Appendix 13A

Ground Investigation Report

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IRISH DRILLING LIMITED

LOUGHREA, CO. GALWAY, IRELAND

CONTRACT DRILLING
SITE INVESTIGATION

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DERRYGREENAGH THERMAL POWER PROJECT

MAIN SITE AREA

SITE INVESTIGATION CONTRACT FACTUAL REPORT

Bord na Mona Powergen Ltd.,
Main Street,
Newbridge,
Co. Kildare.

	Prepared by	Approved by	Rev. Issue Date:	Revision No.
	Ronan Killeen	Declan Joyce	2nd November 2023	23 _OY _101/02
Signature				

FOREWORD

The borehole and trial pit records have been compiled from an examination of the samples by a Geotechnical Engineer and from the Drillers' descriptions.

The report presents an opinion on the configuration of the strata within the site based on the borehole and trial pit results. The assumptions, though reasonable, are given for guidance only and no liability can be accepted for changes in conditions not revealed by the boreholes and trial pits.

The fieldwork was carried out in accordance with IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Site Investigations with precedence given to IS EN 1997-2 where applicable.

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1.0 Introduction.

Irish Drilling Ltd. (IDL) was instructed by Bord na Mona Powergen Limited to carry out a site investigation at the site of the proposed Derrygreenagh Thermal Power Site.

This site investigation was carried out at the Main Site Area to provide detailed factual geotechnical information of the underlying ground conditions for a proposed gas-fired power plant and ancillary grid connection works.

The fieldwork commenced on April 13th 2023 and was completed on July 31st 2023.

2.0 Site & Geology

The site is located at an existing Bord na Mona facility at Derrygreenagh Bog, County Offaly.

The fieldwork was carried out predominantly on peat bog and adjacent agricultural lands and bogland.

Weather conditions in general were quite variable with the majority of the fieldwork carried out over a typical spring/summer period in Ireland. Boglands in particular were occasionally difficult to access, due to rutting, as land became soft caused by sustained wet periods. Tractors and excavators were occasionally used to assist moving of plant and machinery.

Site Plans, prepared by the client's representatives and amended by IDL to show 'As-Built' fieldwork locations, are included with this report.

The following were the main published information sources used:
Geological Map of Ireland: 1:750,000 scale map series.

Site investigation data is available as point source data along the proposed route, and the majority of the ground in between the points can only be assumed to follow the characteristics of the nearest available data.

<u>Overview of Subsoil Geology</u>

Glacial Till:

Glacial Till is what was often referred to as Boulder Clay. It is a diverse material that is largely deposited sub-glacially and has a wide range of characteristics due to the variety of parent materials and different processes of deposition. Tills are often tightly packed, unsorted, heterogeneous, unbedded, and can have a wide range of particle sizes and types, which are often but not exclusively angular or sub-angular.

The type of parent material plays a critical role in providing the particles that create different subsoil permeability with sandstones giving rise to a high proportion of sand sized grains in the till matrix, clean limestones providing a relatively high proportion of silt, while shales, shaly limestones and mudstones break down to the finer clay sized particles.

Glacial Outwash Deposits:

Deposition of sand and gravel takes place mainly when glaciers are melting, which gives rise to large volumes of meltwater with great erosive and transporting power. The subsoils deposited in this environment are predominantly, but not exclusively, rounded to subrounded gravel and sand, with the finer fractions of clay and silt washed out.

Peat:

The deposition of peat occurred in post-glacial periods and is generally associated with the start of warmer and wetter climatic conditions. Peat is an unconsolidated usually dark brown to black organic material comprising a mixture of decomposed and undecomposed plant matter that accumulated in an acidic waterlogged environment. Peat has an extremely high-water content generally averaging over 90% by volume.

Solid Geology
The Geological Map of Ireland: 1:750,000 scale map series indicate that the site is underlain by the Carboniferous Limestone Rock Formations.

3.0 Fieldwork.

3.1 Fieldwork Plant:
The following plant was mobilised to site to carry out fieldwork operations:

Dando 2000 Cable Percussive Boring Rigs.
GT1100 GoTract Rotary Core Drilling Rigs.
Hyundai 140 LC-9 Wide-Tracked Excavator.

Fieldwork carried out to date has included the following:

3.2 Cable Percussive Boreholes:
Fourteen cable percussion (Shell & Auger) boreholes were completed using Dando 2000 Cable Percussive Boring Rigs. The boreholes were bored to 'refusal' or to depths as instructed by the client's representatives.

The borehole depths ranged from 3.50m to 9.20m below ground level and the boreholes completed at the Main Site Area are listed as follows:
BH 101
BH 102
BH 103
BH 104
BH 105
BH 106
BH 107
BH 109
BH 110
BH 111
BH 112
BH 116
BH 117
BH 118
BH PW301

In–Situ testing consisting of Standard Penetration Tests were carried out at regular intervals (predominantly 1.0m intervals) or as instructed by the client's representatives.

Disturbed bulk and jar soil samples were taken at each change in strata and were returned to the laboratory and logged by a Geotechnical Engineer and presented for testing. Groundwater samples were taken where possible and returned to the laboratory for storage and analysis.

Undisturbed (U100, Piston) soil samples were also recovered where possible in cohesive soils and returned to the laboratory for logging and testing.

A 50mm diameter standpipe was installed in a number of boreholes and as instructed by the Client's Engineer, to allow for monitoring of groundwater levels over a prolonged period of time.

Variable Head Permeability Tests (Rising and Falling Head) were carried out at a number of borehole standpipe locations and the records of same are included as Appendix 10.

A summary of water levels recorded during the fieldwork period is included with this report as Appendix 8.

Detailed engineering logs for the cable percussive boreholes completed are included with this report in Appendix 1.

3.3 Rotary Core Boreholes:

Fourteen rotary core boreholes were carried out to establish overburden conditions and rockhead and to establish the nature and integrity of the underlying rock.

The rotary core boreholes were predominantly carried out as 'extension follow-on' boreholes at locations where the cable percussive boreholes encountered 'refusals' at relatively shallow depths.

One further rotary core borehole (BH 111A) was completed as a 'stand-alone' borehole.

The boreholes were completed using wireline drilling techniques, and HQ size (64mm core diameter, 96mm hole diameter) drill strings to recover soil and rock core samples.

A water based flush system was used as the drilling medium while a biodegradable polymer gel was also used where necessary to aid the drilling and soil / rock recovery process.

The samples were stored in wooden boxes and returned to the laboratory where there were logged and photographed by a Geotechnical Engineer and presented for testing.

In-Situ testing consisting of Standard Penetration Tests were carried out in the overburden in a number of the boreholes.

The rotary core boreholes were carried out to depths ranging from 11.00m to 58.00m below ground level and the boreholes completed at the Main Site Area are listed as follows:
BH 101
BH 102
BH 103
BH 104
BH 105
BH 106
BH 107
BH 109
BH 110
BH 111
BH 111A
BH 112
BH 116
BH 117
BH 118.

A 50mm diameter standpipe was installed in a number of boreholes and as instructed by the Client's Engineer, to allow for monitoring of groundwater levels over a prolonged period of time.

Variable Head Permeability Tests (Rising and Falling Head) were carried out at a number of borehole standpipe locations and the records of same are included as Appendix 10.

A summary of water levels recorded during the fieldwork period is included with this report as Appendix 8.

Detailed engineering logs for the rotary core boreholes completed are included with this report in Appendix 2.

3.4 Trial Pits:

Fifteen trial pits were excavated on site using a 14T wide-padded tracked excavator.

The pits were logged and photographed by an Engineer with observations made on ground conditions, pit stability, water ingress and services encountered.
The pits were excavated to depths ranging from 0.50m to 4.80m below ground level and the trial pits completed at the Main Site Area are listed as follows:
TP 201
TP 202
TP 203
TP 204
TP 205
TP 206
TP 206A
TP 207
TP 208
TP 209
TP 210
TP 211
TP 212
TP 224
TP 311

Small and bulk disturbed soil samples were recovered at each change in strata and returned to the laboratory and presented for testing.

In-Situ Tests consisting of plate bearing tests were carried out at many of the trial pit locations, as instructed by the client's representatives. A 610mm diameter steel plate was used and was jacked against a tracked excavator.

The Plate Test graphs were used to measure the co-efficient of subgrade reaction (k_s) and to estimate the CBR values. The records of these test are included in Appendix 9 of this report.

In-Situ tests consisting of shear vane tests and thermal resistivity tests were also carried out where possible in cohesive soils and a summary of the shear vane test results and thermal resistivity results are included on the trial pit logs.

Detailed engineering logs for the trial pits completed are included with this report in Appendix 3.

3.5 Cone Penetration Tests:

Static Cone Penetration tests were carried out at eleven locations using a 20 tonne Track-mounted CPT Rig.

The tests were carried out by In-Situ Site Investigations Ltd to depths ranging from 0.24m to 17.01m below ground level and the tests completed at the Main Site Area are listed as follows:
CPT 201
CPT 202
CPT 203
CPT 204
CPT 205
CPT 206
CPT 207
CPT 209
CPT 211
CPT 212
CPT 213

The records of the cone penetration tests are included as a 'stand-alone' report in appendix 7. This report contains data for tests carried out at both the Main Site Area and Main Site (South Area).

3.6 Geophysical Surveys:

A Geophysical Survey was carried out by Minerex Geophysics Limited at the proposed thermal power site (Main Site Area and Main Site (South Area)).

The geophysical survey consisted of 2D-Resistivity and the main objectives of the survey were to determine ground conditions, estimate the depth to rock, overburden thickness and reduce the risk of encountering unknown subsurface conditions (including soft ground, shallow bedrock or bedrock karstification) during construction.

The geophysical models and interpretations give guidance about the geological ground and in conjunction with the boreholes a detailed picture of the subsurface conditions.

The records of the geophysical survey and interpretations for both the Main Site Area and Main Site South Area are included as a 'stand-alone' report in appendix 4A.

Vertical Electrical Sounding tests were also carried out by Minerex Geophysics Limited at the proposed thermal power site.

The tests were carried out using the Wenner Electrode Configuration and the records of same are presented as a 'stand-alone' report in Appendix 4B of this factual report.

A Ground Penetration Radar (GPR) Utility Survey was also carried out by Scantech Geoscience Ltd in and around the vicinity of the existing plant infrastructure (Main Site Area and Main Site South Area).

The purpose of this survey was to identify the presence of any underground services on site (using non-intrusive fieldwork methods) and the records of this survey have been included as a 'stand-alone' report in Appendix 6 of this factual report.

3.7 Acoustic Televiewer Survey:

An Acoustic Televiewer Survey was carried out by European Geophysical Surveys Limited.

The surveys were carried out at the following three rotary core locations: BH 103 and BH 111A. A survey was also carried out at an existing water well, namely PW 1.

The survey was carried out in the boreholes at depths ranging from 7.00m to 65.80m below ground level and consisted of some or all of the following: Optical Imager, Acoustic Imager, Natural Gamma, Caliper, Focused Resistivity, Fluid Temperature and Conductivity, Impeller Flowmeter and Full Wave Sonic.

The records of the televiewer survey are included as a 'stand-alone' report in appendix 5 of this report.

3.8 In-Situ Testing

Soil infiltration tests were also carried out at four locations (IT 1 to IT 4) in accordance with BRE 365 and the records of same are included with this report as Appendix 11A.

Soil percolation tests were also carried out at two locations (PT 1 to PT 2). The tests were completed by Brendan Slevin & Associates, Consulting Engineers in accordance with EPA Soil Assessment Guidelines and the records of same are included as a 'stand-alone' report in Appendix 11B of this report.

A pump test was carried out at an existing well at the Main Site Area (labelled PW 1 on the site plans). This well was completed in 2008 and a deployable yield of 630 cubic metres per day was determined at that time. Prior to commencement of the pump test reconditioning works were carried out on the well by Dempseys Water Well Drilling Limited.

The Pump test was subsequently carried out by Hydro Environmental Services and the records of the pump test are presented as a 'stand-alone' report in Appendix 11C of this factual report.

3.9 General Summary:

The fieldwork locations were set out on site using a Trimble CU Bluetooth GPS Surveying Unit and the co-ordinates are included on the logs presented in the appendices.

All fieldwork co-ordinates are reported to Irish Transverse Mercator (ITM) with Reduced Levels recorded relative to Malin Head Datum and with an accuracy level of + or – 0.10m.

Ground conditions encountered during the completion of the fieldwork were typical and as expected for this region and predominantly consisted of Peat overlying Glacial Tills overlying Bedrock.

Made ground was also encountered at a number of fieldwork locations to depths of up to 2.90m below ground level.

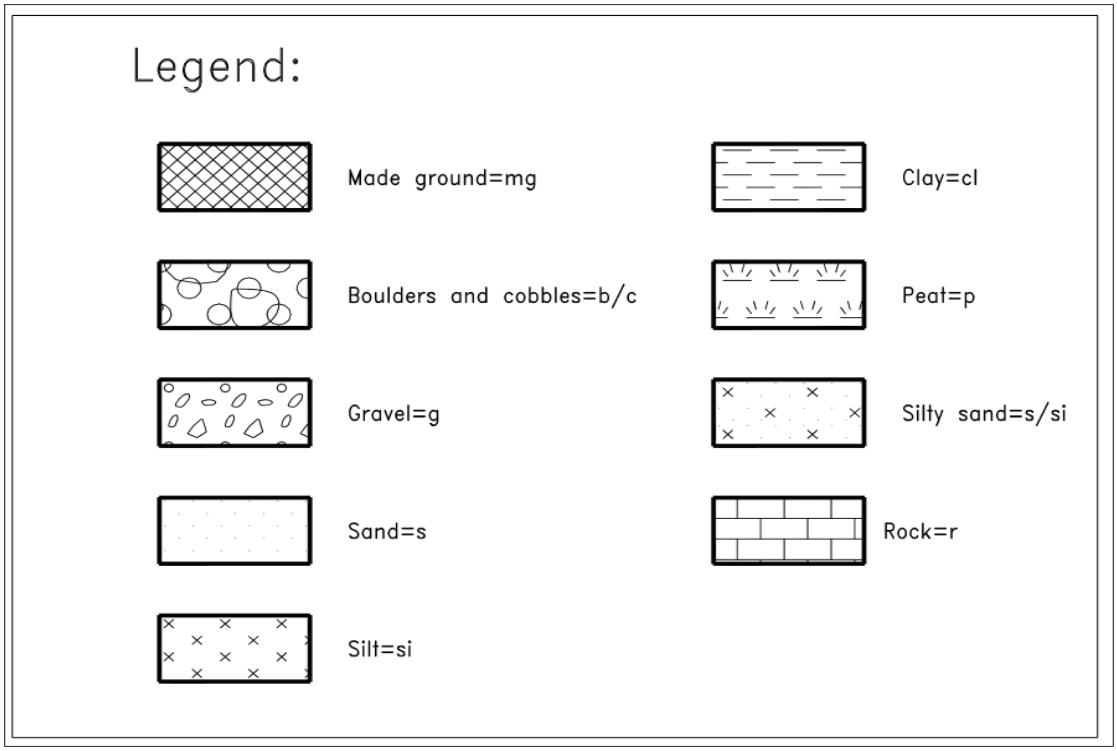
Very soft and soft brown Peat was encountered in many of the boreholes and trial pits to depths ranging from 0.40m to 4.80m below ground level.

The Glacial Tills in general consisted of slightly sandy slightly gravelly silt/clay with cobbles and boulders and/or silty sands and/or gravels with cobbles and boulders.

Intact bedrock was encountered in the rotary core boreholes at depths varying from 5.00m to 39.30m below ground level. Weathered bedrock was also encountered in a number of the boreholes at shallower depths.

It is further noted that bedrock was not encountered in many of the boreholes before borehole termination and for detailed descriptions of bedrock and ground conditions encountered please refer to the engineering logs included in the appendices of this report.

The following Key Legend Table details the symbology used on the engineering logs to describe ground conditions encountered:



The fieldwork was carried out in accordance with IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Site Investigations with precedence given to IS EN 1997-2 where applicable.

4.0 Laboratory Testing

Representative samples recovered from the boreholes and trial pits were scheduled for testing in the laboratory.

The test schedules were prepared by the Client's Engineer and included some or all of the following tests on disturbed and undisturbed soil samples:

* Natural Moisture Content.
* Atterberg Limits.
* Particle Density.
* Particle Size Distribution.
* Sedimentation.
* Organic Content / Loss on Ignition.
* Shearbox.
* Triaxial.
* Compaction (CBR).
* Consolidation.
* Chemical (pH, Sulphate (Total/Water), Chloride).
* BRE SD1
* Thermal Resistivity.

The test schedules included some or all of the following tests on rock core samples:

* Point Load.
* UCS.

The test schedules were carried out predominantly at the IDL Laboratory located at Loughrea, County Galway.

A number of specialist tests not available at the IDL laboratory were carried out by designated laboratories on a subcontract basis as follows:

Laboratory chemical tests were carried out by Alcontrol Laboratories, UK.
Shear Strength, Triaxial and Shear Box Tests were carried out by NMTL, County Carlow.

Soil samples (disturbed and undisturbed) in general were recovered from the excavation of trial pits and completion of cable percussive boreholes. Rock core samples were recovered from the completion of rotary core boreholes.

The records of soil and rock core laboratory test results carried out on same are reported in Appendix 12. The records of all laboratory tests completed on the fieldwork soil/rock samples for all three sites (Main Site Area, Main Site South Area and Cable/Pylon Route) are included in Appendix 12 and reference should be made only to the results relevant to this report, namely Main Site Area.

Environmental laboratory tests were also carried out on many soil samples recovered from the boreholes and trial pits.

The environmental laboratory tests were carried out by Alcontrol Laboratories, UK and the records of same are included as Appendix 13 of this report. The records of all environmental laboratory tests completed on the fieldwork soil samples for all three sites (Main Site Area, Main Site South Area and Cable/Pylon Route) are included in Appendix 13 and reference should be made only to the results relevant to this report, namely Main Site Area.

The soil and rock descriptions as noted on the borehole and trial pit logs are in general visual descriptions as observed and logged by our Engineers and are described in accordance with IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Site Investigations.

Soils descriptions (cohesive or otherwise) are also initially assessed based on the texture and 'feel' of the soil materials as witnessed by our Geotechnical Engineers and in accordance with IS EN 1997-2 and BS5930:2015+A1:2020.

Where laboratory classification tests have been carried out on soil or rock samples then these visual descriptions have been amended accordingly to take into account the results of these classification tests.

The records of all fieldwork, laboratory test results and photographs are included in the appendices of this Factual Report.

Ronan Killeen

Ronan Killeen
Chartered Engineer
Irish Drilling Limited
November 2nd 2023

Appendix 1
Borehole Records
(Cable Percussive)

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BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH101**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	13-04-23 14-04-23	83.67	E 649,431.5 N 738,338.6

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry; 2nd: ; 3rd: ; Rose to (@ 20 min.): ; Sealed at:	1 of 2 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.00-1.00	B1			83.17		(0.50) 0.50	MADE GROUND: Clause 804 type material, 3" & down and gravel.	
1.00	SPT	N = 5 (2, 2, 2, 1, 1, 1)		82.37		(0.80) 1.30	MADE GROUND: Soft black slightly gravelly sandy ORGANIC SILT.	
1.00 1.00 1.00-1.50	ES D2 B4			81.97		(0.40) 1.70	Soft dark brown PEAT.	
				81.77		1.90	Soft brown peaty SILT with wood.	
2.00-2.45 2.50 2.50-3.00 3.00 3.00 3.00-3.50	U1005 D6 B7 SPT D8 B10	14 blows N = 10 (2, 2, 2, 2, 3, 3)		79.87		(1.90) 3.80	Firm grey slightly gravelly SILT with rare cobbles.	
4.00 4.00 4.00-4.50 5.00 5.00 5.00-5.50 6.00 6.00 6.00-6.50	SPT D11 B13 SPT D14 B16 SPT D17 B19	N = 22 (4, 5, 5, 6, 5, 6) N = 23 (5, 7, 5, 6, 5, 7) N = 23 (7, 6, 5, 4, 9, 5)		77.17		(2.70) 6.50	Medium dense brownish greyish yellow very sandy very silty fine and medium GRAVEL.	
7.00 7.00 7.00-7.50	SPT D20 B22	N = 19 (4, 4, 5, 5, 4, 5)				(2.10)	Medium dense brownish yellow silty sandy GRAVEL with rare cobbles.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
13-04-23 14-04-23	17.30 08.00	6.50 6.50			6.00						Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller DK	Logged By DK

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH101**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	13-04-23 14-04-23	83.67	E 649,431.5 N 738,338.6

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry 2nd: 3rd: Rose to (@ 20 min.): Sealed at:	2 of 2 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
8.00 8.00 8.00-8.50 8.50	SPT D23 B25 SPT	N = 30 (3, 4, 6, 7, 6, 11) 25 for 75 mm (25, 25)		75.07		8.60	Medium dense brownish yellow silty sandy GRAVEL with rare cobbles. *(continued)* 8.00-8.45: becoming dense.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
14-04-23	13.00	8.60	8.60	203		8.6		1:00			Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used Dando 2000		Driller DK	Logged By DK

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH102**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	17-04-23 17-04-23	82.94	E 649,532.9 N 738,384.3

Engineer	GROUNDWATER STRIKES				Sheet
Fichtner		Water strikes: 1st: dry 2nd: 3rd:	Rose to (@ 20 min.):	Sealed at:	1 of 1 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.00-1.00	B1			82.34		(0.60) 0.60	MADE GROUND: Site FILL.	
				81.84		(0.50) 1.10	Firm dry black PEAT.	
1.00	SPT	N = 8 (1, 1, 2, 2, 2, 2)		81.34		(0.50) 1.60	Soft blackish grey sandy peaty SILT with rare cobbles.	
1.00 1.00 1.00-1.50	ES D2 B4						Soft black PEAT with wood.	
2.00	SPT	N = 4 (2, 1, 1, 1, 1, 1)				(2.00)		
2.00 2.00-2.50	D5 B7							
3.00 3.00-3.45 3.00-3.50	D8 U1009 B10	8 blows		79.34		3.60		
				77.84		(1.50) 5.10	Medium dense moist brown very silty very sandy fine and medium GRAVEL with rare cobbles. Cobbles are rounded.	
4.00	SPT	N = 14 (2, 3, 3, 4, 3, 4)						
4.00 4.00-4.50	D11 B13							
5.00	SPT	50 for 150 mm (16, 19, 25, 25)						

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
17-04-23	16.30	5.10	5.10	203		5.1		1:00			Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Dando 2000		Driller DK	Logged By DK

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH103**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	17-04-23 17-04-23	84.36	E 649,513.6 N 738,320.7

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry 2nd: 3rd: Rose to (@ 20 min.): Sealed at:	1 of 1 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.00-1.00	B1					(1.20)	MADE GROUND: Dense GRAVEL fill with metal.	
1.00	SPT	N = 30 (5, 8, 8, 7, 6, 9)		83.16		1.20		
1.00	D2					(0.80)	Dense brown silty sandy GRAVEL.	
1.00-1.50	B4							
1.50	ES							
1.50	D5			82.36		2.00		
2.00	SPT	N = 33 (4, 6, 6, 9, 8, 10)				(0.90)	Stiff grey slightly sandy gravelly SILT with cobbles.	
2.00-2.50	B7			81.46		2.90		
3.00	SPT	50 for 240 mm (3, 5, 8, 29, 13, 0)				(0.50)	Stiff brown slightly sandy gravelly SILT. Gravel is fine.	
3.00	D8			80.96		3.40		
3.00-3.50	B10			80.86		3.50	Obstruction as boulder.	
3.50	D11							

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
17-04-23	17.30	3.50	3.50	203		3.4	3.5	1:00			Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller BT	Logged By BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH104**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	18-04-23 18-04-23	82.93	E 649,609.5 N 738,361.9

Engineer	GROUNDWATER STRIKES				Sheet
Fichtner		Water strikes: 1st: dry 2nd: 3rd:	Rose to (@ 20 min.):	Sealed at:	1 of 2 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.00-1.00	B1			82.43		(0.50) 0.50	Firm brown sandy SILT.	
1.00 1.00 1.00-1.45 1.50-2.00	ES D2 U1003 B4	5 blows		81.33		(1.10) 1.60	Firm dry black PEAT.	
2.00 2.00 2.00-2.50 2.50	SPT D5 B7 D8	N = 2 (1, 1, 0, 1, 0, 1)		80.23		(1.10) 2.70	Black slightly gravelly sandy ORGANIC SILT with wood.	
3.00 3.00-3.50	SPT B10	50 for 150 mm (17, 8, 25, 25)		79.03		(1.20) 3.90	Stiff grey sandy SILT with rare cobbles. Cobbles are angular of limestone.	
4.00 4.00 4.00-4.50 5.00 5.00 5.00-5.50 6.00 6.00 6.00-6.50 7.00 7.00 7.00-7.50	SPT D11 B13 SPT D14 B16 SPT D17 B19 SPT D20 B22	N = 18 (3, 4, 6, 3, 4, 5) N = 21 (4, 3, 3, 6, 5, 7) N = 23 (5, 3, 5, 9, 5, 4) N = 31 (4, 4, 5, 8, 5, 13)				(4.20)	Stiff moist reddish brown very sandy very gravelly SILT.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
						3	3.5	1:00			BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Dando 2000		Driller DK	Logged By DK

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH104**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	18-04-23 18-04-23	82.93	E 649,609.5 N 738,361.9

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry 2nd: 3rd: Rose to (@ 20 min.): Sealed at:	2 of 2 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
8.00 8.00	SPT D23	50 for 150 mm (10, 15, 25, 25)		74.83		8.10		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
18-04-23	17.30	8.10	8.10	203		8.1		1:00			BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller DK	Logged By DK

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH105**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	18-04-23 19-04-23	84.38	E 649,562.6 N 738,294.9

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry 2nd: 3rd: Rose to (@ 20 min.): Sealed at:	1 of 2 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.00-1.00	B1			83.78		(0.60) 0.60	MADE GROUND: Stiff grey gravelly CLAY fill.	
1.00 1.00 1.00-1.50 1.50 2.00 2.00-2.50 3.00	SPT D2 B4 D5 SPT B7 D8	N = 23 (4, 5, 3, 6, 7, 7) N = 19 (3, 3, 4, 5, 5, 5)		81.28		(2.50) 3.10	Stiff greyish brown sandy SILT.	
3.00-3.45 3.50 4.00 4.00-4.50 4.50 5.00 5.00-5.50 5.50	U1009 D10 SPT B12 D13 SPT B15 D16	16 blows N = 22 (3, 4, 5, 5, 6, 6) N = 18 (3, 5, 3, 4, 5, 6)		78.28		(3.00) 6.10	Stiff brown slightly sandy slightly gravelly SILT.	
6.50 6.50-7.00 7.00	SPT B18 D19	N = 23 (2, 5, 6, 4, 6, 7)					Stiff dry greyish white sandy SILT.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
18-04-23 19-04-23	17.30 08.00	7.00 7.00	6.00	203							Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller BT	Logged By BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH105**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	18-04-23 19-04-23	84.38	E 649,562.6 N 738,294.9

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry 2nd: 3rd: Rose to (@ 20 min.): Sealed at:	2 of 2 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
8.00	SPT	N = 18 (3, 3, 2, 4, 5, 7)				(3.90)	Stiff dry greyish white sandy SILT. *(continued)*	
8.00-8.50	B21							
8.50	D22							
9.50	SPT	N = 11 (2, 1, 2, 2, 4, 3)						
9.50-10.00	B24			74.38		10.00		
10.00	D25			74.18		10.20	Obstruction as boulder.	
10.10	SPT	50 for 40 mm (25, 50)						
11.10		N = 11 (2, 1, 2, 2, 4, 3)						
12.10		N = 22 (2, 5, 4, 3, 5, 10)						

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
19-04-23	13.00	10.20			10.20	10.1	10.2	1:00			Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used Dando 2000		Driller BT	Logged By BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH106**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	19-04-23 20-04-23	85.45	E 649,588.7 N 738,249.7

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry; 2nd: ; 3rd: ; Rose to (@ 20 min.): ; Sealed at:	1 of 1 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.00-1.00	B1			85.15		0.30	MADE GROUND: Dense gravelly FILL.	
1.00	SPT	50 for 150 mm (8, 10, 17, 33)				(2.00)	Firm brownish grey slightly sandy slightly gravelly SILT with cobbles and boulders.	
1.00	D2							
1.00-1.50	B4							
1.50	D5							
2.00	SPT	N = 41 (4, 5, 8, 7, 7, 19)		83.15		2.30		
2.00-2.50	B7						Firm brownish grey SILT with cobbles and boulders.	
3.00	SPT	N = 27 (3, 3, 6, 5, 8, 8)						
3.00	D8							
3.00-3.50	B10							
3.50	D11							
4.00	SPT	N = 17 (2, 2, 3, 5, 4, 5)				(4.20)		
4.00	ES							
4.00-4.50	B13							
4.50	D14							
5.00	SPT	N = 20 (3, 4, 4, 4, 5, 7)						
5.00-5.50	B16							
5.50	D17							
				78.95		6.50		
6.50	SPT	50 for 12 mm (25, 50)		78.85		6.60	Obstruction as boulder.	

Boring Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m
19-04-23	17.30	2.00	6.50	203	
20-04-23	08.00	2.00			
20-04-23	15.00	6.60			

Chiselling

From	To	Hours
1.3	1.6	1:00
2.45	2.7	1:00
6.5	6.6	1:00

Water Added

From	To

GENERAL REMARKS

Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller: BT	Logged By: BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH107**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	26-04-23 27-04-23	87.19	E 649,439.0 N 738,146.2

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry; 2nd: ; 3rd: ; Rose to (@ 20 min.): ; Sealed at:	1 of 2 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.00-1.00	B1						Grass over firm brown slightly sandy slightly gravelly SILT with cobbles.	
1.00	SPT	N = 15 (2, 3, 3, 4, 4, 4)				(2.40)		
1.00	D2							
1.00-1.50	B4							
1.50	ES							
1.50	D5							
2.00	SPT	N = 36 (5, 5, 8, 9, 9, 10)						
2.00-2.50	B7			84.79		2.40		
2.50	D8						Very stiff orangish brown slightly sandy slightly gravelly SILT.	
3.00	SPT	50 for 150 mm (8, 10, 16, 34)				(1.50)		
3.00-3.50	B10							
3.50	D11							
				83.29		3.90		
4.00	SPT	50 for 95 mm (13, 12, 39, 11)					Dense brownish orangish white silty SAND with cobbles. Cobbles are of siltstone.	
4.00-4.50	B13							
4.50	D14							
5.00	SPT	N = 29 (4, 6, 6, 7, 8, 8)						
5.00-5.50	B16							
5.50	D17							
6.50	SPT	N = 30 (5, 6, 4, 7, 9, 10)				(5.50)		
6.50-7.00	B19							
7.00	D20							

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
26-04-23	17.30	8.00	8.00	203		2.6	2.8	1:00			Falling head test expedited in BH. BH backfilled.
27-04-23	08.00	8.00				3.3	3.5	1:00			

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller: BT	Logged By: BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH107**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	26-04-23 27-04-23	87.19	E 649,439.0 N 738,146.2

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: Rose to (@ 20 min.): Sealed at: 1st: dry 2nd: 3rd:	2 of 2 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
8.00	SPT	N = 36 (6, 8, 7, 9, 9, 11)					Dense brownish orangish white silty SAND with cobbles. Cobbles are of siltstone. *(continued)*	
8.00-8.50	B22							
8.50	D23							
				77.79		9.40		
9.40	SPT	50 for 40 mm (25, 50)		77.69		9.50	Dense multi coloured silty SAND with cobbles.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
27-04-23	13.00	9.50				9.4	9.5	1:00			Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller: BT	Logged By: BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH109**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	20-04-23 21-04-23	82.73	E 649,687.4 N 738,383.5

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry 2nd: 3rd: Rose to (@ 20 min.): Sealed at:	1 of 2 Status FINAL

SAMPLES & TESTS

Depth	Type No	Test Result
0.00-1.00	B1	
1.00	SPT	N = 0 (1, 0, 0, 0, 0, 0)
1.00	ES	
1.00	D2	
1.00-1.50	B4	
1.50	D5	
2.00-2.45	U1006	5 blows
3.00	SPT	N = 1 (1, 0, 0, 1, 0, 0)
3.00	D7	
3.00-3.50	B9	
3.50	D10	
4.00	SPT	N = 3 (1, 1, 0, 1, 1, 1)
4.00-4.50	B13	
4.50	D14	
5.00	SPT	N = 23 (3, 6, 5, 6, 6, 6)
5.00-5.50	B16	
5.50	D17	
6.00	SPT	N = 21 (4, 7, 5, 5, 5, 6)
6.00-6.50	B19	
7.00	SPT	N = 28 (4, 3, 9, 5, 6, 8)
7.00	D20	
7.00-7.50	B22	

Water

STRATA

Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION
		(1.20)	Firm dry black PEAT.
81.53		1.20	
		(1.70)	Soft moist black PEAT.
79.83		2.90	
		(1.90)	Soft moist brown PEAT.
77.93		4.80	
		(1.70)	Stiff grey slightly sandy gravelly SILT.
76.23		6.50	
		(2.30)	Stiff brownish grey sandy gravelly SILT with rare cobbles.

Instrument/ Backfill

Boring Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m
20-04-23	17.30	5.50			
21-04-23	08.00	5.50			

Chiselling

From	To	Hours
7	7.5	0:30

Water Added

From	To

GENERAL REMARKS

Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000	Driller DK	Logged By DK

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH109**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	20-04-23 21-04-23	82.73	E 649,687.4 N 738,383.5

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: Rose to (@ 20 min.): Sealed at: 1st: dry 2nd: 3rd:	2 of 2 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
8.00	SPT	N = 30 (6, 6, 7, 8, 6, 9)					Stiff brownish grey sandy gravelly SILT with rare cobbles. *(continued)*	
8.00	D23							
8.00-8.50	B25							
				73.93		8.80		
8.80	SPT	50 for 150 mm (15, 10, 25, 25)						

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
21-04-23	14.00	8.80	8.50	203		8.8		1:00			Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller DK	Logged By DK

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH110**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	27-04-23 28-04-23	86.11	E 649,461.4 N 738,212.7

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry; 2nd: ; 3rd: ; Rose to (@ 20 min.): ; Sealed at:	1 of 1 Status FINAL

SAMPLES & TESTS / STRATA

Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	Instrument/ Backfill
0.00-1.00	B1			85.71		(0.40) 0.40	MADE GROUND: GRAVEL.	
1.00	SPT	50 for 150 mm (10, 10, 18, 32)				(1.40)	Stiff brown slightly sandy gravelly SILT with cobbles. Gravel is coarse.	
1.00	D2							
1.00-1.50	B4							
1.50	D5			84.31		1.80		
2.00	SPT	50 for 75 mm (10, 15, 50)				(0.60)	COBBLES & BOULDERS.	
2.00-2.50	B7			83.71		2.40		
2.50	D8						Very stiff slightly sandy slightly gravelly SILT.	
3.00	SPT	78 for 225 mm (9, 8, 11, 17, 50)						
3.00-3.50	B10							
3.50	D11							
4.00	SPT	N = 38 (6, 8, 8, 8, 9, 13)				(3.60)		
4.00-4.50	B13							
4.50	D14							
5.00	SPT	N = 50 (5, 7, 10, 9, 16, 15)						
5.00-5.50	B16							
5.50	D17			80.11		6.00		
6.50	SPT	50 for 150 mm (16, 9, 21, 29)				(1.20)	Dense orangish brown silty SAND with cobbles.	
6.50-7.00	B19							
7.00	D20			78.91		7.20		
7.20	SPT	50 for 75 mm (25, 50)		78.81		7.30	Obstruction as boulder.	

Boring Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m
27-04-23	17.30	6.00	6.00	203	
28-04-23	08.00	6.00			
28-04-23	12.00	7.30			

Chiselling

From	To	Hours
1.3	1.7	1:00
2.2	2.6	1:00
6.7	6.9	1:00
7.2	7.3	1:00

Water Added

From	To

GENERAL REMARKS

Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller: BT	Logged By: BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH111**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	02-05-23 02-05-23	87.59	E 649,512.7 N 738,206.2

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry; 2nd: ; 3rd: ; Rose to (@ 20 min.): ; Sealed at:	1 of 1 Status FINAL

SAMPLES & TESTS

Depth	Type No	Test Result
0.00-1.00	B1	
1.00	SPT	N = 45 (6, 8, 9, 17, 10, 9)
1.00	D2	
1.00-1.50	B4	
1.50	ES	
1.50	D5	
2.00	SPT	N = 43 (3, 5, 7, 9, 9, 18)
2.00-2.50	B7	
3.00	SPT	N = 50 (7, 9, 9, 10, 14, 17)
3.00	D8	
3.00-3.50	B10	
3.50	D11	
4.00	SPT	N = 50 (6, 7, 9, 15, 16, 10)
4.00-4.50	B13	
4.50	D14	
5.00	SPT	50 for 150 mm (9, 10, 18, 32)
5.00-5.50	B16	
5.50	D17	

Water

STRATA

Reduced Level	Legend	Depth (Thickness)	DESCRIPTION
		(1.90)	Very stiff grey sandy gravelly SILT with cobbles.
85.69		1.90	
		(2.60)	Very stiff orangish brown slightly sandy gravelly SILT. 4.00-4.50: becoming slightly gravelly sandy.
83.09		4.50	
		(0.90)	Very dense grey SAND with cobbles.
82.19		5.40	
82.09		5.50	Obstruction as possible rock.

Instrument/ Backfill

Boring Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m
02-05-23	17.30	5.50	5.50	203	

Chiselling

From	To	Hours
0.4	0.9	1:00
5.4	5.5	1:00

Water Added

From	To

GENERAL REMARKS

Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000	Driller: BT	Logged By: BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH112**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	12-04-23 13-04-23	84.42	E 649,358.6 N 738,261.1

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry; 2nd: ; 3rd: ; Rose to (@ 20 min.): ; Sealed at:	1 of 1 Status FINAL

SAMPLES & TESTS

Depth	Type No	Test Result
0.00-1.00	B1	
0.60	ES	
1.00	SPT	N = 12 (2, 3, 3, 4, 2, 3)
1.00		
1.00	D2	
1.00-1.50	B4	
2.00	SPT	N = 15 (3, 2, 4, 3, 4, 4)
2.00	D5	
2.00-2.50	B7	
3.00	SPT	N = 19 (3, 4, 3, 6, 4, 6)
3.00	D8	
3.00-3.50	B10	
4.00	SPT	N = 19 (3, 4, 3, 6, 4, 6)
4.00	D11	
4.00-4.50	B13	
5.10	SPT	50 for 150 mm (21, 4, 25, 25)

Water

STRATA

Reduced Level	Legend	Depth (Thickness)	DESCRIPTION
		(0.60)	MADE GROUND: Tarmac, Clause 804 type material and road fill.
83.82		0.60	
		(2.30)	POSSIBLE MADE GROUND: Firm grey sandy gravelly CLAY with occasional cobbles. Cobbles are of limestone.
81.52		2.90	
		(0.60)	Stiff brown slightly sandy slightly gravelly SILT.
80.92		3.50	
		(1.60)	Medium dense brown gravelly silty SAND with occasional cobbles.
79.32		5.10	

Instrument/ Backfill

Boring Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m
12-04-23	17.30	5.10	5.10	203	

Chiselling

From	To	Hours
5.1		1:00

Water Added

From	To

GENERAL REMARKS

Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller: DK	Logged By: DK

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH116**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	11-05-23 12-05-23	82.87	E 649,743.1 N 738,296.4

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry; 2nd: ; 3rd: ; Rose to (@ 20 min.): ; Sealed at:	1 of 1 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.00-1.00	B1						Firm brown fibrous PEAT.	
1.00	D2							
1.00-1.45	U1003	2 blows				(2.60)		
1.50	D4							
2.00	SPT	N = 0 (0, 0, 0, 0, 0, 0)						
2.00-2.50	B6							
2.50	D7			80.27		2.60		
				79.87		(0.40) 3.00	Stiff grey sandy gravelly SILT with cobbles.	
3.00	SPT	N = 36 (3, 2, 4, 7, 6, 19)					Dense brownish grey very silty very sandy GRAVEL.	
3.00-3.50	B9			79.37		(0.50) 3.50		
3.50	D10						Stiff greyish white SILT.	
4.00	SPT	N = 29 (4, 4, 8, 7, 7, 7)						
4.00-4.50	B12							
4.50	D13					(2.10)		
5.00	SPT	N = 50 (5, 9, 11, 11, 11, 17)						
5.00-5.50	B15							
5.50	D16			77.27		5.60		
							Greyish whitish brown limestone COBBLES.	
6.50	SPT	50 for 170 mm (10, 15, 15, 21, 14)				(2.00)		
6.50-7.00	B18							
7.00	ES							
7.00	D19							
7.50	SPT	50 for 0 mm (25, 50)		75.27		7.60		

Boring Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m
11-05-23	17.30	7.60	7.00	203	
12-05-23	08.00	7.60			
12-05-23	10.00	7.60			

Chiselling

From	To	Hours
3.45	3.7	1:00
7.5	7.6	1:00

Water Added

From	To

GENERAL REMARKS

50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000	Driller: BT	Logged By: BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH117**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	10-05-23 10-05-23	82.78	E 649,723.2 N 738,289.0

Engineer	GROUNDWATER STRIKES				Sheet
Fichtner		Water strikes: 1st: dry 2nd: 3rd:	Rose to (@ 20 min.):	Sealed at:	1 of 1 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.00-1.00	B1			81.88		(0.90) 0.90	Soft dark brown gravelly PEAT.	
1.00 1.00-1.45 1.50	D2 U1003 D4	6 blows		80.78		(1.10) 2.00	Grey silty SAND with cobbles. Cobbles are of limestone.	
2.00 2.00-2.50	SPT B6	N = 50 (5, 8, 9, 17, 20, 4)		80.28		(0.50) 2.50	Very stiff brownish grey slightly gravelly sandy SILT.	
2.50 3.00 3.00-3.50 3.50 4.00 4.00-4.50	D7 SPT B9 D10 SPT B12	50 for 225 mm (10, 8, 9, 13, 28) N = 50 (8, 9, 10, 10, 16, 14)		78.38		(1.90) 4.40	Dense grey silty SAND with cobbles. Cobbles are of limestone.	
4.50 5.00 5.00-5.50 5.50 6.50	D13 SPT B15 D16 SPT	50 for 150 mm (6, 6, 7, 43) 50 for 75 mm (25, 50)		76.08		(2.30) 6.70	Stiff grey gravelly sandy SILT with cobbles.	
6.50-7.00 7.00	B18 D19			75.78		7.00	Obstruction as boulder.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
10-05-23	16.00	7.00	7.00	203		2.4 3.3 6.7	2.6 3.7 7	1:00 1:00 1:00			BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller BT	Logged By BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH118**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	12-05-23 15-05-23	82.80	E 649,594.2 N 738,364.9

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: Rose to (@ 20 min.): Sealed at: 1st: 8.50m 2nd: 3rd:	1 of 2 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.00-1.00	B1						MADE GROUND: Grass over PEAT and CLAY fill.	
						(0.80)		
				82.00		0.80		
							Firm dry brown fibrous PEAT.	
1.00	D2							
1.00-1.45	U1003	3 blows						
1.00-1.50	B4							
1.50	D5					(1.80)		
2.00	SPT	N = 8 (2, 2, 2, 3, 1, 2)						
2.00-2.50	B7							
2.50	D8			80.20		2.60		
							Stiff greyish brown sandy SILT with cobbles.	
3.00	SPT	N = 35 (3, 4, 4, 5, 8, 18)						
3.00-3.50	B10							
3.50	ES					(1.90)		
3.50	D11							
4.00	SPT	N = 38 (5, 7, 10, 11, 8, 9)						
4.00-4.50	B13			78.30		4.50		
4.50	D14						Stiff orangish brown sandy SILT.	
						(0.50)		
				77.80		5.00		
5.00	SPT	N = 37 (4, 5, 9, 7, 10, 11)					Stiff orangish brown sandy gravelly SILT.	
5.00-5.50	B15							
5.50	D16							
6.50	SPT	N = 29 (4, 5, 6, 8, 8, 7)						
6.50-7.00	B18							
7.00	D19					(4.10)		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
12-05-23	17.30	5.00				3.45	3.7	1:00			50mm standpipe installed.
15-05-23	08.00	5.00									

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller: BT	Logged By: BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH118**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	12-05-23 15-05-23	82.80	E 649,594.2 N 738,364.9

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: Rose to (@ 20 min.): Sealed at: 1st: 8.50m 2nd: 3rd:	2 of 2 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
8.00	SPT	50 for 235 mm (8, 9, 9, 16, 17, 8)					Stiff orangish brown sandy gravelly SILT. *(continued)*	
8.00-8.50	B21		1					
8.50	D22							
				73.70		9.10		
9.10	SPT	50 for 10 mm (25, 50)		73.60		9.20	Obstruction as boulder.	
10.10		N = 29 (4, 5, 6, 8, 8, 7)						
11.10		N = 29 (4, 5, 6, 8, 8, 7)						
12.10		N = 44 (5, 5, 8, 9, 11, 16)						

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
15-05-23	13.00	9.20	9.00	203		9.1	9.2	1:00			50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller: BT	Logged By: BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BHPW301**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	19-04-23 20-04-23	82.38	E 649,637.1 N 738,409.7

Engineer	GROUNDWATER STRIKES				Sheet
Fichtner		Water strikes: 1st: dry 2nd: 3rd:	Rose to (@ 20 min.):	Sealed at:	1 of 2 Status FINAL

SAMPLES & TESTS

Depth	Type No	Test Result
0.00-1.00	B1	
1.00	SPT	N = 0 (1, 0, 0, 0, 0, 0)
1.00	ES	
1.00	D2	
1.00-1.50	B4	
1.50	D5	
2.00-2.45	U1006	6 blows
3.00	SPT	N = 2 (1, 1, 0, 1, 0, 1)
3.00-3.50	B7	
3.00-3.50	B9	
4.00	D10	
4.00-4.45	U10011	7 blows
5.00	SPT	N = 19 (3, 4, 5, 5, 4, 5)
5.00	D12	
5.00-5.50	B14	
6.00	SPT	N = 22 (4, 4, 5, 6, 6, 5)
6.00	D15	
6.00-6.50	B17	
7.00	SPT	N = 24 (3, 4, 5, 7, 5, 7)
7.00	D18	
7.00-7.50	B20	

Water

STRATA

Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION
		(0.90)	Firm dry black PEAT.
81.48		0.90	
		(1.60)	Soft moist black PEAT.
79.88		2.50	
		(2.20)	Firm brown PEAT with wood.
77.68		4.70	
		(1.80)	Stiff moist brownish grey sandy SILT with rare cobbles.
75.88		6.50	
			Stiff brownish grey slightly gravelly slightly sandy SILT with rare cobbles. Cobbles are of limestone.

Instrument/ Backfill

Boring Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m
19-04-23	18.00	6.50			
20-04-23	08.00	6.50			

Chiselling

From	To	Hours
7.5	8	0:30

Water Added

From	To

GENERAL REMARKS

BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller DK	Logged By DK

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BHPW301**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	19-04-23 20-04-23	82.38	E 649,637.1 N 738,409.7

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry 2nd: 3rd: Rose to (@ 20 min.): Sealed at:	2 of 2 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
8.00	SPT	N = 28 (5, 8, 6, 8, 5, 9)				(3.60)	Stiff brownish grey slightly gravelly slightly sandy SILT with rare cobbles. Cobbles are of limestone. *(continued)*	
8.00	D21							
8.00-8.50	B23							
9.00	SPT	N = 24 (4, 4, 6, 6, 6, 6)						
9.00	D24							
9.00-9.50	B26							
10.00	SPT	25 for 75 mm (25, 25, 25)		72.28		10.10		
10.00	D27							

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
20-04-23	13.00	10.10	10.10	203		10.1		1:00			BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller DK	Logged By DK

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Appendix 2
Borehole Records
(Rotary Core)

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH101**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	25-04-23 02-05-23	83.67	E 649,431.5 N 738,338.6

Engineer	Sheet
Fichtner	1 of 8 Status FINAL

RUN DETAILS						STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 48.40 : overburden.		Open hole drilling. No recovery.	
	- - -				(9.00)				

Drilling Progress and Water Observations							
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush			
From (m)	To (m)	Type	Return (%)
0	58	Polymer	100

GENERAL REMARKS

10 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH101**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	25-04-23 02-05-23	83.67	E 649,431.5 N 738,338.6

Engineer	Sheet
Fichtner	2 of 8 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
								Open hole drilling. No recovery. *(continued)*	
9.00			74.67		9.00				
	20 - -							Orangish greyish brown slightly gravelly silty fine to medium SAND. Gravel is angular to subangular fine to coarse of assorted grey limestone. (6.70m recovered).	
10.50									
	25 - -								
11.70		11.70 (27)				12.15 - 12.15 medium dense.			
	13 - -								
13.20									
	20 - -								
14.70		14.70 (25)							
	20 - -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
			9.00	96								10 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH101**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	25-04-23 02-05-23	83.67	E 649,431.5 N 738,338.6

Engineer	Sheet
Fichtner	3 of 8 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
16.20								Orangish greyish brown slightly gravelly silty fine to medium SAND. Gravel is angular to subangular fine to coarse of assorted grey limestone. (6.70m recovered). *(continued)*	
	13								
25.04 17.70 26.04		17.70 (44/150mm)							
	20								
19.20									
	20								
20.70		20.70 (25/75mm)							
	33								
22.20									
	27								
23.70		23.70 (25/75mm)							
	71								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
25/04/23	08.00	17.70										10 litres polydrill used.
26/04/23	08.00	17.70										50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH101**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	25-04-23 02-05-23	83.67	E 649,431.5 N 738,338.6

Engineer	Sheet
Fichtner	4 of 8 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
24.40	- -							Orangish greyish brown slightly gravelly silty fine to medium SAND. Gravel is angular to subangular fine to coarse of assorted grey limestone. (6.70m recovered). *(continued)*	
	13 - -				(32.70)				
26.00									
	28 - -								
26.70		26.70 (25/75mm)							
	13 - -								
28.20									
	13 - -								
29.70		29.70 (25/75mm)							
	27 - -								
31.20									
	27 -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	10 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH101**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	25-04-23 02-05-23	83.67	E 649,431.5 N 738,338.6

Engineer	Sheet
Fichtner	5 of 8 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
26.04 32.70 27.04	-	32.70 (25/75mm)						Orangish greyish brown slightly gravelly silty fine to medium SAND. Gravel is angular to subangular fine to coarse of assorted grey limestone. (6.70m recovered). *(continued)*	
	13								
34.20	-								
	7								
35.70	-								
	7								
37.20	-								
	7								
38.70	-								
	20								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
26/04/23	17.30	32.70										10 litres polydrill used.
27/04/23	08.00	32.70										50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH101**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	25-04-23 02-05-23	83.67	E 649,431.5 N 738,338.6

Engineer	Sheet
Fichtner	6 of 8 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
40.20	13 - -							Orangish greyish brown slightly gravelly silty fine to medium SAND. Gravel is angular to subangular fine to coarse of assorted grey limestone. (6.70m recovered). *(continued)*	
41.70	47 - -		41.97		41.70			Dark grey and grey slightly sandy silty angular to subangular fine to coarse dark grey and grey limestone GRAVEL with frequent cobbles. Cobbles are of dark grey and grey limestone.	
43.20	20 - -								
44.70	47 - -				(6.70)				
46.20	40 - -								
47.70									

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	10 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH101**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	25-04-23 02-05-23	83.67	E 649,431.5 N 738,338.6

Engineer	Sheet
Fichtner	7 of 8 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	73 - -		35.27		48.40	48.40 - 58.00 Possible weathered rock.		Possible weathered rock. Strong thinly bedded dark grey and grey silty fine grained limestone with subvertical and vertical white calcite veinlets recovered as angular to subangular fine to coarse gravel and cobble sized clasts.	
49.20									
	53 - -								
27.04 28.04 50.50									
	45 - -								
52.50									
	67 - -				(9.60)				
53.70									
	33 - -								
55.20									
	13 -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
27/04/23	17.30	50.50										10 litres polydrill used.
28/04/23	08.00	50.50										50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH101**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	25-04-23 02-05-23	83.67	E 649,431.5 N 738,338.6

Engineer	Sheet
Fichtner	8 of 8 Status FINAL

RUN DETAILS						STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
56.70 28.04 02.05	- 30 - -		25.67		58.00			Possible weathered rock. Strong thinly bedded dark grey and grey silty fine grained limestone with subvertical and vertical white calcite veinlets recovered as angular to subangular fine to coarse gravel and cobble sized clasts. *(continued)*	

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
28/04/23	17.30	58.00										10 litres polydrill used. 50mm standpipe installed.
02/05/23	08.00	58.00										
02/05/23	10.00	58.00										

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH102**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 26-04-23	82.94	E 649,532.9 N 738,384.3

Engineer	Sheet
Fichtner	1 of 6 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 39.30 : overburden.		Open hole drilling. No recovery.	
	- - -				(6.00)				
6.00			76.94		6.00				
	- - -				(0.50)			No recovery.	
6.50		6.50 (28/75mm)	76.44		6.50			Grey and brown medium and coarse SAND. (0.40m recovered).	
	20 - -				(1.50)				
8.00			74.94		8.00				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
								0	45	Polymer	100	11 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ/DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH102**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 26-04-23	82.94	E 649,532.9 N 738,384.3

Engineer	Sheet
Fichtner	2 of 6 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	13 - -	8.00 (50/225mm)						Very dense brown silty gravelly coarse SAND with occasional cobbles. Gravel is subrounded to subangular fine to coarse of light brown and grey dolomitised limestone. Cobbles are of grey mottled brownish grey silty fine grained limestone. (0.90m recovered).	
9.50									
	33 - -				(4.40)				
11.00		11.00 (50)							
	13 - -								
			70.54		12.40				
12.50								Stiff light brown slightly gravelly SILT. Gravel is subangular medium to coarse of brown and grey siltstone and limestone.	
	47 - -				(1.50)				
			69.04		13.90				
14.00		14.00 (25/75mm)						Light greyish white slightly silty angular fine to coarse light grey 'bleached' fine grained weakly dolomitised limestone GRAVEL with frequent cobbles. Cobbles are of light and dark grey and brownish grey silty fine grained limestone.	
	13 - -								
15.50									

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	11 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller AZ/DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH102**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 26-04-23	82.94	E 649,532.9 N 738,384.3

Engineer	Sheet
Fichtner	3 of 6 Status FINAL

RUN DETAILS					STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	20 - -							Light greyish white slightly silty angular fine to coarse light grey 'bleached' fine grained weakly dolomitised limestone GRAVEL with frequent cobbles. Cobbles are of light and dark grey and brownish grey silty fine grained limestone. *(continued)*	
24.04 17.00 25.04		17.00 (50/150mm)							
	13 - -								
18.50									
	13 - -								
20.00		20.00 (25/75mm)							
	40 - -								
21.50									
	87 - -				(16.60)				
23.00		23.00 (50/150mm)							
	40 - -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
24/04/23	17.30	17.00	20.00	96								11 litres polydrill used. BH backfilled.
25/04/23	08.00	17.00										

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ/DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH102**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 26-04-23	82.94	E 649,532.9 N 738,384.3

Engineer	Sheet
Fichtner	4 of 6 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
24.50								Light greyish white slightly silty angular fine to coarse light grey 'bleached' fine grained weakly dolomitised limestone GRAVEL with frequent cobbles. Cobbles are of light and dark grey and brownish grey silty fine grained limestone. *(continued)*	
	40 - -								
26.00		26.00 (50/225mm)							
	40 - -								
27.50									
	27 - -								
29.00		29.00 (25/75mm)							
	27 - -								
30.50			52.44		30.50				
	20 - -				(1.50)			Stiff greyish brown SILT. (0.30m recovered).	
32.00			50.94		32.00				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	11 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller AZ/DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH102**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 26-04-23	82.94	E 649,532.9 N 738,384.3

Engineer	Sheet
Fichtner	5 of 6 Status FINAL

RUN DETAILS / STRATA

Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
		32.00 (50/225mm)						Light greyish white slightly silty angular fine to coarse light grey 'bleached' fine grained weakly dolomitised limestone GRAVEL with frequent cobbles. Cobbles are of light and dark grey and brownish grey silty fine grained limestone.	
	20 - -								
33.50									
	27 - -								
35.00		35.00 (50/150mm)							
	33 - -				(7.30)				
36.50									
	27 - -								
38.00		38.00 (50/150mm)							
	80 (32) 8		43.64		39.30				
25.04 40.00		12				39.50 - 39.50 Point Load Test: very strong. 39.30 - 45.00 Discontinuities, medium		Very strong locally extremely strong and strong thinly bedded dark grey silty fine grained LIMESTONE with subvertical and horizontal white calcite veinlets.	

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
25/04/23	17.30	40.00					
26/04/23	08.00	40.00					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

11 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller AZ/DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH102**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 26-04-23	82.94	E 649,532.9 N 738,384.3

Engineer	Sheet
Fichtner	6 of 6 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities / Detail	DESCRIPTION: Main	Instrument/ Backfill
26.04						spaced, locally very closely and closely spaced, dipping 10 to 12°, stepped, smooth, with 0.5 to 2mm thick orangish brown clay smear and minor surficial orangish brown iron stain. 39.60 - 41.90 Joint, vertical dip, stepped, rough, with 0.5 to 1mm thick orangish brown clay smear and minor surficial orangish brown iron stain, open. 40.80 - 40.80 Point Load Test: extremely strong. 42.00 - 42.00 Point Load Test: very strong. 41.90 - 42.70 Joint, vertical dip, stepped, rough, with 0.5 to 1mm thick orangish brown clay smear and minor surficial orangish brown iron stain, open. 43.10 - 43.10 Point Load Test: strong. 43.80 - 43.80 Point Load Test: very strong.	Very strong locally extremely strong and strong thinly bedded dark grey silty fine grained LIMESTONE with subvertical and horizontal white calcite veinlets. *(continued)*	
	100 (37) -	28						
41.30								
	100 (35) -	18			(5.70)			
42.50								
	100 (74) 55	8						
43.50								
	100 (85) 58	8						
		6						
26.04 45.00			37.94		45.00			

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
26/04/23	12.00	45.00					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

11 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller AZ/DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH103**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 03-05-23	84.36	E 649,513.6 N 738,320.7

Engineer	Sheet
Fichtner	1 of 6 Status FINAL

RUN DETAILS						STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 39.30 : overburden.		Open hole drilling. No recovery.	
	- - -				(3.50)				
3.50			80.86		3.50				
	13 - -							Subangular to subrounded fine to medium assorted orangish brown siltstone and assorted grey limestone GRAVEL. (0.70m recovered).	
5.00		5.00 (50/225mm)							
	13 - -				(4.50)				
6.50		6.50 (50)				very dense.			
	13 - -								
8.00			76.36		8.00				

Drilling Progress and Water Observations							
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush			
From (m)	To (m)	Type	Return (%)
0	43.9	Polymer	100

GENERAL REMARKS

15 litres polydrill used.
90mm televiewer pipe installed to 39.00m bgl.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH103**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 03-05-23	84.36	E 649,513.6 N 738,320.7

Engineer	Sheet
Fichtner	2 of 6 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main (DESCRIPTION)	Instrument/ Backfill
		8.00 (50/150mm)	76.06		8.30			Very stiff light greenish grey SILT. (0.30m recovered).	
	20 - -							Orangish brown slightly silty fine to medium SAND. (0.40m recovered).	
9.50		9.50 (50/225mm)							
	20 - -				(4.20)				
26.04 27.04 11.00									
	27 - -	12.00 (42/225mm)							
12.50			71.86		12.50			Subangular to subrounded fine to medium assorted orangish brown siltstone and assorted grey limestone GRAVEL. (0.70m recovered).	
	20 - -				(1.50)				
14.00		14.00 (50)	70.36		14.00			Very dense orangish brown slightly silty fine to medium SAND. (0.40m recovered).	
	13 - -								
15.50		15.50 (50/150mm)							

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
26/04/23	17.30	11.00					
27/04/23	08.00	11.00					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

15 litres polydrill used.
90mm televiewer pipe installed to 39.00m bgl.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH103**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 03-05-23	84.36	E 649,513.6 N 738,320.7

Engineer	Sheet
Fichtner	3 of 6 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main (DESCRIPTION)	Instrument/ Backfill
	13 - -				(4.50)			Very dense orangish brown slightly silty fine to medium SAND. (0.40m recovered). *(continued)*	
17.00		17.00 (50/225mm)							
	13 - -								
18.50			65.86		18.50				
		18.50 (50)						Very stiff brown slightly gravelly SILT thickly interbedded with light orangish brown and orangish brown SILT. Gravel is angular fine to coarse of brown siltstone and subrounded fine to coarse grey limestone.	
	20 - -								
20.00		20.00 (25/75mm)							
	13 - -								
21.50									
	20 - -								
23.00		23.00 (50/225mm)							
	47 - -								

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

15 litres polydrill used.
90mm televiewer pipe installed to 39.00m bgl.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: DK	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH103**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 03-05-23	84.36	E 649,513.6 N 738,320.7

Engineer	Sheet
Fichtner	4 of 6 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
27.04 24.50 28.04					(12.00)			Very stiff brown slightly gravelly SILT thickly interbedded with light orangish brown and orangish brown SILT. Gravel is angular fine to coarse of brown siltstone and subrounded fine to coarse grey limestone. *(continued)*	
	47 - -								
26.00		26.00 (50)							
	73 - -								
27.50									
	87 - -								
29.00		29.00 (50/225mm)							
	60 - -								
30.50			53.86		30.50	30.14 - 30.14 Point Load Test: very strong.			
	47 - -							Very stiff light pinkish brown slightly gravelly SILT. Gravel is subrounded to angular fine to medium of brown silty limestone.	
32.00									

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
27/04/23	17.30	24.50	24.50	96			
28/04/23	08.00	24.50					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

15 litres polydrill used.
90mm televiewer pipe installed to 39.00m bgl.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: DK	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH103**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 03-05-23	84.36	E 649,513.6 N 738,320.7

Engineer	Sheet
Fichtner	5 of 6 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	27 - -	32.00 (25/75mm)						Very stiff light pinkish brown slightly gravelly SILT. Gravel is subrounded to angular fine to medium of brown silty limestone. *(continued)*	
28.04 02.05 33.50									
	27 - -				(7.70)				
35.00		35.00 (50/150mm)							
	13 - -								
36.50									
	20 - -								
38.00		38.00 (25/75mm)	46.16		38.20				
	100 (85) 58	7				38.20 - 43.90 Discontinuities, medium spaced, locally closely spaced, dipping 18 to 20°, stepped, rough, with 0.5 to 4mm thick dark grey silt smear.		Strong locally medium strong and very strong thinly bedded grey silty fine grained LIMESTONE with subvertical and horizontal white calcite veinlets.	
39.20									
	100 (68)	18				39.60 - 40.00 Joint, subvertical dip, stepped, smooth, with 0.5 to 1mm thick			

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
28/04/23	17.30	33.50										15 litres polydrill used. 90mm televiewer pipe installed to 39.00m bgl.
02/05/23	08.00	33.50										

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH103**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 03-05-23	84.36	E 649,513.6 N 738,320.7

Engineer	Sheet
Fichtner	6 of 6 Status FINAL

RUN DETAILS						STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
	35					grey silt smear, open.		Strong locally medium strong and very strong thinly bedded grey silty fine grained LIMESTONE with subvertical and horizontal white calcite veinlets. *(continued)*	
40.70	100 (90) 37	8							
41.00					(5.70)	41.04 - 41.04 Point Load Test: very strong. 41.00 - 41.30 Possible joint, Non-intact as light grey slightly silty angular fine to medium gravel sized clasts. 41.30 - 41.30 Non-intact as light grey slightly silty angular fine to medium gravel sized clasts.			
	100 (82) 42	23							
42.60		14				41.77 - 41.77 Point Load Test: medium strong.			
	100 (46) 10					42.40 - 42.40 with subvertical dark grey fine grained chert nodule. 43.90 - 43.90 becoming dark grey. 42.70 - 42.80 Joint, dipping 60°, stepped, smooth, with 0.5 to 1mm thick orangish brown clay smear and minor surficial orangish brown iron stain and powder, open.			
		15							
02.05 43.90			40.46		43.90	42.90 - 43.10 Joint, subvertical dip, stepped, smooth, with 0.5 to 1mm thick light orangish brown clay smear and minor surficial orangish brown iron stain, open. 43.40 - 43.40 Point Load Test: medium strong.			

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
02/05/23	17.30	43.90										15 litres polydrill used. 90mm televiewer pipe installed to 39.00m bgl.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH104**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	02-05-23 05-05-23	82.93	E 649,609.5 N 738,361.9

Engineer	Sheet
Fichtner	1 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 37.70 : overburden.		Open hole drilling. No recovery.	
	- - -				(9.00)				

Drilling Progress and Water Observations							
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush			
From (m)	To (m)	Type	Return (%)
0	50.9	Polymer	100

GENERAL REMARKS
5 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH104**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	02-05-23 05-05-23	82.93	E 649,609.5 N 738,361.9

Engineer	Sheet
Fichtner	2 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
								Open hole drilling. No recovery. *(continued)*	
02.05 9.00 03.05		9.00 (50)	73.93		9.00			Very stiff brown slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is flat and subangular fine and medium of light grey and brownish grey siltstone and whitish grey and grey 'bleached' limestone.	
	7 - -								
10.50									
	7 - -								
11.80		11.80 (50)							
	7 - -				(7.30)				
13.30									
	13 - -								
14.80		14.80 (50/150mm)							
	7 - -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
02/05/23	17.30	9.00	9.00	96								5 litres polydrill used.
03/05/23	08.00	9.00										50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH104**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	02-05-23 05-05-23	82.93	E 649,609.5 N 738,361.9

Engineer	Sheet	Status
Fichtner	3 of 7	FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
16.30			66.63		16.30				
	13 - -							Orangish brown slightly gravelly silty fine and medium SAND. Gravel is subangular fine to medium of brownish grey limestone.	
17.80		17.80 (50/150mm)			(3.00)				
	20 - -								
19.30			63.63		19.30				
	67 - -					20.80 - 20.80 Core run: 1 No dark grey limestone boulder 350mm in length.		Subangular to angular fine to coarse 'bleached' white and dark grey limestone brownish grey siltstone and grey limestone GRAVEL with occasional cobbles and occasional boulders. Cobbles are of grey and dark grey limestone.	
20.80									
	73 - -								
03.05 22.30 04.05						23.80 - 23.80 Core run: 1 No dark grey limestone boulder 480mm in length.			
	100 - -								
23.80									

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
03/05/23	17.30	22.30					
04/05/23	08.00	22.30					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

5 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH104**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	02-05-23 05-05-23	82.93	E 649,609.5 N 738,361.9

Engineer	Sheet
Fichtner	4 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	53 - -							Subangular to angular fine to coarse 'bleached' white and dark grey limestone brownish grey siltstone and grey limestone GRAVEL with occasional cobbles and occasional boulders. Cobbles are of grey and dark grey limestone. *(continued)*	
25.30									
	67 - -								
26.80									
	53 - -								
28.30					(18.40)				
	27 - -								
29.80									
	13 - -								
31.30									
	27								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	5 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH104**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	02-05-23 05-05-23	82.93	E 649,609.5 N 738,361.9

Engineer	Sheet	Status
Fichtner	5 of 7	FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
32.80	- - 27 - -							Subangular to angular fine to coarse 'bleached' white and dark grey limestone brownish grey siltstone and grey limestone GRAVEL with occasional cobbles and occasional boulders. Cobbles are of grey and dark grey limestone. *(continued)*	
34.30	33 - -								
35.80	60 - -								
37.30			45.23		37.70				
38.40	57 (17) -	28				37.84 - 37.84 Point Load Test: weak. 37.70 - 47.00 Discontinuities, very closely and closely spaced, locally medium spaced, dipping 12 to 14 and 45 to 48°, stepped, rough, with 0.5 to 2mm thick dark grey silt smear and minor surficial orangish brown iron stain and powder.		Medium strong locally strong thinly bedded light brownish grey 'bleached' fine grained LIMESTONE with subrounded fine to coarse dark grey fine grained chert nodules.	
04.05 40.00	100 (71) 19	20			(3.30)	39.45 - 39.45 Point Load Test: weak.			

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
04/05/23	17.30	40.00					
05/05/23	08.00	40.00					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

5 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH104**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	02-05-23 05-05-23	82.93	E 649,609.5 N 738,361.9

Engineer	Sheet
Fichtner	6 of 7 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
05.05								Medium strong locally strong thinly bedded light brownish grey 'bleached' fine grained LIMESTONE with subrounded fine to coarse dark grey fine grained chert nodules. *(continued)*	
	100 (44) 21	26							
41.00			41.93		41.00	40.86 - 40.86 Point Load Test: medium strong.		Very strong locally strong thinly bedded dark grey fine grained LIMESTONE with subvertical and horizontal white calcite veinlets and subrounded fine to coarse dark grey fine grained chert nodules.	
	100 (91) 51	12							
41.80						41.70 - 41.70 Point Load Test: strong.			
	100 (61) 11	10				42.31 - 42.31 Point Load Test: strong.			
42.80					(3.20)				
	100 (72) 18	12				43.80 - 43.80 Point Load Test: strong.			
44.20			38.73		44.20				
	100 (49) 11	26				44.50 - 44.50 Point Load Test: medium strong.		Very strong locally strong thinly interbedded medium strong light greyish brown weakly dolomitised fine grained LIMESTONE and dark grey fine grained LIMESTONE with subrounded medium to coarse dark grey fine grained chert nodules.	
45.50		20			(2.80)				
	100 (43) 22	NI				46.36 - 46.36 Point Load Test: medium strong.			
46.80			35.93		47.00				
					(0.60)	47.00 - 47.00 Point Load Test: weak. 47.00 - 47.60 CAVITY.		CAVITY.	
	53 (18) 9	NR	35.33		47.60				
						47.60 - 49.30 Non-intact as angular fine to coarse gravel sized clasts with a little			

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

5 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH104**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	02-05-23 05-05-23	82.93	E 649,609.5 N 738,361.9

Engineer	Sheet
Fichtner	7 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
48.30	100 - -	NI	33.63		(1.70) 49.30	orangish brown clay and surficial orange and orangish brown iron stain and powder.		Weathered rock. Very strong locally medium strong strong and weak thinly interbedded medium strong light greyish brown weakly dolomitised fine grained LIMESTONE recovered as angular fine to coarse gravel sized clasts with a little orangish brown clay and surficial orange and orangish brown iron stain and powder. *(continued)*	
49.40	100 (80) 42	4 7	32.03		(1.60) 50.90	49.40 - 49.40 Point Load Test: weak. 49.30 - 50.90 Discontinuities, closely spaced, locally medium spaced, dipping 12 to 14 and 45 to 48°, stepped, rough, with 0.5 to 1mm thick dark grey silt smear. 50.00 - 50.00 Point Load Test: very strong.		Very strong thinly bedded dark grey fine grained LIMESTONE.	
05.05 50.90									

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
05/05/23	17.30	50.90										5 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase	Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH105**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	08-05-23 09-05-23	84.38	E 649,562.6 N 738,294.9

Engineer	Sheet
Fichtner	1 of 6 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 37.20 : overburden.		Open hole drilling. No recovery.	
	- - -				(10.50)				

Drilling Progress and Water Observations							
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush			
From (m)	To (m)	Type	Return (%)
0	45	Polymer	100

GENERAL REMARKS

6 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH105**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	08-05-23 09-05-23	84.38	E 649,562.6 N 738,294.9

Engineer	Sheet
Fichtner	2 of 6 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
								Open hole drilling. No recovery. *(continued)*	
10.50			73.88		10.50				
	8 - -				(1.10)			No recovery. Drillers Comment: Sand.	
11.70		11.70 (25/75mm)	72.78		11.60			Very stiff orangish brown thickly laminated slightly gravelly SILT. Gravel is subangular to angular fine whitish grey and white 'bleached' limestone.	
	33 - -								
13.20									
	53 - -				(4.60)				
14.70		14.70 (25/75mm)							
	40 - -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
			10.50	96								6 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH105**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	08-05-23 09-05-23	84.38	E 649,562.6 N 738,294.9

Engineer	Sheet
Fichtner	3 of 6 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
16.20			68.18		16.20				
	7 - -							Very stiff dark brown gravelly SILT. Gravel is subrounded to subangular fine and medium of brownish grey siltstone and assorted grey limestone.	
17.70		17.70 (25/75mm)							
	7 - -				(4.70)				
19.20									
	7 - -								
20.70		20.70 (25/75mm)	63.48		20.90				
	67 - -				(1.40)			Very stiff brown sandy gravelly SILT. Sand is fine to coarse. Gravel is subangular fine of white 'bleached' limestone.	
22.20			62.08		22.30				
	92 - -							Light orangish grey slightly silty angular to subangular fine to coarse light grey 'bleached' fine grained weakly dolomitised limestone GRAVEL with occasional cobbles and occasional boulders. Cobbles are of light and dark grey and brownish grey silty fine grained limestone.	
08.05 09.05 23.50									

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
08/05/23	17.30	23.50					
09/05/23	08.00	23.50					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

6 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH105**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	08-05-23 09-05-23	84.38	E 649,562.6 N 738,294.9

Engineer	Sheet
Fichtner	4 of 6 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	25 - -							Light orangish grey slightly silty angular to subangular fine to coarse light grey 'bleached' fine grained weakly dolomitised limestone GRAVEL with occasional cobbles and occasional boulders. Cobbles are of light and dark grey and brownish grey silty fine grained limestone. *(continued)*	
25.10									
	25 - -								
26.70									
	33 - -				(10.40)				
28.20									
	33 - -								
29.70									
	60 - -								
30.70									
	90 - -					31.70 - 31.70 Core run: 1 No brownish grey limestone boulder 210mm in length.			
31.70						32.70 - 32.70 Core run: 1 No light			

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	6 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH105**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	08-05-23 09-05-23	84.38	E 649,562.6 N 738,294.9

Engineer	Sheet
Fichtner	5 of 6 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities / Detail	DESCRIPTION: Main	Instrument/ Backfill
	100 - -					brownish grey limestone boulder 550mm in length.		
32.70			51.68		32.70			
	64 - -						Very stiff light orangish grey gravelly SILT with rare cobbles. Gravel is angular fine to coarse of light brownish grey weakly dolomitised limestone. Cobbles are of light brownish grey weakly dolomitised limestone.	
34.10								
	19 - -				(4.50)			
35.70								
	20 - -							
37.20			47.18		37.20			
	100 (69) 37	15 NI				37.20 - 45.00 Discontinuities, very closely and closely spaced, locally medium spaced, dipping 12 to 14 and 54 to 56°, stepped, rough, with 0.5 to 20mm thick brown silt smear. 37.80 - 37.80 Point Load Test: weak.	Very strong locally weak thinly bedded grey fine grained LIMESTONE with subvertical and horizontal white calcite veinlets.	
38.70		8						
	73 (25) -	20				39.20 - 39.20 Point Load Test: weak. 39.80 - 40.80 No recovery. Possible area		

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

6 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH105**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	08-05-23 09-05-23	84.38	E 649,562.6 N 738,294.9

Engineer	Sheet
Fichtner	6 of 6 Status FINAL

RUN DETAILS						STRATA		
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities / Detail	DESCRIPTION: Main	Instrument/ Backfill
40.20						of core loss as washout of fines during drilling. No record of cavity. 40.80 - 40.80 possible area of core loss.	Very strong locally weak thinly bedded grey fine grained LIMESTONE with subvertical and horizontal white calcite veinlets. *(continued)*	
	55 (22) -	NR						
		4			(7.80)			
41.30						41.30 - 41.30 Point Load Test: weak.		
	100 (48) 21	24				41.52 - 41.52 Point Load Test: weak.		
42.00						42.60 - 42.60 becoming light brownish grey.		
	100 (81) 41	6				42.64 - 42.64 Point Load Test: very strong.		
43.50								
		20				43.50 - 43.50 white calcite vein.		
	100 (83) 46							
		8				44.40 - 44.40 Point Load Test: very strong.		
09.05 45.00			39.38		45.00	44.65 - 44.65 brown silt.		

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
09/05/23	14.00	45.00										6 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH106**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	10-05-23 11-05-23	85.45	E 649,588.7 N 738,249.7

Engineer	Sheet
Fichtner	1 of 4 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 25.00 : overburden.		Open hole drilling. No recovery.	
	- - -				(6.00)				
6.00			79.45		6.00				
	14 - -							Dark orangish brown slightly silty medium to coarse SAND. (0.90m recovered).	
7.40									
	15								

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
			6.00	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	25	Polymer	100

GENERAL REMARKS

3 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH106**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	10-05-23 11-05-23	85.45	E 649,588.7 N 738,249.7

Engineer	Sheet	Status
Fichtner	2 of 4	FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
	- -							Dark orangish brown slightly silty medium to coarse SAND. (0.90m recovered). *(continued)*	
8.70		8.70 (50/225mm)							
	13 - -				(7.30)				
10.20									
	13 - -								
11.70		11.70 (50/225mm)							
	13 - -								
13.20			72.15		13.30				
	13 - -							Soft orangish brown gravelly SILT. Gravel is subrounded to subangular fine to coarse of grey limestone and grey sandstone. (0.90m recovered).	
14.70		14.70 (25/75mm)			(3.10)				
	27 - -								

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

3 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH106**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	10-05-23 11-05-23	85.45	E 649,588.7 N 738,249.7

Engineer	Sheet
Fichtner	3 of 4 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
16.20			69.05		16.40				
	13 - -							Brown silty fine and medium SAND. (0.60m recovered).	
17.70		17.70 (25/75mm)							
	13 - -				(4.30)				
19.20									
	13 - -								
20.70		20.70	64.75		20.70				
	20 - -							Stiff light orangish grey thinly laminated light orangish brown slightly gravelly SILT. Gravel is subangular fine to medium of white and light brownish grey siltstone.	
22.20									
	20 - -				(4.30)				
10.05 23.70 11.05		23.70							

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
10/05/23	17.30	23.70					
11/05/23	08.00	23.70					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

3 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH106**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	10-05-23 11-05-23	85.45	E 649,588.7 N 738,249.7

Engineer	Sheet
Fichtner	4 of 4 Status FINAL

RUN DETAILS						STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
11.05 25.00	53 - -		60.45		25.00	25.00 - 25.00 becoming orangish brown. Gravel becoming fine.		Stiff light orangish grey thinly laminated light orangish brown slightly gravelly SILT. Gravel is subangular fine to medium of white and light brownish grey siltstone. *(continued)*	

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
11/05/23	11.00	25.00										3 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH107**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	15-05-23 16-05-23	87.19	E 649,439.0 N 738,146.2

Engineer	Sheet	Status
Fichtner	1 of 4	FINAL

RUN DETAILS						STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 25.00 : overburden.		Open hole drilling. No recovery.	
	- - -				(9.00)				

Drilling Progress and Water Observations							
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush			
From (m)	To (m)	Type	Return (%)
0	25	Polymer	100

GENERAL REMARKS

2 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH107**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	15-05-23 16-05-23	87.19	E 649,439.0 N 738,146.2

Engineer	Sheet
Fichtner	2 of 4 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
15.05 16.05 9.00			78.19		9.00			Open hole drilling. No recovery. *(continued)*	
10.10	81 - -					11.70 - 11.70 Core run: 1 No grey limestone boulder 340mm in length.		Light brownish grey silty subrounded to angular fine to coarse white and grey and dark grey limestone GRAVEL with occasional cobbles and occasional boulders. Cobbles are of white and grey and dark grey limestone.	
	50 - -								
11.70		11.70 (25/75mm)							
	19 - -								
13.30									
	56 - -								
14.90		14.90 (25/75mm)							
	40 - -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
15/05/23 16/05/23	17.30 08.00	9.00 9.00	9.00	96								2 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH107**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	15-05-23 16-05-23	87.19	E 649,439.0 N 738,146.2

Engineer	Sheet
Fichtner	3 of 4 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
16.40								Light brownish grey silty subrounded to angular fine to coarse white and grey and dark grey limestone GRAVEL with occasional cobbles and occasional boulders. Cobbles are of white and grey and dark grey limestone. *(continued)*	
	20 - -				(16.00)	17.90 - 17.90 Core run: 1 No dark grey limestone boulder 220mm in length.			
17.90		17.90 (25/75mm)							
	67 - -								
19.10						20.40 - 20.40 Core run: 1 No light grey vuggy limestone boulder 220mm in length.			
	53 - -								
20.40		20.40 (25/75mm)							
	19 - -								
22.00									
	19 - -								
23.60		23.60 (25/75mm)							

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
												2 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH107**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	15-05-23 16-05-23	87.19	E 649,439.0 N 738,146.2

Engineer	Sheet
Fichtner	4 of 4 Status FINAL

RUN DETAILS						STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
	28 - -							Light brownish grey silty subrounded to angular fine to coarse white and grey and dark grey limestone GRAVEL with occasional cobbles and occasional boulders. Cobbles are of white and grey and dark grey limestone. *(continued)*	
16.05 25.00			62.19		25.00				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
16/05/23	16.00	25.00										2 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH109**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	07-06-23 12-06-23	82.73	E 649,687.4 N 738,383.5

Engineer	Sheet
Fichtner	1 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 54.20 : overburden.		Open hole drilling. No recovery.	
	- - -				(10.70)				

Drilling Progress and Water Observations							
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush			
From (m)	To (m)	Type	Return (%)
0	54.2	Polymer	100

GENERAL REMARKS

6 gallons polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller PMcG	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH109**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	07-06-23 12-06-23	82.73	E 649,687.4 N 738,383.5

Engineer	Sheet
Fichtner	2 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
								Open hole drilling. No recovery. *(continued)*	
10.70			72.03		10.70				
								Very dense brown silty coarse SAND.	
	20 - -								
12.20									
	20 - -								
13.70		13.70 (50)							
	13 - -								
15.20									
	13 -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
			15.00	96								6 gallons polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: PMcG	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH109**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	07-06-23 12-06-23	82.73	E 649,687.4 N 738,383.5

Engineer	Sheet
Fichtner	3 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	-							Very dense brown silty coarse SAND. *(continued)*	
16.70		16.70 (50)							
	20 - -								
18.20									
	20 - -								
07.06 19.70 08.06		19.70 (50)							
	20 - -								
21.20									
	20 - -								
22.70		22.70 (50)							
	20 - -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
07/06/23	17.30	19.70										6 gallons polydrill used.
08/06/23	08.00	19.70										50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: PMcG	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH109**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	07-06-23 12-06-23	82.73	E 649,687.4 N 738,383.5

Engineer	Sheet
Fichtner	4 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
24.20								Very dense brown silty coarse SAND. *(continued)*	
	20								
25.70		25.70 (50)							
	13								
27.20									
	13								
28.70		28.70 (50)							
	13								
30.20									
	20								
		31.20 (50)							
31.70									

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	6 gallons polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: PMcG	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH109**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	07-06-23 12-06-23	82.73	E 649,687.4 N 738,383.5

Engineer	Sheet
Fichtner	5 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	20 - -				(43.50)			Very dense brown silty coarse SAND. *(continued)*	
33.20									
	13 - -								
08.05 34.70 09.06		34.70 (50)							
	20 - -								
36.20									
	20 - -								
37.70		37.70							
	20 - -								
39.20									
	20 -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
08/05/23	17.30	34.70										6 gallons polydrill used.
09/06/23	08.00	34.70										50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller PMcG	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH109**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	07-06-23 12-06-23	82.73	E 649,687.4 N 738,383.5

Engineer	Sheet
Fichtner	6 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	-							Very dense brown silty coarse SAND. *(continued)*	
40.70		40.70 (47/150mm)							
	13 - -								
42.20									
	13 - -								
43.70		43.70 (50/225mm)							
	13 - -								
45.20									
	13 - -								
46.70		46.70 (50/225mm)							
	13 - -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	6 gallons polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: PMcG	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH109**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	07-06-23 12-06-23	82.73	E 649,687.4 N 738,383.5

Engineer	Sheet
Fichtner	7 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
48.20								Very dense brown silty coarse SAND. *(continued)*	
	13 - -								
49.70		49.70 (50/225mm)							
	13 - -								
09.06 12.06 51.20									
	13 - -								
52.70									
	20 - -								
12.06 54.20			28.53		54.20				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
09/06/23	17.30	51.20										6 gallons polydrill used. 50mm standpipe installed.
12/06/23	08.00	51.20										
12/06/23	14.00	54.20										

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller PMcG	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH110**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	12-05-23 15-05-23	86.11	E 649,461.4 N 738,212.7

Engineer	Sheet
Fichtner	1 of 3 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
0.00	- - -				(1.50)	0.00 - 14.70 : overburden.		Open hole drilling. No recovery.	
1.50	50 - -		84.61		1.50	2.70 - 2.70 Core run: 1 No dark grey limestone boulder 320mm in length.		Subangular coarse light grey and dark grey limestone GRAVEL with rare boulders.	
2.70	13 - -		83.41		(1.20) 2.70			Light orangish brown slightly gravelly silty fine to coarse SAND. Gravel is subrounded to angular fine to coarse of assorted grey limestone.	
4.20	13 - -								
5.70	13 - -								
7.20	13 -								

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
			1.50	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	20.7	Polymer	100

GENERAL REMARKS

2 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH110**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	12-05-23 15-05-23	86.11	E 649,461.4 N 738,212.7

Engineer	Sheet
Fichtner	2 of 3 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
8.70	-	8.70 (48/75mm)			(12.00)			Light orangish brown slightly gravelly silty fine to coarse SAND. Gravel is subrounded to angular fine to coarse of assorted grey limestone. *(continued)*	
	13 - -								
10.20									
	13 - -								
12.05 11.70 15.05		11.70 (22/75mm)							
	7 - -								
13.20									
	7 - -								
14.70		14.70 (25/75mm)	71.41		14.70	14.70 - 16.20 Non-intact as weathered rock.		Weathered rock. Medium strong and strong thinly bedded grey fine grained limestone recovered as angular fine to coarse gravel sized clasts with a little orangish brown clay.	
	100 (21) -	NI			(1.50)				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
12/05/23 15/05/23	17.30 08.00	11.70 11.70										2 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH110**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	12-05-23 15-05-23	86.11	E 649,461.4 N 738,212.7

Engineer	Sheet
Fichtner	3 of 3 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities / Detail	DESCRIPTION: Main	Instrument/ Backfill
16.20			69.91		16.20	16.00 - 16.00 Point Load Test: very strong.		
	100 (57) 14	20				16.30 - 16.30 white calcite vein. 16.20 - 20.70 Discontinuities, very closely and closely spaced, locally medium spaced, dipping 12 to 14 and 54 to 56°, stepped, rough, with 0.5 to 3mm thick light greyish brown silt smear. 16.30 - 16.60 Joint, subvertical dip, planar, smooth, with 0.5 to 1mm thick greyish brown silt smear, open.	Very strong locally strong and medium strong thinly bedded dark grey silty fine grained LIMESTONE with subvertical and horizontal white calcite veinlets and subrounded fine and medium gravel sized dak grey fine grained chert nodules.	
17.70	100 (45) -	26			(4.50)	16.95 - 16.95 Point Load Test: very strong. 17.90 - 17.90 Point Load Test: medium strong.		
18.70	100 (11) -	NI				19.20 - 19.20 Point Load Test: very strong.		
19.70	100 (96) 51	12						
15.05 20.70			65.41		20.70	20.44 - 20.44 Point Load Test: medium strong. 20.70 - 20.70 becoming dark bluish grey.		

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
15/05/23	14.00	20.70					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

2 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH111**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	11-05-23 11-05-23	87.59	E 649,512.7 N 738,206.2

Engineer	Sheet
Fichtner	1 of 2 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities / Detail	DESCRIPTION: Main	Instrument/ Backfill
0.00	- - -				(1.50)	0.00 - 5.00 : overburden.	Open hole drilling. No recovery.	
1.50	28 - -		86.09		1.50		Greyish brown slightly silty subrounded to subangular fine to coarse grey and dark grey limestone GRAVEL.	
2.90	13 - -				(3.50)			
4.40			82.59		5.00			
	80 (29) 7	17				5.00 - 11.00 Discontinuities, very closely and closely spaced, locally medium spaced, dipping 12 to 14 and 45 to 47°, stepped, rough, with 0.5 to 30mm thick grey silt smear.	Very strong locally strong thinly bedded grey silty fine grained LIMESTONE with subvertical and horizontal white calcite veinlets and subrounded fine to coarse gravel sized dak grey fine grained chert nodules.	
5.90	100 (73) 21	21						
6.90						6.80 - 6.80 Point Load Test: strong.		
	100 (76) 35	20				7.85 - 7.85 brownish grey silt.		

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
			1.50	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	11	Polymer	100

GENERAL REMARKS

1 litre polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH111**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	11-05-23 11-05-23	87.59	E 649,512.7 N 738,206.2

Engineer	Sheet
Fichtner	2 of 2 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities / Detail	DESCRIPTION: Main	Instrument/ Backfill
					(6.00)	7.84 - 7.84 Point Load Test: very strong.	Very strong locally strong thinly bedded grey silty fine grained LIMESTONE with subvertical and horizontal white calcite veinlets and subrounded fine to coarse gravel sized dak grey fine grained chert nodules. *(continued)*	
8.40						8.40 - 8.40 becoming brownish grey.		
	100 (74) 34	22						
9.40						9.20 - 9.20 Point Load Test: very strong.		
		14				9.65 - 9.65 becoming brownish grey.		
	100 (73) 32					10.03 - 10.03 Point Load Test: very strong.		
		15						
11.05 11.00			76.59		11.00			

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
11/05/23	15.00	11.00										1 litre polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH111A**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	14-06-23 16-06-23	87.59	E 649,513.7 N 738,205.5

Engineer	Sheet
Fichtner	1 of 3 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 7.00 : overburden.		Open hole drilling. No recovery.	
	- - -				(6.00)				
14.06 6.00 15.06			81.59		6.00				
	40 - -				(1.00)			Subangular fine to coarse assorted dark grey limestone GRAVEL.	
7.00			80.59		7.00				
	100 (65) 19	26				7.00 - 20.70 medium spaced, locally closely spaced, dipping 12 to 14°, stepped, rough, with 0.5 to 8mm thick brownish grey silt smear and minor orangish brown iron stain.		Very strong locally weak medium strong and strong thickly bedded light grey cherty fine and medium grained LIMESTONE with 'anastomosing' white calcitic veinlets.	
8.00									

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
14/06/23	17.30	6.00	6.00	96			
15/06/23	08.00	6.00					

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	20.7	Polymer	100

GENERAL REMARKS

6 gallons polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: PMcG	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH111A**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	14-06-23 16-06-23	87.59	E 649,513.7 N 738,205.5

Engineer	Sheet	Status
Fichtner	2 of 3	FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities / Detail	Main	Instrument/ Backfill
8.60	100 (85) 35	6				7.30 - 7.30 Point Load Test: strong. 7.10 - 7.40 Joint, subvertical dip, stepped, rough, with 0.5 to 10mm thick light orangish brown clay smear, open to wide.	Very strong locally weak medium strong and strong thickly bedded light grey cherty fine and medium grained LIMESTONE with 'anastomosing' white calcitic veinlets. *(continued)*	
	94 (71) 55	6				7.55 - 7.55 UCS: weak. 7.55 - 7.90 Joint, subvertical dip, stepped, rough, with 0.5 to 10mm thick light orangish brown clay smear, open to wide. 7.95 - 8.10 Joint, subvertical dip, stepped, smooth, with 0.5 to 1mm thick orangish brown clay smear, open.		
10.20		NR				8.34 - 8.34 Point Load Test: very strong.		
	100 (88) 37	8				9.22 - 9.22 UCS: strong. 9.70 - 9.70 Point Load Test: very strong. 10.00 - 10.60 Joint, subvertical dip, stepped, smooth, with 0.5 to 1mm thick orangish brown clay smear, open.		
11.40		8				10.10 - 10.20 Possible area of core loss. No recovery as probable washout of fines during drilling. No record of cavity.		
	100 (85) 52	7				10.80 - 10.80 Point Load Test: strong. 12.20 - 12.20 Point Load Test: strong.		
13.00					(12.70)			
	100 (82) 39	20				13.40 - 13.40 Point Load Test: very strong. 13.70 - 14.00 Non-intact as angular fine to medium gravel sized clasts.		
14.00		NI				14.00 - 14.00 medium strong brownish grey fine grained 'bleached' weakly dolomitised limestone.		
	100 (70) 30	8				14.15 - 14.15 UCS: medium strong. 15.00 - 15.00 Point Load Test: medium strong.		
15.06 16.06 15.60	100	26				15.50 - 15.60 Joint, dipping 60°, stepped, rough, with 0.5 to 1mm thick orangish brown clay smear and minor		

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
15/06/23	17.30	15.60					
16/06/23	08.00	15.60					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

6 gallons polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: PMcG	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH111A**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	14-06-23 16-06-23	87.59	E 649,513.7 N 738,205.5

Engineer	Sheet
Fichtner	3 of 3 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities / Detail	DESCRIPTION: Main	Instrument/ Backfill
16.40	(64) 55	9				orangish brown iron stain, open. 15.90 - 15.90 Point Load Test: strong. 15.90 - 16.40 Joint, subvertical dip, stepped, rough, with 0.5 to 4mm thick orangish brown clay smear, open to moderately wide.	Very strong locally weak medium strong and strong thickly bedded light grey cherty fine and medium grained LIMESTONE with 'anastomosing' white calcitic veinlets. *(continued)*	
17.70	100 (73) 46	8 NI				17.16 - 17.16 Point Load Test: very strong. 17.60 - 19.35 Joint, subvertical dip, stepped, rough, with 0.5 to 4mm thick orangish brown clay smear, open to moderately wide. 17.70 - 18.00 Non-intact as angular fine to medium gravel sized clasts.		
19.30	81 (61) 43	12 8	67.89		19.70	19.70 - 19.70 medium strong brownish grey fine grained 'bleached' weakly dolomitised limestone. 19.14 - 19.14 Point Load Test: weak. 19.40 - 19.40 Point Load Test: very strong. 19.70 - 20.70 CAVITY.		
16.06 20.70	28 (11) -	NR	66.89		(1.00) 20.70		CAVITY.	

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
16/06/23	14.00	20.70					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

6 gallons polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: PMcG	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH112**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	04-05-23 05-05-23	84.42	E 649,358.6 N 738,261.1

Engineer	Sheet
Fichtner	1 of 5 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
0.00	- - -				(5.00)	0.00 - 40.00 : overburden.		Open hole drilling. No recovery.	
5.00	20 - -	5.00 (46)	79.42		5.00			Very stiff light grey sandy gravelly SILT with rare cobbles. Sand is fine to coarse. Gravel is subangular fine to coarse of assorted brown sandstone and assorted grey limestone. Cobbles are of dark grey limestone.	
6.50	20 - -	6.50 (31)			(3.00)	6.50 - 6.50 becoming orangish brown.			
8.00			76.42		8.00				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
								0	40	Polymer	100	15 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH112**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	04-05-23 05-05-23	84.42	E 649,358.6 N 738,261.1

Engineer	Sheet
Fichtner	2 of 5 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main (DESCRIPTION)	Instrument/ Backfill
	20	8.00 (44)						Angular medium greyish brown siltstone GRAVEL.	
9.50	20	9.50 (46/150mm)			(3.00)				
11.00		11.00 (50/225mm)	73.42		11.00			Dark blackish brown slightly gravelly silty fine to medium SAND. Gravel is subrounded to subangular fine to coarse of greyish brown siltstone and grey limestone.	
12.50	20	12.50 (38)							
14.00	20	14.00 (50/225mm)							
15.50	20	15.50 (25/75mm)							

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

15 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: DK	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH112**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	04-05-23 05-05-23	84.42	E 649,358.6 N 738,261.1

Engineer	Sheet	Status
Fichtner	3 of 5	FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
	20 - -							Dark blackish brown slightly gravelly silty fine to medium SAND. Gravel is subrounded to subangular fine to coarse of greyish brown siltstone and grey limestone. *(continued)*	
17.00		17.00 (50/150mm)							
	13 - -								
18.50									
	13 - -								
04.05 05.05 20.00		20.00 (50/150mm)							
	20 - -								
21.50									
	13 - -								
23.00		23.00 (50/150mm)							
	20 - -								

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
04/05/23	17.30	20.00	20.00	96			
05/05/23	08.00	20.00					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

15 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: DK	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH112**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	04-05-23 05-05-23	84.42	E 649,358.6 N 738,261.1

Engineer	Sheet
Fichtner	4 of 5 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
24.50								Dark blackish brown slightly gravelly silty fine to medium SAND. Gravel is subrounded to subangular fine to coarse of greyish brown siltstone and grey limestone. *(continued)*	
	20 - -				(29.00)				
26.00		26.00 (50/150mm)							
	20 - -								
27.50									
	13 - -								
29.00		29.00 (50)							
	20 - -								
30.50									
	20 - -								
32.00									

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	15 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH112**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	04-05-23 05-05-23	84.42	E 649,358.6 N 738,261.1

Engineer	Sheet
Fichtner	5 of 5 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
		32.00 (25/75mm)						Dark blackish brown slightly gravelly silty fine to medium SAND. Gravel is subrounded to subangular fine to coarse of greyish brown siltstone and grey limestone. *(continued)*	
	20								
33.50									
	12								
36.00		36.00 (50/225mm)							
	10								
39.00		39.00 (25/75mm)							
	30								
05.05 40.00			44.42		40.00				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
05/05/23	16.00	40.00										15 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller DK	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH116**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	13-06-23 14-06-23	82.87	E 649,743.1 N 738,296.4

Engineer	Sheet
Fichtner	1 of 3 Status FINAL

RUN DETAILS						STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 22.10 : overburden.		Open hole drilling. No recovery.	
	- - -				(7.80)				
7.80			75.07		7.80				

Drilling Progress and Water Observations							
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush			
From (m)	To (m)	Type	Return (%)
0	22.1	Polymer	100

GENERAL REMARKS

2 gallons polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller PMcG	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH116**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	13-06-23 14-06-23	82.87	E 649,743.1 N 738,296.4

Engineer	Sheet
Fichtner	2 of 3 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	20 - -				(3.80)			Dark orangish brown fine and medium SAND. *(continued)*	
10.10		10.10 (50/225mm)							
	13 - -								
11.60			71.27		11.60				
	13 - -							Subrounded to subangular fine to coarse assorted grey limestone GRAVEL.	
13.10		13.10 (47/150mm)			(3.00)				
	13 - -								
14.60			68.27		14.60				
	20 - -							Dark reddish brown silty fine SAND.	

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
			10.50	96								2 gallons polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: PMcG	Logged By: EAT

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH116**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	13-06-23 14-06-23	82.87	E 649,743.1 N 738,296.4

Engineer	Sheet
Fichtner	3 of 3 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
16.10	20 - -	16.10 (25/75mm)	65.27		(3.00)			Dark reddish brown silty fine SAND. *(continued)*	
17.60	20 - -	19.10 (50/225mm)	62.27		(3.00)			Subangular fine to medium assorted grey limestone GRAVEL with surficial dark orangish brown iron stain.	
19.10	20 - -								
20.60	13 - -	22.10 (47/150mm)	60.77		(1.50)			Dark reddish brown silty fine and medium SAND.	
22.10									

13.06

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
13/06/23	17.30	22.10										2 gallons polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: PMcG	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH117**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	30-05-23 06-06-23	82.78	E 649,723.2 N 738,289.0

Engineer	Sheet
Fichtner	1 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 55.40 : overburden.		Open hole drilling. No recovery.	
	- - -				(7.50)				
7.50			75.28		7.50			Assorted light grey and dark grey limestone COBBLES.	

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
			7.50	96				0	55.4	Polymer	100	4 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH117**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	30-05-23 06-06-23	82.78	E 649,723.2 N 738,289.0

Engineer	Sheet
Fichtner	2 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	20 - -				(1.40)			Assorted light grey and dark grey limestone COBBLES. *(continued)*	
8.90		8.90 (25/75mm)	73.88		8.90			Grey silty fine and medium SAND.	
	7 - -								
10.40					(3.00)				
	7 - -								
11.90		11.90 (25/75mm)	70.88		11.90			Grey sandy subangular to subrounded fine to coarse assorted grey limestone GRAVEL. Sand is fine to coarse.	
	7 - -								
13.40					(3.00)				
	7 - -								
14.90		14.90 (25/75mm)	67.88		14.90			Pinkish brown silty fine to coarse SAND.	
	7 - -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	4 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH117**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	30-05-23 06-06-23	82.78	E 649,723.2 N 738,289.0

Engineer	Sheet
Fichtner	3 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
16.40								Pinkish brown silty fine to coarse SAND. *(continued)*	
	7 - -				(4.50)				
17.90		17.90 (25/75mm)							
	7 - -								
19.40			63.38		19.40				
	7 - -							Subangular fine to medium brownish grey 'bleached' weakly dolomitised limestone GRAVEL with a little orangish brown clay.	
20.90		20.90 (25/75mm)							
	13 - -								
22.40									
	27 - -								
30.05 31.05 23.90									

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
30/05/23	17.30	23.90										4 litres polydrill used.
31/05/23	08.00	23.90										50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH117**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	30-05-23 06-06-23	82.78	E 649,723.2 N 738,289.0

Engineer	Sheet
Fichtner	4 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
		23.90 (25/75mm)						Subangular fine to medium brownish grey 'bleached' weakly dolomitised limestone GRAVEL with a little orangish brown clay. *(continued)*	
	27 - -								
25.40									
	27 - -				(13.50)				
26.90		26.90 (25/75mm)							
	13 - -								
28.40									
	13 - -								
29.90		29.90 (25/75mm)							
	20 - -								
31.40									

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	4 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH117**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	30-05-23 06-06-23	82.78	E 649,723.2 N 738,289.0

Engineer	Sheet
Fichtner	5 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	20 - -							Subangular fine to medium brownish grey 'bleached' weakly dolomitised limestone GRAVEL with a little orangish brown clay. *(continued)*	
32.90		32.90 (25/75mm)	49.88		32.90				
	7 - -							Brown coarse SAND.	
34.40					(3.00)				
	7 - -								
35.90		35.90 (25/75mm)	46.88		35.90				
	7 - -							Subangular fine to medium brownish grey 'bleached' weakly dolomitised limestone GRAVEL with some grey silt.	
37.40									
	13 - -								
38.90		38.90 (25/75mm)							
	13 - -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	4 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH117**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	30-05-23 06-06-23	82.78	E 649,723.2 N 738,289.0

Engineer	Sheet	Status
Fichtner	6 of 7	FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
31.05 40.40 01.06					(9.00)			Subangular fine to medium brownish grey 'bleached' weakly dolomitised limestone GRAVEL with some grey silt. *(continued)*	
	20 - -								
41.90		41.90 (25/75mm)							
	7 - -								
43.40									
	7 - -								
44.90			37.88		44.90				
		44.90 (25/75mm)						Stiff brown slightly sandy SILT. Sand is fine.	
	7 - -								
46.40					(3.00)				
	7 - -								
47.90			34.88		47.90				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
31/05/23 01/06/23	17.30 08.00	40.40 40.40										4 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH117**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	30-05-23 06-06-23	82.78	E 649,723.2 N 738,289.0

Engineer	Sheet
Fichtner	7 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
		47.90 (25/75mm)						No recovery. Core loss as probable washout of fines during drilling. No record of cavity. *(continued)*	
49.40	- - -				(3.00)				
	- - -								
50.90			31.88		50.90				
	20 - -				(1.50)			Subangular fine to medium brownish grey 'bleached' weakly dolomitised limestone GRAVEL with a little orangish brown clay.	
52.40			30.38		52.40				
	80 - -				(1.50)			Assorted grey limestone COBBLES.	
53.90			28.88		53.90				
	40 - -				(1.50)			Subangular fine to medium brownish grey 'bleached' weakly dolomitised limestone GRAVEL with a little orangish brown clay.	
01.06 55.40			27.38		55.40				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
01/06/23	17.30	55.40										4 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH118**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	19-06-23 19-06-23	82.80	E 649,594.2 N 738,364.9

Engineer	Sheet
Fichtner	1 of 3 Status FINAL

RUN DETAILS						STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 12.80 : overburden.		Open hole drilling. No recovery.	
	- - -				(9.00)				

Drilling Progress and Water Observations							
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush			
From (m)	To (m)	Type	Return (%)
0	13.3	Polymer	100

GENERAL REMARKS

2 gallons polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller PMcG	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH118**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	19-06-23 19-06-23	82.80	E 649,594.2 N 738,364.9

Engineer	Sheet	Status
Fichtner	2 of 3	FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
								Open hole drilling. No recovery. *(continued)*	
9.00			73.80		9.00				
	27 - -							Subangular to subrounded fine to coarse assorted dark grey and light grey limestone GRAVEL.	
10.50					(3.80)				
	17 - -								
12.30									
			70.00		12.80				
	61 - -					12.80 - 18.70 Non-intact as weathered rock. No recovery as washout of fines during drilling.No record of cavity.		Probable weathered rock. Very strong extremely strong and strong light whitish grey 'bleached' weakly dolomitised fine grained limestone with surficial orangish brown iron stain recovered as angular to subangular fine to coarse gravel and cobble sized clasts.	
13.60						13.55 - 13.55 Point Load Test: strong.			
	80 (23) -								
14.60						14.60 - 14.60 Point Load Test: strong.			
	69 (22) 9					14.90 - 14.90 Point Load Test: very strong.			
15.90		NR/NI			(5.90)				

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
			9.00	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
13.3	20.3	Polymer	0

GENERAL REMARKS

2 gallons polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: PMcG	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH118**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	19-06-23 19-06-23	82.80	E 649,594.2 N 738,364.9

Engineer	Sheet
Fichtner	3 of 3 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
16.50	50 - -							Probable weathered rock. Very strong extremely strong and strong light whitish grey 'bleached' weakly dolomitised fine grained limestone with surficial orangish brown iron stain recovered as angular to subangular fine to coarse gravel and cobble sized clasts. *(continued)*	
17.60	55 (13) -					16.70 - 16.70 Point Load Test: strong.			
18.70	72 (19) -		64.10		18.70	18.40 - 18.40 Point Load Test: strong.			
19.06 20.30	100 (53) 25	NI	62.50		(1.60) 20.30	18.70 - 20.30 Non-intact as weathered rock. 19.20 - 19.20 Point Load Test: very strong.		Weathered rock. Strong and very strong thinly bedded grey and dark grey cherty fine grained limestone with flat and elongate medium and coarse gravel sized chert nodules recovered as angular fine to coarse gravel and cobble sized clasts with a little grey silt.	

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
19/06/23	17.30	20.30										2 gallons polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller PMcG	Logged By EAT

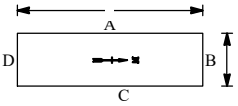
IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Appendix 3
Trial Pit Records

PROJECT: Derrygreenagh Power	**TRIALPIT: TP201**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,371.5 N 738,404.1**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 81.39m O.D.	**DATE: 2.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 0°
PIT DIMENSION: 4.80m * 1.60
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							80.69	0.70	Plastic black amorphous PEAT. H9.	
1			B 1	1.00-1.20			78.59	2.80	Firm orangish brown fibrous PEAT. H3. 1.00: thermal resistivity test.	
2										
3			ES B 2 D 3	2.80-3.00 2.80-3.00 2.80-3.00			78.39	3.00	Soft damp grey slightly gravelly sandy SILT with occasional cobbles. Sand is fine to coarse. Gravel is angular fine to coarse. Cobbles are angular of limestone.	
			B 4 D 5	3.40-3.60 3.40-3.60					Firm light grey slightly sandy gravelly SILT with occasional cobbles. Gravel is angular to subrounded fine to coarse. Cobbles are angular to subrounded of limestone. 3.30-4.50: with occasional boulders. Boulders are subrounded of limestone. Boulders are up to 400mm in length.	
4							76.89	4.50		
						END				
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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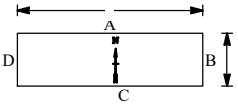
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT:** TP202
LOCATION: Co Offaly	**Sheet** 1 of 1
CLIENT: Bord na Mona	**Co-ordinates:** E 649,497.7 N 738,453.3
ENGINEER: Fichtner	**Rig:** Hyundai HX 140
	Rev: FINAL
Ground level: 81.36m O.D.	**DATE:** 2.5.23

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 90°
PIT DIMENSION: 4.50m * 1.60
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							80.86	0.50	Grass over plastic black amorphous PEAT. H8.	
									Firm orangish brown fibrous PEAT. H2 B3 F3 R1 W1 TV0 TH0 A0.	
1			ES B 1	1.00 1.00-1.20					1.00: thermal resistivity test.	
2										
3			B 2	3.00-3.20						
4							76.86	4.50		
						END				
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

Irish drilling LTD

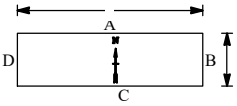
Ph.
Fax

TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT: TP203**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,589.4 N 738,470.5**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 81.22m O.D.	**DATE: 3.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 90°
PIT DIMENSION: 4.50m * 1.60
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit unstable. Sidewall collapse.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							80.87	0.35	Grass over plastic black amorphous PEAT. H8 B1 F1 R0 W0 TV0 TH0 A0.	
									Firm orangish brown fibrous PEAT. H2 B2 F3 R1 W1 TV0 TH0 A1.	
1			B 1	1.00-1.20						
2									2.40-3.60: with decaying trees stumps	
3			B 2	2.80-3.00			77.62	3.60		
						END				
4										
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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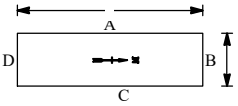
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT: TP204**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,368.8 N 738,329.6**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 83.56m O.D.	**DATE: 2.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 0°
PIT DIMENSION: 4.20m * 1.60
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							83.31	0.25	MADE GROUND: Soft brown silty PEAT.	
			B 1	0.50-0.70			82.71	0.85	MADE GROUND: Greyish brown peaty gravelly SAND. Sand is medium to coarse. Gravel is angular to subrounded fine to coarse. Cobbles are subangular to subrounded.	
			ES	0.80-0.85			82.56	1.00		
1			B 2	0.85-1.00					MADE GROUND: Stiff yellowish brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is angular to subrounded fine to coarse. Cobbles are subangular to subrounded.	
			D 3	0.85-1.00			82.21	1.35	MADE GROUND: Stiff grey slightly sandy gravelly SILT with occasional cobbles. Gravel is subangular to subrounded fine to coarse. Cobbles are subrounded of limestone. 1.00: thermal resistivity test.	
			B 4	1.60-1.80					Firm orangish brown and black fibrous PEAT. H2.	
2							81.11	2.45		
			B 5	2.50-2.70					Soft brownish grey slightly gravelly slightly sandy SILT with occasional cobbles and rootlets. Sand si fine to coarse. Gravel is angular to subangular fine to coarse. Cobbles are subangular. 2.80: becoming firm.	
			D 6	2.50-2.70						
3							80.16	3.40		
			B 7	3.60-3.80					Light brown silty sandy angular to subangular fine to medium GRAVEL. Sand is fine to coarse.	
4							79.16	4.40		
						END				
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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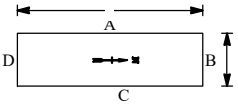
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT: TP205**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,422.6 N 738,388.3**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 81.90m O.D.	**DATE: 3.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 0°
PIT DIMENSION: 4.50m * 1.60
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							81.15	0.75	MADE GROUND: Heather over spongy black pseudo fibrous PEAT.	
			B 1	0.75-0.95			80.70	1.20	Firm brownish black fibrous PEAT. H3 B1 F1 R1 W3 TV0 TH0 A1.	
1							79.45	2.45	Firm orangish brown fibrous PEAT. H2 F3 R2 W3 TV0 TH0 A1.	
2			ES	2.45-2.55			79.20	2.70	Firm greenish grey slightly sandy SILT with decaying organic material. Sand is fine.	
			B 2	2.50-2.70						
			D 3	2.50-2.70					Soft damp grey slightly gravelly sandy SILT with occasional cobbles. Sand is fine to coarse. Gravel is angular to subangular fine to coarse. Cobbles are subangular.	
3			B 4	3.30-3.50						
4			B 5	4.20-4.40			77.40	4.50	3.90-4.50: locally black in colour.	
						END				
5										
6										
7										
8										
9										
10										

Remarks: Seepage of water at 1.80m bgl. TP backfilled with arisings.

Scale: 1:50

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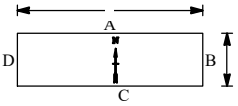
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power		**TRIALPIT: TP206**
LOCATION: Co Offaly		**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates:**	**Rig: Hyundai HX 140**
ENGINEER: Fichtner	**E 649,305.8 N 738,252.8**	**Rev: FINAL**
Ground level: 83.52m O.D.		**DATE: 8.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 90°
PIT DIMENSION: 4.60m * 1.80
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							83.02	0.50	MADE GROUND: Black and grey peaty fine to coarse SAND and subrounded to rounded fine to coarse GRAVEL.	
						END				
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings. Move location to TP206A.

Scale: 1:50

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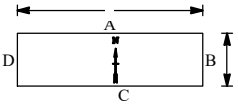
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power		**TRIALPIT: TP206A**
LOCATION: Co Offaly		**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates:** E 649,307.5 N 738,249.3	**Rig: Hyundai HX 140**
ENGINEER: Fichtner		**Rev: FINAL**
Ground level: 83.62m O.D.		**DATE: 8.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 90°
PIT DIMENSION: 4.80m * 2.00
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							83.52	0.10	MADE GROUND: Dark grey GRAVEL.	
							83.22	0.40	MADE GROUND: Greyish brown fine to coarse SAND and subrounded to rounded fine to coarse GRAVEL with frequent cobbles. Cobbles are subrounded.	
			B 1 D 2	0.50-0.70 0.50-0.70					MADE GROUND: Stiff greyish brown slightly gravelly slightly sandy SILT with frequent cobbles. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse. Cobbles are angular to rounded. 0.70-1.20: with occasional boulders. Boulders are subangular to subrounded of limestone.	
1			ES	1.00-1.10			82.42	1.20		
							82.07	1.55	Spongy orangish black pseudo fibrous PEAT. H6 B1 F2 R1 W1 TV0 TH0 A0.	
			B 3	1.50-1.70			81.82	1.80	Firm greyish brown slightly gravelly sandy SILT with occasional cobbles. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse. Cobbles are subrounded.	
2			B 4 D 5	2.40-2.60 2.40-2.60					Firm grey slightly gravelly sandy SILT with frequent cobbles and occasional boulders. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse. Cobbles are subrounded. Boulders are subrounded of limestone. Gravel content increasing with depth. 2.30-4.00: becoming locally soft.	
3										
							79.62	4.00		
4			B 6 D 7	4.00-4.20 4.00-4.20					Stiff light brown gravelly SILT with occasional cobbles. Gravel is angular to subangular fine to coarse. Cobbles are subrounded.	
							79.12	4.50		
						END				
5										
6										
7										
8										
9										
10										

Remarks: Moved location from TP206. TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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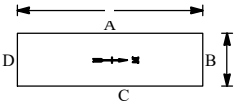
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT:** TP207
LOCATION: Co Offaly	**Sheet** 1 of 1
CLIENT: Bord na Mona	**Co-ordinates:** E 649,641.4 N 738,293.5
ENGINEER: Fichtner	**Rig:** Hyundai HX 140
	Rev: FINAL
Ground level: 83.49m O.D.	**DATE:** 3.5.23

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 0°
PIT DIMENSION: 4.70m * 1.60
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							83.19	0.30	MADE GROUND: Firm brown peaty SILT.	
							83.04	0.45	Stiff greyish white SILT.	
			BATE	0.60			82.84	0.65	Stiff yellowish brown SILT.	
			B 1	0.60-0.70					Firm damp yellowish brown and black slightly sandy SILT. Sand is fine to coarse.	
			D 2	0.60-0.70					0.85-1.20: becoming gravelly. Gravel is angular to subrounded fine to coarse.	
1			ES	1.00-1.10			82.29	1.20		
			B 3	1.40-1.60					Firm light grey slightly sandy slightly gravelly SILT with frequent cobbles. Sand is fine to coarse. Gravel is angular to subangular fine to coarse. Cobbles are subrounded of limestone.	
			D 4	1.40-1.60			81.89	1.60		
							81.49	2.00	Very soft wet light grey slightly sandy slightly gravelly SILT with occasional cobbles. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse. Cobbles are angular.	
2									Grey mottled orangish brown slightly sandy silty angular to rounded fine to coarse GRAVEL with frequent cobbles. Sand is fine to coarse. Cobbles are subrounded.	
			B 5	2.40-2.60			80.69	2.80		
3									Stiff light brown and orangish brown slightly sandy gravelly SILT with occasional cobbles. Sand is fine to coarse. Gravel is angular to subangular fine to coarse. Cobbles are subrounded of limestone.	
			B 6	3.40-3.60						
			D 7	3.40-3.60						
4							78.99	4.50		
						END				
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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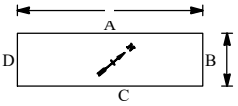
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power		**TRIALPIT: TP208**
LOCATION: Co Offaly		**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates:**	**Rig: Hyundai HX 140**
ENGINEER: Fichtner	**E 649,786.6 N 738,266.5**	**Rev: FINAL**
Ground level: 82.91m O.D.		**DATE: 29.6.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 40°
PIT DIMENSION: 4.00m * 1.80
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							82.51	0.40	MADE GROUND: Ferns over firm dark blackish brown and grey mottled spongy pseudo fibrous PEAT and clayey sandy SILT with some visible plastic. Sand is fine to coarse.	
			B 1 D 2	0.50-0.60 0.50-0.60			81.31	1.60	Spongy dark blackish brown pseudo fibrous PEAT. H6 B1 F1 R1 W2 TV2 TH2 A1.	
2			B 3 D 4 ES 5 B 6 D 7	2.00-2.10 2.00-2.10 2.00-2.00 2.50-2.60 2.50-2.60			80.91 79.91	2.00 3.00	Soft damp light brownish grey slightly sandy gravelly SILT with rare cobbles. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of limestone. Cobbles are subrounded to rounded of limestone. Firm light brownish grey slightly gravelly sandy SILT with rare cobbles and rare boulders. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of limestone. Cobbles are subrounded to rounded of limestone. Boulders are subrounded to rounded of limestone. Boulders are up to 350mm in length. 2.50-3.00: becoming slightly gravelly slightly sandy.	
3			AS 8 B 9 D 10	3.50-3.60 3.50-3.60 3.50-3.60		END	79.31	3.60	Stiff brownish grey slightly sandy very gravelly SILT with occasional cobbles and rare boulders. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of limestone. Cobbles are subrounded to rounded of limestone. Boulders are subrounded to rounded of limestone. Boulders are up to 400mm in length.	
4										
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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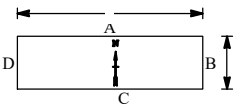
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT: TP209**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,665.8 N 738,226.4**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 82.77m O.D.	**DATE: 3.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 90°
PIT DIMENSION: 4.20m * 1.80
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0									MADE GROUND: Grass over trench over 6" concrete pipe covered by brown fine to coarse SAND and subrounded to rounded fine to coarse GRAVEL with stiff yellowish brown slightly sandy slightly gravelly CLAY on either side of trench.	
			PLATE	0.50						
			B 1	0.50-0.70						
1			ES	1.00-1.10			81.57	1.20	1.00: thermal resistivity test.	
			B 2	1.30-1.50					Stiff orangish brown slightly sandy slightly gravelly SILT with occasional cobbles. Sand is fine to coarse. Gravel is angular to subangular fine to coarse. Cobbles are subangular.	
			D 3	1.30-1.50						
2									1.90-3.00: with occasional boulders. Boulders are subangular of limestone. Boulders are up to 500mm in length.	
			B 4	2.40-2.60						
			D 5	2.40-2.60						
							79.77	3.00		
3							79.62	3.15	Grey gravelly coarse SAND. Gravel is angular to subangular fine to coarse.	
									Stiff reddish brown sandy gravelly SILT with frequent cobbles. Sand is fine to coarse. Gravel is angular to subangular fine to coarse. Cobbles are angular to subangular.	
4							78.27	4.50		
						END				
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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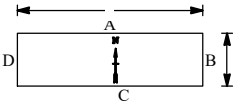
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT: TP210**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,510.0 N 738,159.5**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 82.58m O.D.	**DATE: 8.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 90°
PIT DIMENSION: 4.50m * 1.60
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							82.33	0.25	MADE GROUND: Grass over grey coarse SAND and subrounded to rounded fine to coarse GRAVEL with frequent cobbles. Cobbles are subrounded to rounded.	
			B 1 D 2	0.50-0.70 0.50-0.70			81.83	0.75	Stiff orangish brown slightly sandy slightly gravelly SILT with occasional cobbles. Gravel is angular coarse. Cobbles are angular of limestone. 0.45: 8" concrete pipe running parallel to TP/railway line.	
1			ES	1.00					Limestone COBBLES and BOULDERS with brown silty gravel. Gravel is angular to subangular fine to coarse. Boulders are up to 800mm in length. 1.00: thermal resistivity test failed. Strata too gravelly.	
			B 3	1.40-1.60			80.98	1.60		
						END				
2										
3										
4										
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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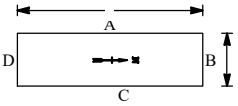
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT: TP211**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,425.9 N 738,170.0**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 85.59m O.D.	**DATE: 9.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 0°
PIT DIMENSION: 4.50m * 1.80
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							85.34	0.25	MADE GROUND: Grass over firm dark brown organic SILT.	
							85.09	0.50	Firm orangish brown slightly gravelly SILT with occasional cobbles. Cobbles are subangular to subrounded.	
			PHATE	0.50					Firm brownish grey slightly gravelly SILT with occasional cobbles. Gravel is subrounded fine to coarse. Cobbles are subrounded.	
			B 1	0.50-0.70						
			D 2	0.50-0.70			84.69	0.90		
1			ES	1.00-1.10					Firm brown slightly gravelly slightly sandy SILT with occasional cobbles. Sand is fine to coarse. Gravel is subangular fine to medium. Cobbles are subangular.	
			B 3	1.00-1.20						
			D 4	1.00-1.20						
							83.89	1.70		
									Stiff orange and brown SILT.	
2			B 5	2.00-2.20						
			D 6	2.00-2.20						
							82.89	2.70		
									Stiff orange and brown SILT with occasional cobbles. Cobbles are angular of shale.	
3										
			B 7	3.40-3.60						
4										
							81.09	4.50		
						END				
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

Irish drilling LTD

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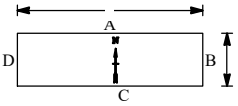
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT: TP212**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,358.5 N 738,190.7**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 84.22m O.D.	**DATE: 9.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 90°
PIT DIMENSION: 4.50m * 1.80
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							83.97	0.25	MADE GROUND: Grass over firm brown SILT.	
			PLATE	0.50			83.52	0.70	Light brown silty fine SAND with occasional cobbles. Cobbles are subangular.	
			B 1	0.50-0.70						
			D 2	0.50-0.70			82.87	1.35	Firm light brown slightly gravelly sandy SILT with lenses of silty sand. Sand is fine.	
1			ES	1.10-1.20						
			B 3	1.10-1.30						
			B 4	1.40-1.60			82.22	2.00	Stiff orangish brown slightly gravelly CLAY. Gravel is angular to subangular fine to medium.	
			D 5	1.40-1.60						
2			B 6	2.50-2.70			79.92	4.30	Orangish brown and black slightly sandy angular fine to coarse GRAVEL. Sand is fine to coarse. 2.70-3.30: with lenses of stiff whitish grey SILT on southern side of TP. 3.00-4.30: with occasional cobbles. Cobbles are angular.	
3			D 7	3.00-3.20						
4						END				
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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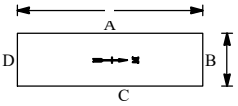
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT: TP224**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates:** E 649,296.1 N 738,355.3
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 79.41m O.D.	**DATE: 14.6.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 0°
PIT DIMENSION: 4.60m * 2.00
LOGGED BY: MM



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							78.51	0.90	Spongy dry black pseudo fibrous PEAT. H5 B1 F2 R0 W1 TV0 TH0 A0.	
1			ES	0.90-1.00			77.61	1.80	Soft bluish grey sandy gravelly SILT. Sand is medium. Gravel is medium of limestone.	
		↓	B 1	1.80-2.00			76.91	2.50	Wet brownish grey very sandy angular to subangular fine to medium limestone GRAVEL. Sand is medium to coarse.	
2			B 2	2.30-2.50						
						END				
3										
4										
5										
6										
7										
8										
9										
10										

Remarks: Ingress of water at 1.80 bgl. TP backfilled with arisings.

Scale: 1:50

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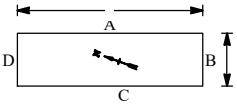
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT: TP311**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,693.1 N 738,488.7**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 79.27m O.D.	**DATE: 22.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 160°
PIT DIMENSION: 4.00m * 2.00
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit unstable. Sidewall collapse from g/l.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							78.97	0.30	MADE GROUND: Dry spongy brownish black pseudo fibrous PEAT as dust.	
			B 1 D 2 VANE	0.40-0.50 0.40-0.50 0.50	33mm vane 12 kN/m² 14 kN/m² 12 kN/m²		78.87	0.40	Firm orangish brown fibrous PEAT. H2 B3 F3 R2 W0 TV1 TH1 A0.	
1									Spongy dark orangish brown pseudo fibrous PEAT. H5 B0 F2 R2 W1 TV1 TH1 A1.	
2							77.17	2.10		
			B 3 D 4	2.40-2.50 2.40-2.50					Spongy dark brown pseudo fibrous PEAT. H6 B1 F1 R1 W3 TV1 TH1 A1.	
3							75.77	3.50		
			B 5 ES 6	3.90-4.00 3.90-4.00			75.27	4.00	Blue and grey mottled slightly silty sandy angular to subangular fine to coarse sandstone and limestone GRAVEL with some plant material and rootlets. Sand is fine to coarse.	
4						END				
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 1/11/23

Appendix 4A
Geophysical Survey

Derrygreenagh Thermal Power Plant
Main Site, South Site and 220kV Substation, Co. Offaly

Geophysical Survey

Report Status: Final

MGX Project Number: 6695

MGX File Ref: 6695f-005.doc

31st October 2023

Confidential Report To:

Irish Drilling Ltd
Old Galway Road
Loughrea
Co. Galway

Report submitted by:
Minerex Geophysics Limited

Unit F4, Maynooth Business Campus
Maynooth, Co. Kildare, W23X7Y5
Ireland
Tel.: 01-6510030
Email: info@mgx.ie

Issued by:

Author: John Connaughton (Geophysicist)

Reviewer: Hartmut Krahn (Senior Geophysicist)

Minerex
Geophysics Limited

Subsurface Geophysical Investigations

EXECUTIVE SUMMARY

1. Minerex Geophysics Ltd. (MGX) carried out a geophysical survey consisting of 2D-Resistivity (ERT) surveying for the ground investigation for the proposed development at Derrygreenagh, County Offaly.
2. The survey area includes the main site, the south site and the 220kV substation site. This is where the cable/pylon route starts.
3. The main objective of the survey was to determining features of the underlying geology to a depth of 58m.
4. The data was interpreted based on the resistivity ranges using three layers.
5. Layer 1 is interpreted as peat or sandy gravelly clay and silt. This is the dominant overburden layer and extends to the maximum depth of 58m in many areas.
6. Layer 2 is interpreted as a clayey silty sand and gravel or weathered limestone.
7. Layer 3 is described as fresh limestone. The extent of this layer across the survey lines is shown on Map 2 where the top of the fresh limestone is present to depths of less than 13m (Blue) and 13 – 58m (Green).
8. The shallowest fresh rock is in the SW of the site close to the R400 road (Map 1).
9. Overall, the survey shows a lot of variation in the underlying geology with the top of rock ranging from very shallow to over 58m bgl.
10. Differential settlement of heavy structures might occur especially where the depth to rock changes suddenly.
11. Line R8 to the west of the R400 road was disturbed likely due to the railway tracks in this area. It is unclear if the shallow rock extends to the west of the road.
12. Direct ground investigation results have been added to the report and tie in well with the interpretation.

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1.1 Background 1
1.2 Objectives 1
1.3 Site Description 1
1.4 Geology 1
1.5 Report 2

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2.2 2D-Resistivity (ERT) 3
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3.3 Interpretation Map 6

4. CONCLUSIONS AND RECOMMENDATIONS 8

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Table 1: Geophysical Survey Locations and Acquisition Parameters	In text	In text
Table 2: Summary of Interpretation	In text	In text
Map 1: Geophysical Survey Location Map	1 x A3	6695f_Drawings.dwg
Map 2: Geophysical Survey Interpretation Map	1 x A3	6695f_Drawings.dwg
Figure 1a: Models of Geophysical Survey	1 x A3	6695f_Drawings.dwg
Figure 1b: Models of Geophysical Survey	1 x A3	6695f_Drawings.dwg
Figure 2a: Interpretation of Geophysical Survey	1 x A3	6695f_Drawings.dwg
Figure 2b: Interpretation of Geophysical Survey	1 x A3	6695f_Drawings.dwg

1. INTRODUCTION

1.1 Background

Minerex Geophysics Ltd. (MGX) carried out a geophysical survey for the Derrygreenagh Thermal Power Plant in Co. Offaly. The survey consisted of 2D-Resistivity (ERT) measurements. The survey was commissioned by Irish Drilling Ltd. The survey here covers the Main Site, the South Site and the 220kV substation.

The role of geophysics as a non-destructive fast method is to provide a geological interpretation over a wide area to complement direct ground investigations at specific locations. The direct ground investigation results have been used to improve the initial geophysical results and interpretation.

The proposed development is a Thermal Power Plant and an associated 220kV substation.

1.2 Objectives

The aim stated in the tender was determining features of the underlying geology to a depth of 58m.

Our main objectives of the geophysical survey were:

- To determine the ground conditions under the site
- To determine the depth to rock and the overburden thickness
- To determine the type of overburden and rock
- To detect lateral changes within the geological layers

1.3 Site Description

The site is located on the Bord Na Mona Derrygreenagh site which contains offices, stores, workshop complex and hardstanding areas. There are disused railway tracks crossing the site. The peripheral land consisted of scrubland and the site is surrounded by bog. The R400 Road runs along the west of the site.

1.4 Geology

Online geological maps of Ireland (GSI, 2022) give the following information:

The overburden geology consists of till derived from limestones with cut over raised peat in the NW of the site and surrounding the site.

In terms of rock the survey area is underlain by the Lucan Formation, described as dark limestone and shale.

The Lucan formation is generally not karstifiable.

There are no faults or karst features recorded near the site.

1.5 Report

This report includes the results and interpretation of the geophysical survey. Maps, figures and tables are included to illustrate the results of the survey. More detailed descriptions of geophysical methods and measurements can be found in GSEG (2002), Milsom (1989) and Reynolds (1997).

The description of soil, rock and the use of geotechnical terms (soft, stiff, dense etc) follows Eurocode (2007) and BSI (2015) standards. The terms are defined in the standards and the physical parameters are related from experience. This geophysical survey has been acquired, processed, interpreted and reported in accordance with these guidelines.

Elevations were surveyed on site and are used in the vertical sections.

The interpretative nature and the non-invasive survey methods must be taken into account when considering the results of this survey and Minerex Geophysics Limited, while using appropriate practice to execute, interpret and present the data, give no guarantees in relation to the existing subsurface.

2. GEOPHYSICAL SURVEY

2.1 Methodology

The methodology consisted of using 2D-Resistivity surveying along proposed lines across the site. The tender document required surveying depths of 58m below ground level.

The survey locations are indicated on Map 1. The lines and parameters are tabulated in Table 1.

Table 1: Geophysical Survey Locations and Acquisition Parameters

Resistivity Line	**Electrode Spacing/m**	**Number of Electrodes**	**Line Length/m**
R1	5	89	440
R2	5	75	370
R3	5	87	450
R4	5	83	430
R5	5	80	395
R6	5	92	475
R7	5	64	315
R8	5	64	315
SUM			**3,190**

2.2 2D-Resistivity (ERT)

2D-Resistivity lines were surveyed with electrode spacing of 5m, up to 64 electrodes per set-up and a maximum length of 315m per set-up. The readings were taken with a Tigre Resistivity Meter, Imager Cables, stainless steel electrodes and a laptop with ImagerPro acquisition software.

The 2D-Resistivity lines were carried out as overlapping lines surveyed to a maximum depth of 58m below ground level.

During 2D-Resistivity surveying, data is acquired in the form of linear arrays using a suite of metal electrodes. A current is induced into the ground via a pair of electrodes whilst a potential difference is measured across a second pair of electrodes. This allows for the recording of the apparent resistivity in a two-dimensional arrangement below the line. The data is inverted after the survey to obtain a model of

subsurface resistivities. The generated model resistivity values and their spatial distribution can then be related to typical values for different geological materials.

The presence of metal underground services like water or gas pipes or other metal items may influence the results of the survey. Line R7 was stopped short in the south of the line due to the presence of reinforced concrete which would have disrupted the data. Line R6 was moved to the north to avoid the reinforced concrete.

Line R8 on the west side of the R8 likely shows significant interference due to the tracks in this area.

2D-Resistivity has previously proven zones of anomalous or karstified rock with lateral extents of 5m and more.

2.3 Site Work

The data acquisition was carried out between the 11th and 17th of April 2023. The weather conditions were fair throughout the acquisition period. Health and safety standards were adhered to at all times. The locations and elevations were surveyed with a Carlson NR3 RTK-GPS to accuracy < 0.05m.

3. RESULTS AND INTERPRETATION

The interpretation of geophysical data was executed utilizing the known response of geophysical measurements, typical physical parameters for subsurface features that may underlay the site, and the experience of the authors.

Ground investigation results were provided after the survey and the abbreviated borehole logs are indicated on the sections. The overburden was abbreviated as peat, cobbles, silt, sand and gravel. The rock was generally divided into weathered limestone (based on RQD value < 50%) and limestone rock (> 50%). This can be done only to a certain extend as the rock can be very variable. RQD values, fracture indices and non-intact zones often change rapidly with depth. The small size of a borehole only represents a very small volume of ground while the geophysical survey on the other end of the scale averages over a large volume of ground.

3.1 2D-Resistivity (ERT)

The 2D-Resistivity data was positioned and inverted with the RES2DINV inversion package. Overlapping set-ups were concatenated for a joint inversion. The programme uses a smoothness constrained least-squares inversion method to produce a 2D model of the subsurface resistivities from the recorded apparent resistivity values. Three variations of the least squares method are available and for this project the Jacobian Matrix was recalculated for the first three iterations, then a Quasi-Newton approximation was used for subsequent iterations. Each dataset was inverted using seven iterations resulting in a typical RMS error of <3.0%. The resulting models were colour contoured with the same resistivity scale for all lines and they are displayed as cross sections (Figure 1a and 1b).

The models are drawn as a ‘visual stack’ to allow cross-correlation by eye between them.

Resistivities are characteristic for certain overburden and rock types. If there is a high content of clay minerals (which are electrically conductive) then the overburden resistivity will be lower than as if there is a high content of clastic grains like sand or gravel. The purer the clay and the lower the sand and gravel content, the lower the resistivity. Water content in overburden layers can influence the resistivities, but generally clay content has a more dominating effect.

Within bedrock types like clean limestone, high resistivities indicate a fresh, strong, unweathered rock. As the weathering in the rock increases the resistivity gets lower because of weathering products, remineralisation of rock and infill of cracks, faults and voids with clay and water. Weathering within rock is typically indicated by lower resistivity values in the cross sections.

The resistivities cover a range typical for materials from clay rich overburden or peat (low resistivities) to fresh strong unweathered bedrock (high resistivities). The ranges have been taken into the consideration for the interpretation. Low resistivity values (<250 Ohmm) typically indicate peat and sandy gravelly clay

and silt. Medium values (250 to 500 Ohmm) show a clayey silty sand and gravel overburden or weathered bedrock. High resistivities (>500 Ohmm) indicate bedrock types like limestone.

3.2 Interpretation of Resistivity

Table 2 summarises the interpretation. The interpretation has been made solely from the 2D-Resistivity data. The majority of resistivities across the survey lines are low and indicate overburden material such as peat or a sandy gravelly clay and silt. Across lines R6 and R1 there are pockets of medium resistivities which are most likely areas of clayey silty sand and gravel. At depths of 15 – 40m across all the survey lines there are medium resistivities which may indicate clayey silty sand and gravel overburden or a weathered limestone.

Where high resistivities are present at depth, this indicates a fresh limestone. High resistivities are seen on lines R1, R2 and R5 in the SW of the site near the R400 where the fresh limestone may be very shallow and on lines R3, R4 and R7 in the NE of the site where the fresh limestone is interpreted as deeper than 25m.

Table 2: Summary of Interpretation (Resistivity only)

Layer	General Resistivity Range (Ohmm)	Interpretation
A	<250	Peat or sandy gravelly Clay and Silt
B	250 – 500	Clayey silty Sand and Gravel, or weathered Limestone
C	>500	Fresh Limestone

3.3 Interpretation Map

Map 2 shows areas where the fresh limestone is shallower than 13m (Blue) and where the limestone is between 13 and 58m below ground level (Green). Across other areas, no fresh rock was noted to a depth of 58m. This map is solely based on the 2D-Reistivity interpretation. Data was interpolated between lines and the data cannot be extrapolated away from lines where no data exists.

The area where the fresh limestone is interpreted as shallower than 13m deep is located in the SW of the power plant site near the R400. BH108, in this area shows limestone at 11.7m while BH111 indicates limestone at 5m bgl. Close to this area, BH110 shows rock at 16.2m bgl while BH113 does not show any rock to its depth of 40m bgl.

The data along R8 to the west of the R400 road was disturbed and was not interpreted so the extent of the rock on the western side of the R400 is not confirmed. The northern extent of the fresh limestone shallower than 13m has not been determined but it does not extend as far north as lines R6 or R7.

Boreholes carried out to the west of the R400 indicate deep overburden. BHSS03 describes possible weathered rock recovered as gravel and cobbles at a depth of 23.8m while BHSS05, 35m to the south describes gravel to a depth of 40m bgl.

The fresh limestone at a depth of between 13 – 58m is in two distinct areas near the shallow rock and in the NE corner of the site which matches with results from boreholes in these areas. It is possible that the two zones of rock between 13 – 58m could continue closer to the middle of the site. BH106, between these two areas does not show rock to a maximum depth of 25m bgl.

There is a data gap in the west of the site between lines R1 and R6/R7.

4. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are made:

- The geophysical surveys carried out at the Derrygreenagh Plant consisted of 2D-Resistivity lines which surveyed to depths of 58m across the site.
- The survey area includes the main site, the south site and the 220kV substation site. This is where the cable/pylon route starts.
- The survey indicates very deep overburden across much of the site, extending to over 58m depth in many places.
- An area where the top of rock is interpreted shallower that 13m is identified close to the east side of the R400 in the SW corner of the site. The rock may be very shallow in this area.
- Two areas where the top of fresh limestone was indicated at depths of between 13 and 58m are shown in the SW and NE of the site.
- Line R8 is located to the west of the R400 road the data may be disturbed by the railway tracks in this area. It is unclear if the shallow rock extends to the west of the road.
- Ground conditions are very variable with undulating rockhead across the site. Differential settlement of heavy structures might occur.
- Direct ground investigation results were provided after the survey and tie in well with the geophysical survey interpretation.

5. REFERENCES

1. **BSI, 2015.** BS5930, Code of Practice for Ground Investigations, British Standards Institute 2015

2. **Eurocode, 2007.** EN 1997-2:2007. Eurocode 7. Part 2 Ground Investigation and Testing 2007

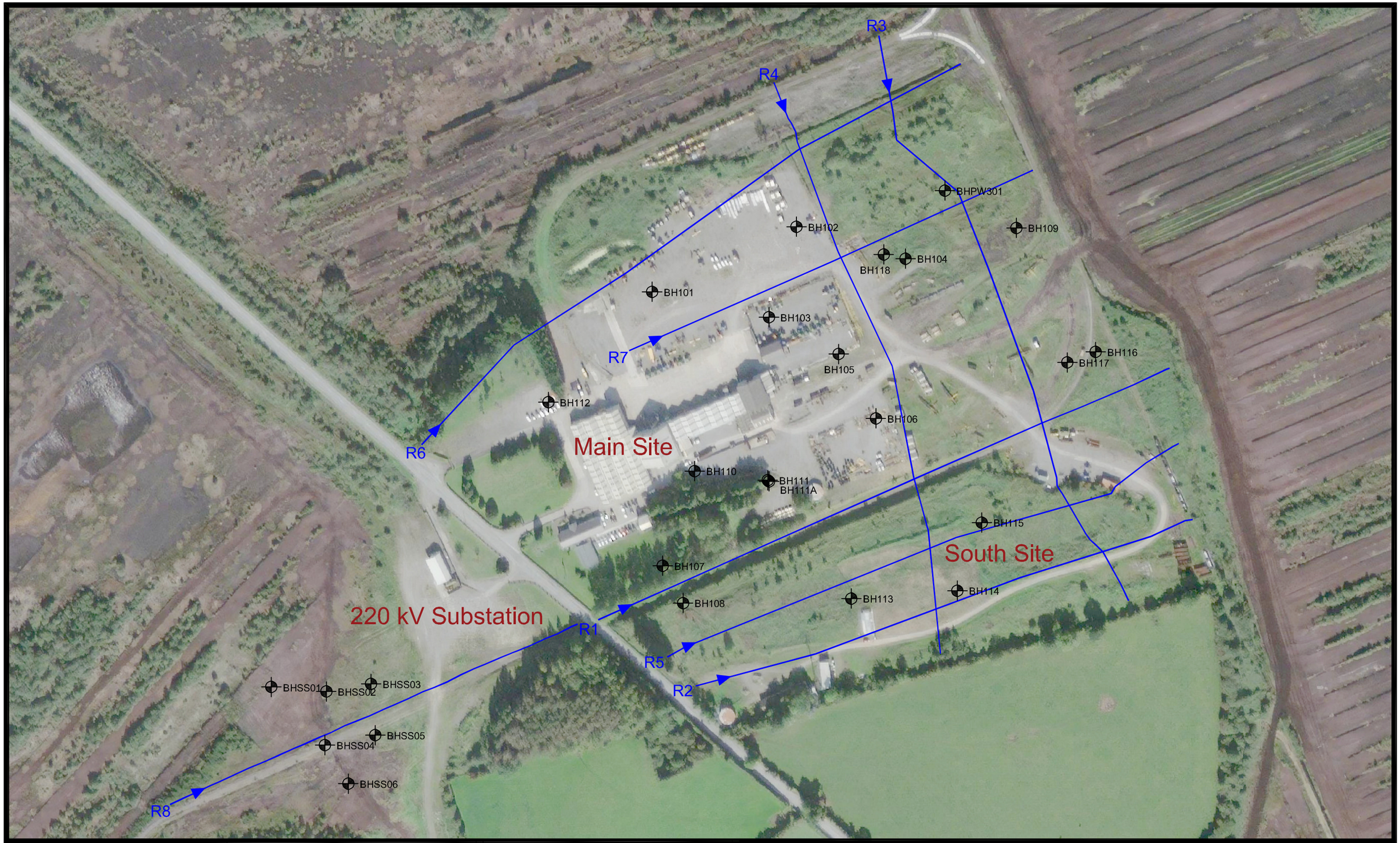
3. **GSEG, 2002.** Geophysics in Engineering Investigations. Geological Society Engineering Geology Special Publication 19, London, 2002

4. **GSI, 2023.** Online Geological Map of Ireland. Geological Survey of Ireland 2022

5. **Milsom, 1989.** Field Geophysics. John Wiley and Sons, 1989

6. **Reynolds, 1997.** An Introduction to Applied and Environmental Geophysics. John Wiley and Son, 1997

7. **Weaver, 1975.** Geological Factors significant in the Assessment of Rippability, 1975



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Web: www.mgx.ie

CLIENT	Irish Drilling Ltd.
PROJECT	Derrygreenagh Thermal Power Plant County Offaly Geophysical Survey
TITLE	Map 1: Geophysical Survey Location Map

SCALE:	1:2500 @ A3
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695f_Drawings.dwg
STATUS:	Final

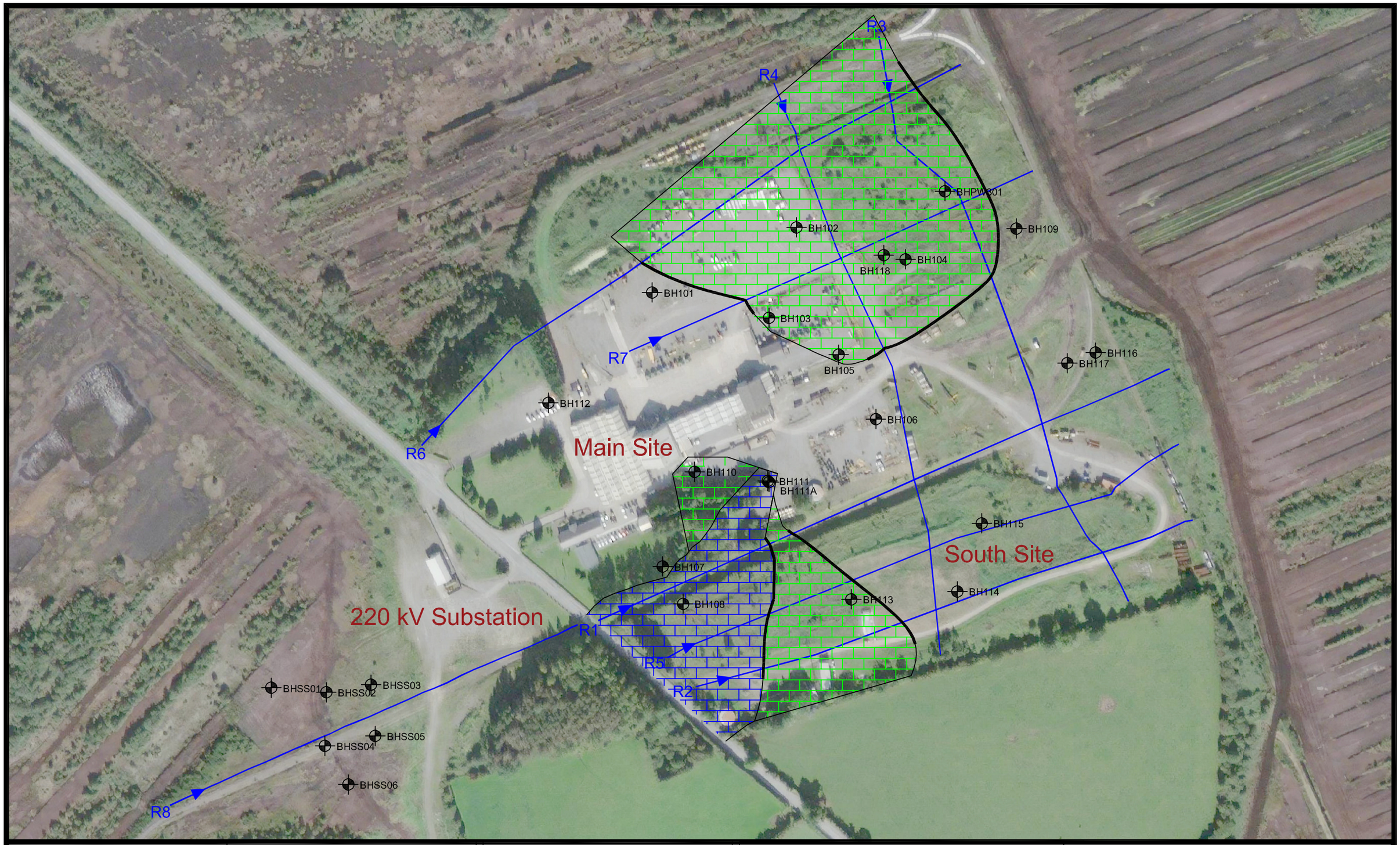
Geophysical Survey Locations:

R2 — 2D-Resistivity Line

Direct Ground Investigation Locations:

BH101 — Rotary Corehole

Locations are in Irish Transverse Mercator (ITM), Elevations are in mOD (Malin Head)



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CLIENT	Irish Drilling Ltd.
PROJECT	Derrygreenagh Thermal Power Plant County Offaly Geophysical Survey
TITLE	Map 2: Geophysical Survey Interpretation Map

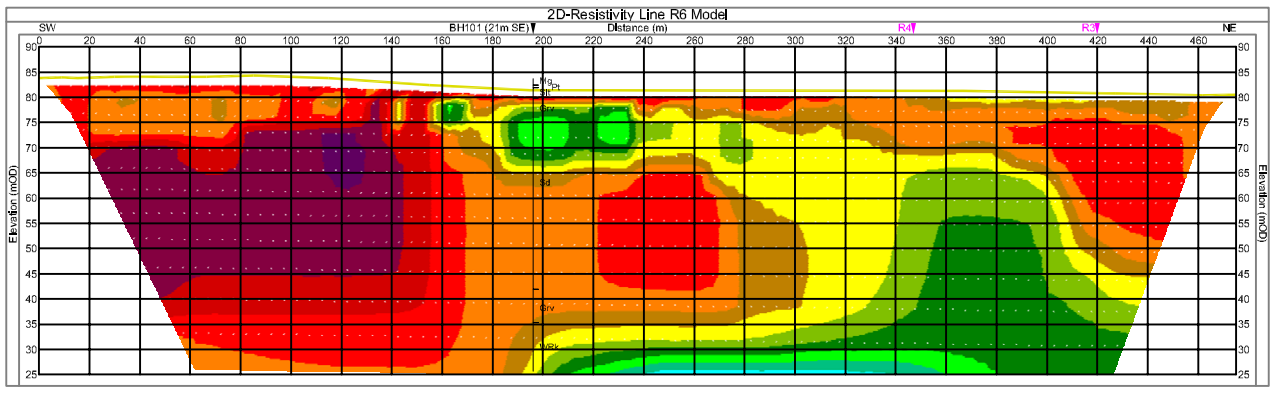
SCALE:	1:2500 @ A3
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695f_Drawings.dwg
STATUS:	Final

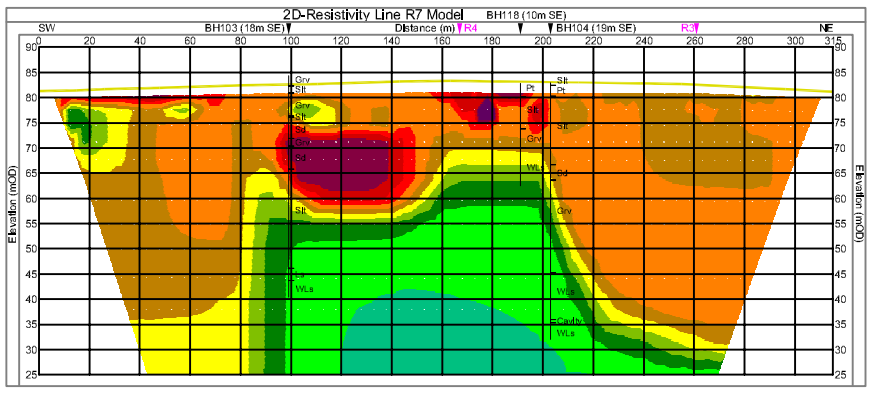
Interpretation:

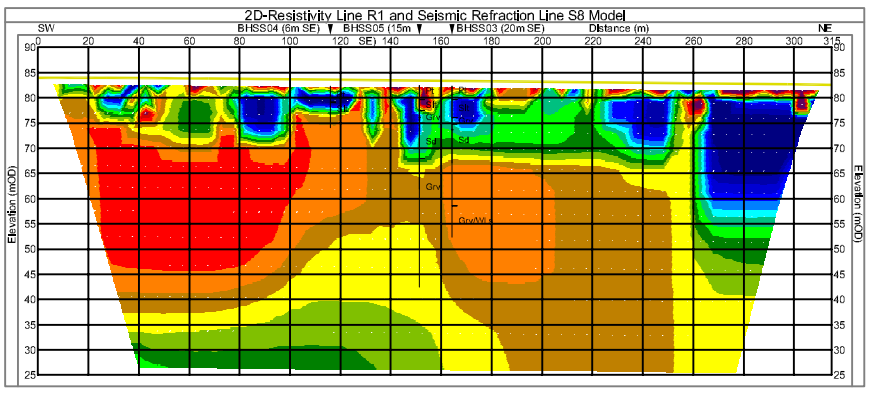
- Depth to Top of Fresh Limestone <13m
- Depth to Top of Fresh Limestone 13-58m
- Depth to Top of Fresh Limestone >58m

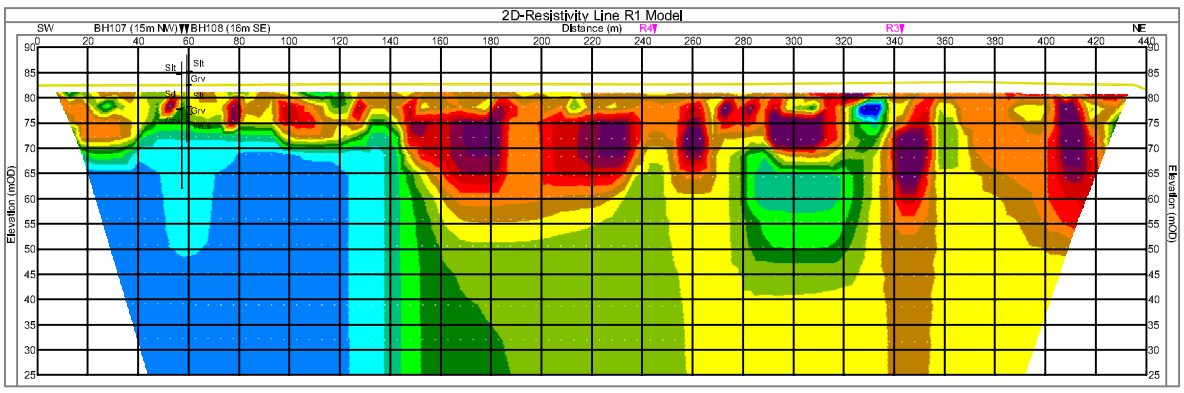
Direct Ground Investigation Locations:

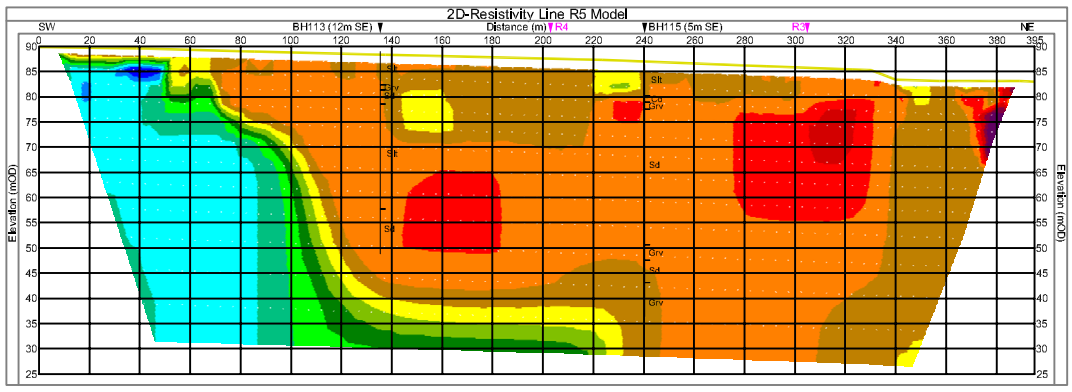
- BH101 Rotary Corehole

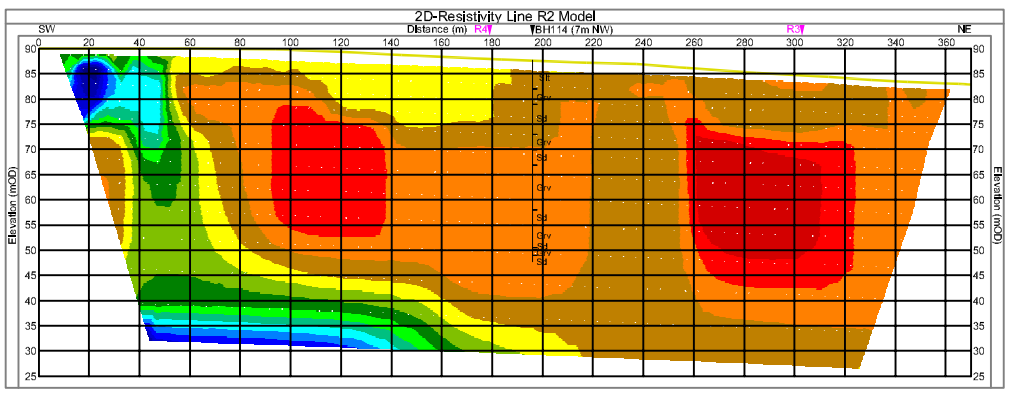












Abbreviated GI Logs:

BH101 Borehole Name and Location

Pt	Peat	Mg	Made Ground
Grv	Gravel	Co	Cobbles
Sd	Sand	Slt	Silt
Ob	Overburden	Ls	Limestone
WRk	Weathered Rock		
WLt	Weathered Limestone		

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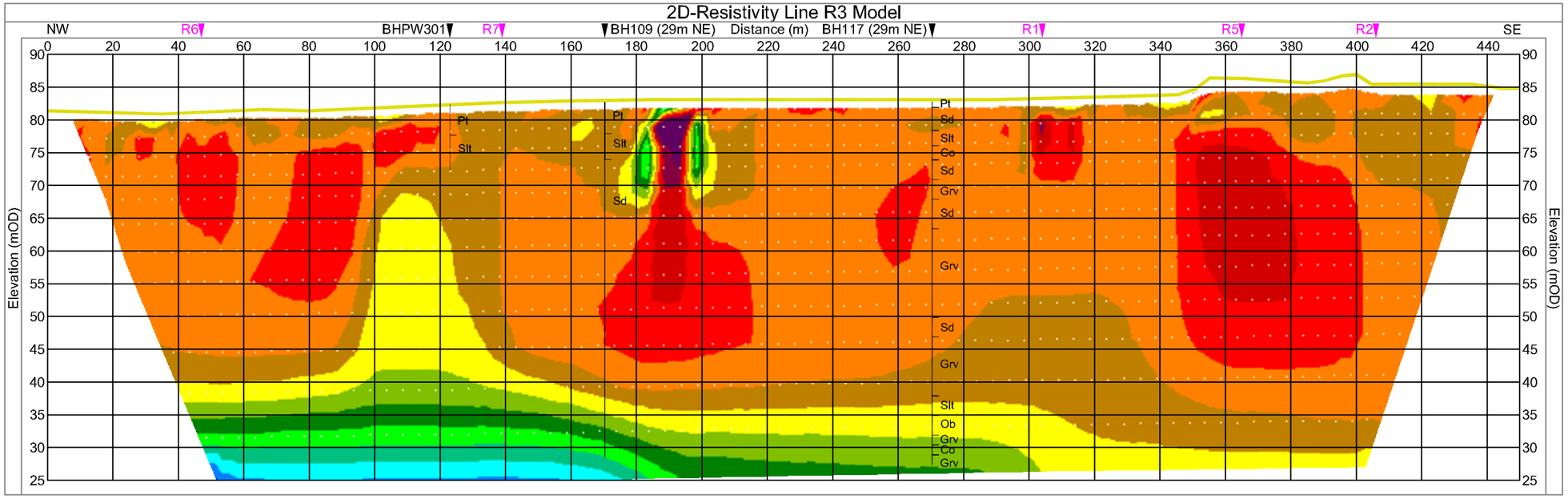
CLIENT	Irish Drilling Ltd.
PROJECT	Derrygreenagh Thermal Power Plant County Offaly Geophysical Survey
TITLE	Figure 1a: Models of Geophysical Survey

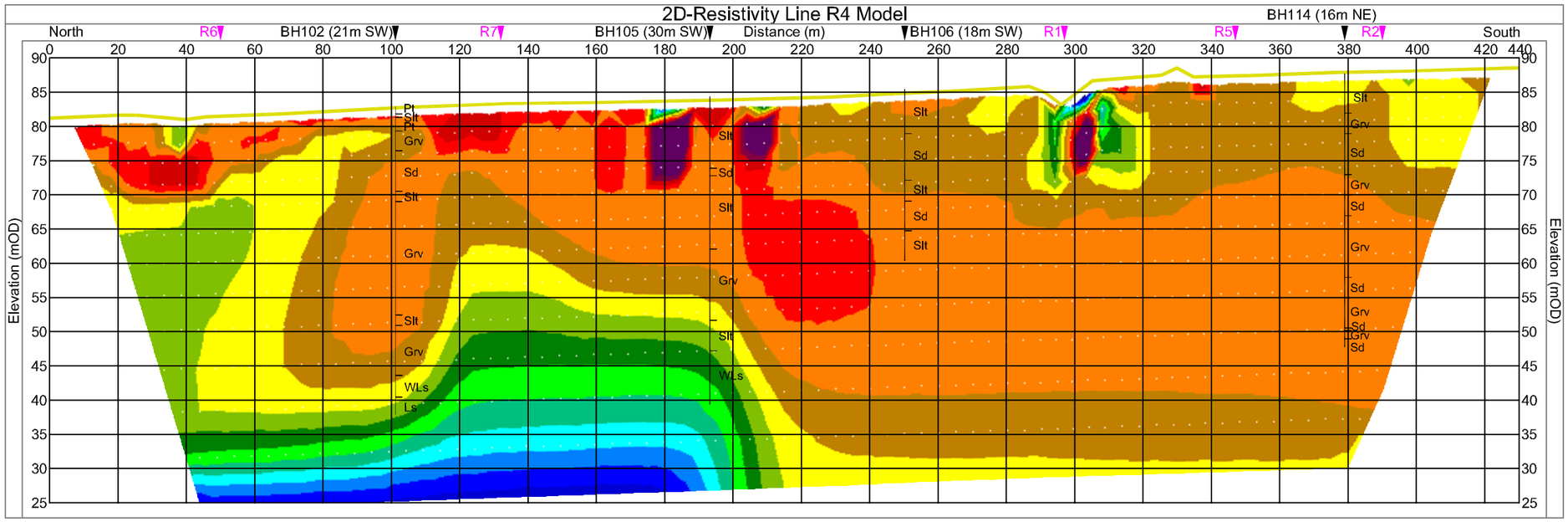
SCALE:	1:3000 @ A3, VE x 2
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695f_Drawings.dwg
STATUS:	Final

2D-Resistivity Model Values:

Resistivities (Ohmm)

31.2 62.5 125 250 500 1000 2000 4000





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CLIENT	Irish Drilling Ltd.
PROJECT	Derrygreenagh Thermal Power Plant County Offaly Geophysical Survey
TITLE	Figure 1b: Models of Geophysical Survey

SCALE:	1:1500 @ A3, VE x 2
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695f_Drawings.dwg
STATUS:	Final

2D-Resistivity Model Values:

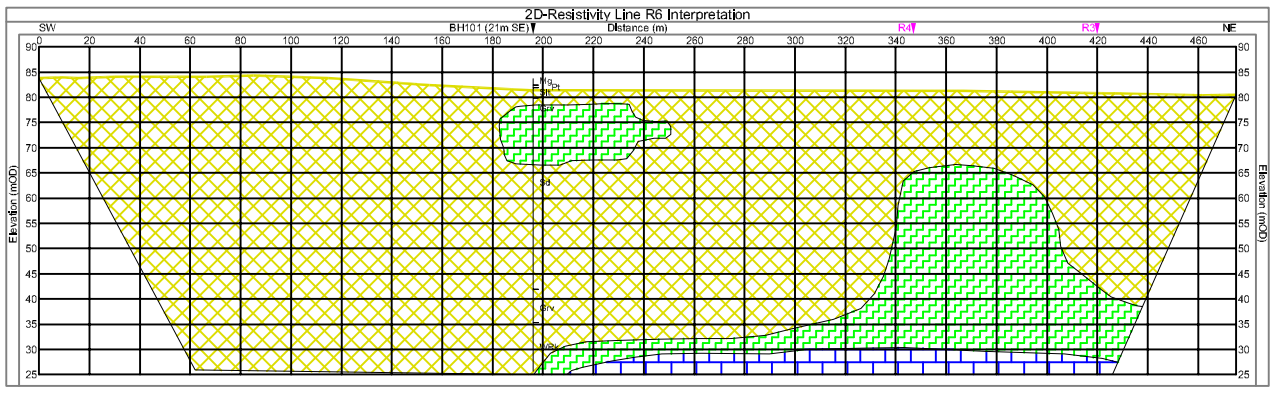
Resistivities (Ohmm)

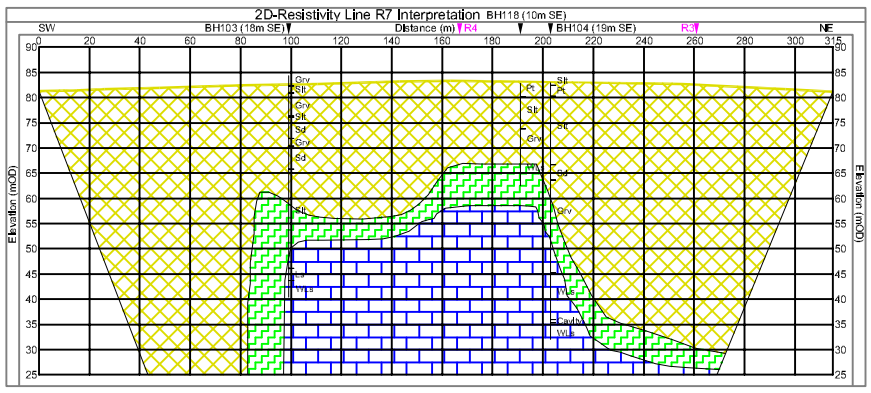
31.2 62.5 125 250 500 1000 2000 4000

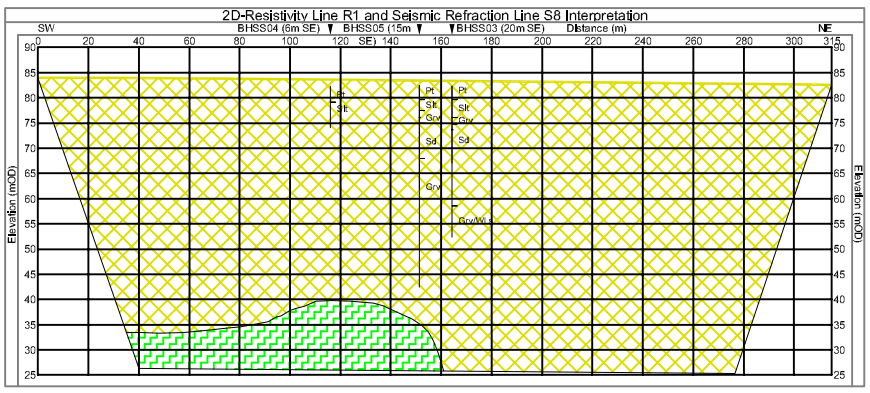
Abbreviated GI Logs:

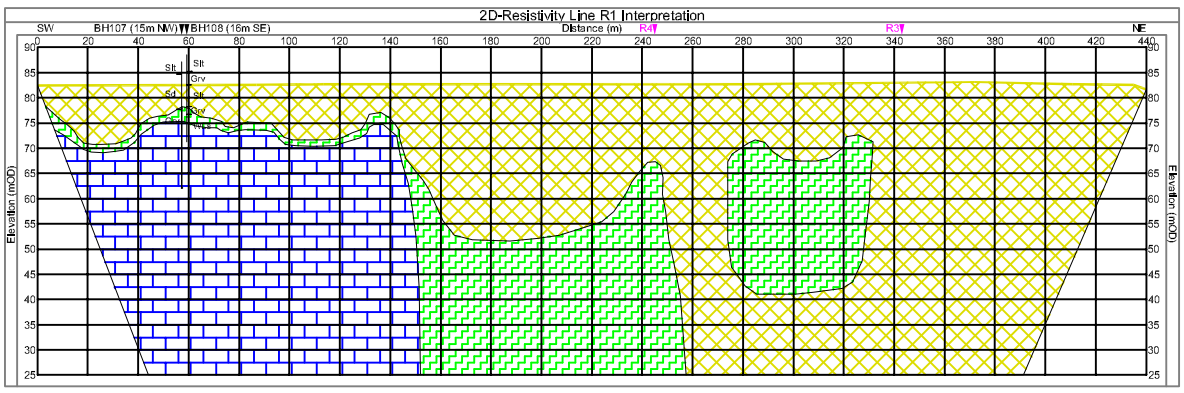
BH101 Borehole Name and Location

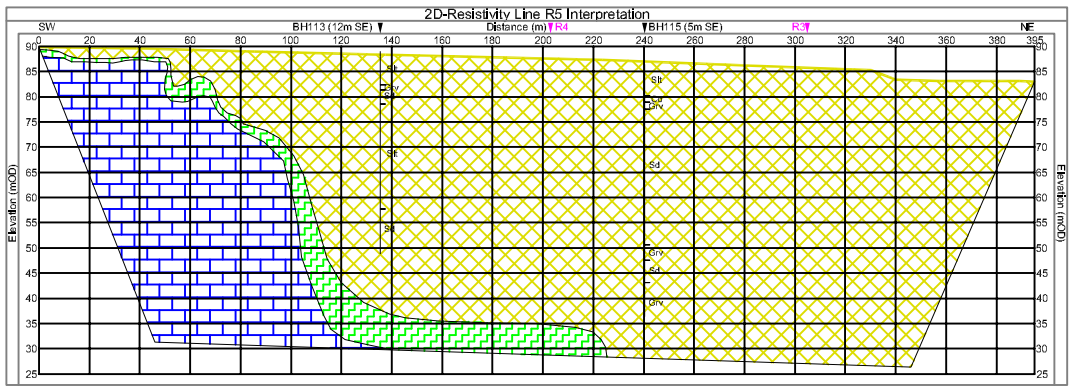
Pt	Peat	Mg	Made Ground
Grv	Gravel	Co	Cobbles
Sd	Sand	Slt	Silt
Ob	Overburden	Ls	Limestone
WRk	Weathered Rock		
WLt	Weathered Limestone		

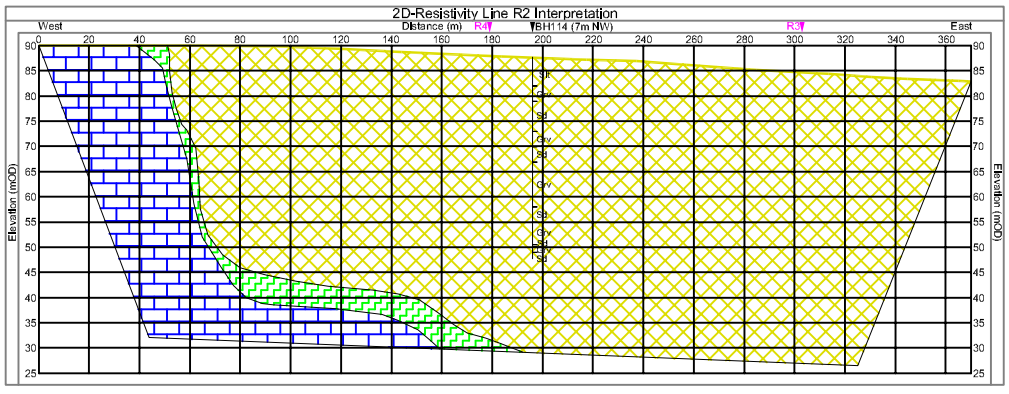












Abbreviated GI Logs:

BH101 Borehole Name and Location

Pt	Peat	Mg	Made Ground
Grv	Gravel	Co	Cobbles
Sd	Sand	Slt	Silt
Ob	Overburden	Ls	Limestone
WRk	Weathered Rock		
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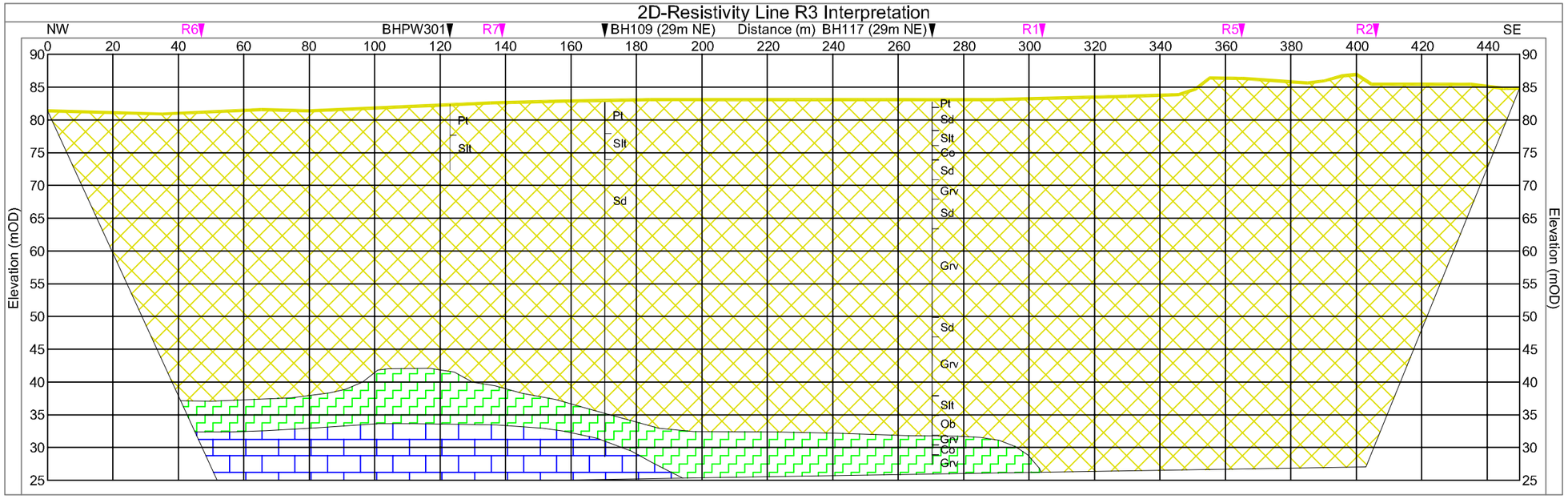
CLIENT	Irish Drilling Ltd.
PROJECT	Derrygreenagh Thermal Power Plant County Offaly Geophysical Survey
TITLE	Figure 2a: Interpretation of Geophysical Survey

SCALE:	1:3000 @ A3, VE x 2
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695f_Drawings.dwg
STATUS:	Final

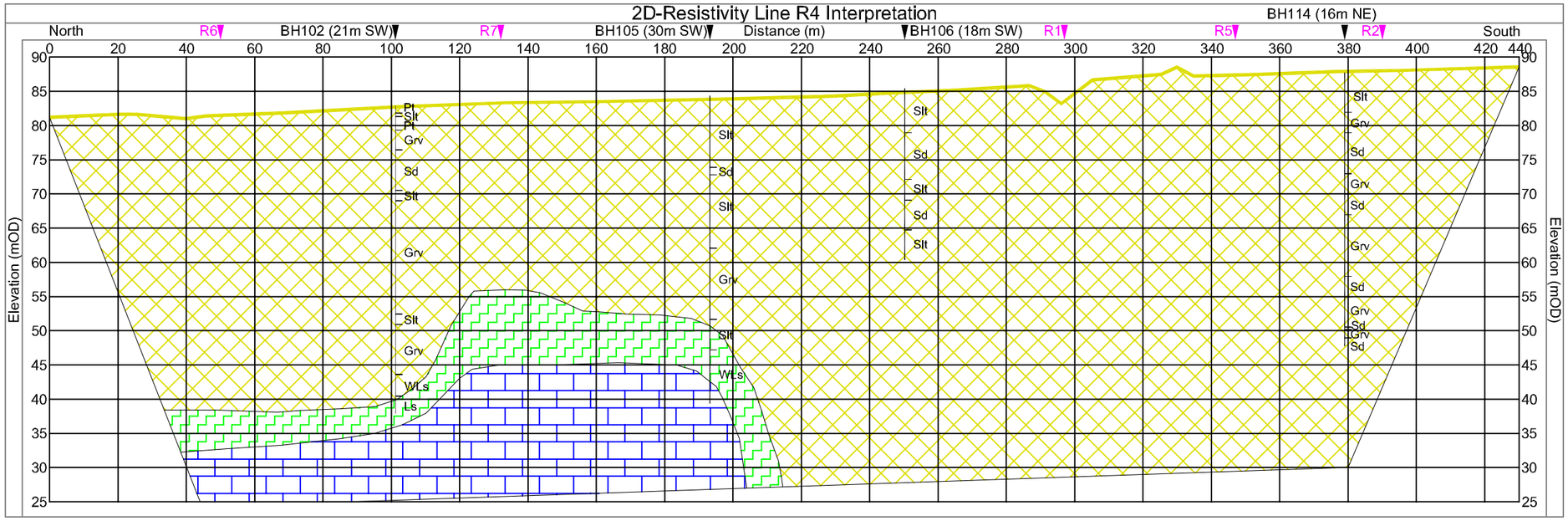
Interpretation:

1 Peat and sandy gravelly Clay and Silt
2 Clayey silty Sand and Gravel or weathered Limestone
3 Fresh Limestone

2D-Resistivity Line R3 Interpretation



2D-Resistivity Line R4 Interpretation



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CLIENT	Irish Drilling Ltd
PROJECT	Derrygreenagh Thermal Power Plant County Offaly Geophysical Survey
TITLE	Figure 2b: Interpretation of Geophysical Survey

SCALE:	1:1500 @ A3, VE x 2
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695f_Drawings.dwg
STATUS:	Final

Interpretation:

1 Peat and sandy gravelly Clay and Silt
2 Clayey silty Sand and Gravel or weathered Limestone
3 Fresh Limestone

Abbreviated GI Logs:

BH101 Borehole Name and Location

Pt	Peat	Mg	Made Ground
Grv	Gravel	Co	Cobbles
Sd	Sand	Slt	Silt
Ob	Overburden	Ls	Limestone
WRk	Weathered Rock		
WLt	Weathered Limestone		

Appendix 4B
Ground Electrical Resistivity Tests

Derrygreenagh Thermal Power Plant

Main Site, Co. Offaly

Ground Electrical Resistivity Testing

Report Status: Draft

MGX Project Number: 6695

MGX File Ref: 6695a-005.doc

31st October 2023

Confidential Report To:

Irish Drilling Ltd.
Old Galway Road
Pollroebuck
Loughrea
Co. Galway

Report submitted by:
Minerex Geophysics Limited

Unit F4, Maynooth Business Campus
Maynooth, Co. Kildare
Ireland
Tel.: 01-6510030
Email: info@mgx.ie

Issued by:

Hartmut Krahn (Senior Geophysicist)

Minerex
Geophysics Limited

Subsurface Geophysical Investigations

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1. INTRODUCTION 1

1.1 Background 1
1.2 Objectives 1
1.3 Site Description 1
1.4 Report 1

2. TESTING ON SITE 2

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2.2 Measurements 2
2.4 Site Work 3

3. RESULTS 4

4. REFERENCES 5

List of Tables, Maps and Figures:

Title	Pages	Document Reference
Table 1: Ground Resistivity Testing Results	2 x A4	6695a-Tab1.xls
Figure 1: Resistivity Testing using the Wenner Array	In Text	In Text

1. INTRODUCTION

1.1 Background

Minerex Geophysics Ltd. (MGX) conducted Vertical Electrical Sounding (VES) using the Wenner electrode configuration at 2 test locations at the main site for the proposed thermal power plant at Derrygreenagh, Co. Offaly. The tests are named VES1 and VES2.

The purpose of the survey was to provide information to be used in the design and construction phases of the project.

These tests are conducted in order to increase the knowledge of the resistivity of the soil and rock and to assist with the design and installation of earthing systems and underground cabling systems. Soil resistivity depends on a number of factors like soil type, mineral content, temperature, moisture, salt content and compaction.

The methodology specified here encompasses onsite in–situ measurements and the presentation of the results, but does not include the design of the earthing or cabling system.

1.2 Objectives

The main objective of the geophysical survey was:

- To determine the electrical resistivity at a range of depths for each test location

1.3 Site Description

The site is shown on Map 1, and the survey areas consists of the Derrygreenagh compound.

1.4 Report

This report includes tables of VES results. The indirect nature and the non-invasive survey methods must be taken into account when considering the results of this survey and Minerex Geophysics Limited, while using appropriate practice to execute the measurements and to present the data, give no guarantees in relation to the existing subsurface.

2. TESTING ON SITE

2.1 Methodology

The methodology consisted of using Vertical Electrical Sounding (VES) in the Wenner electrode configuration at a range of electrode spacing agreed with the client prior to the fieldwork. The increase in the electrode spacing leads to an increase in the depth.

VES - Vertical Electrical Sounding

Objective:	Determine the resistivity for ground, soil and rock
Purpose:	This test is generally done to deliver values for the design of an earthing or grounding system
Test Method:	Four probe array in Wenner electrode configuration with expanding electrode spacing
Spacings:	0.3, 0.5, 0.7, 1, 2, 3, 4, 5, 7, 10, 15, 20, 30, 40, 50, 60, 70, 80 and 100m
	(less if there is not enough physical space 'Boundary')
Instrument:	Tigre Resistivity Meter (high power)

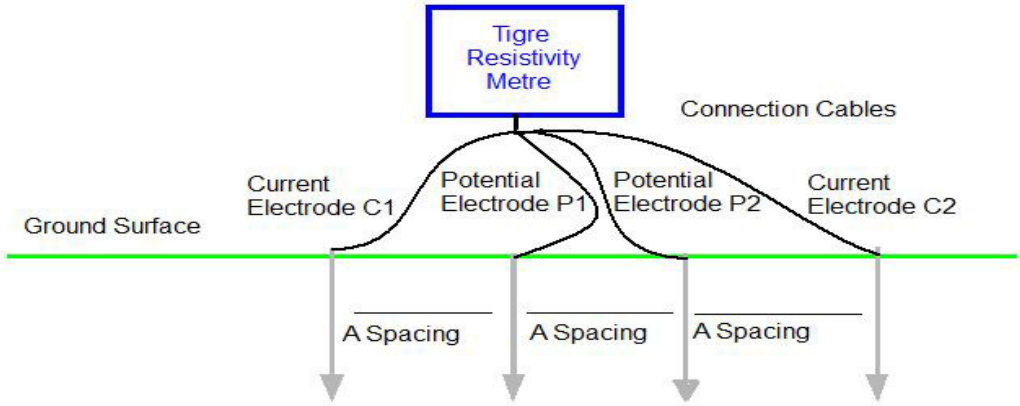
2.2 Measurements

Vertical Electrical Soundings were conducted at 9 locations across the site.

All measurements were acquired in accordance with Minerex Geophysics Ltd. procedures, protocols, QC procedures and in compliance with appropriate IEEE and British Standards. The relevant IEEE standards are 81-1983 part 1 – Guide to Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of Ground Systems (ANSI/IEEE Std 81-1983) for the resistivity testing (IEEE 1983).

The Vertical Electrical Sounding (VES) was conducted using a Tigre Resistivity Meter with variable current input, a suite of four cables and four stainless steel electrodes. This 'four probe array' is called a **Wenner Array** as the spacing (A) between the four electrodes was the same for each measurement. At each electrode spacing, the test resistance in Ohms (Ω) was recorded in a detailed field sheet for later office-based computing of ground resistivities.

Figure 1: Resistivity Testing using the Wenner Array.



2.3 Testing Equipment

All equipment used was portable and intrinsically safe. The method is non-destructive and non-intrusive. Only low voltage power requirements of 12V or less were needed on site and were supplied by batteries. The following equipment was used:

- An ALLIED Tigre Resistivity Meter
- A suite of cables with 4 reels and distance marks for resistivity readings
- Stainless Steel Electrodes
- Measuring tapes
- Handheld GPS

Equipment checks and QC procedures were applied prior to the commencement of data acquisition.

2.4 Site Work

The data acquisition was carried out on the 9th and 10th of August 2023 in good weather conditions. Health and safety standards were adhered to at all times.

3. RESULTS

The recorded test resistance in Ω allows for the calculation of the resistivity value in Ωm for each individual electrode spacing.

The resistivity at a given electrode spacing was calculated using the following formula:

$\rho = 2^{*}\pi * A * R$

Where:

ρ = Resistivity in Ωm

π = Pi = 3.141592

A = electrode spacing in m

R = Measured Resistance value in Ω

The survey results with electrode spacing, resistances and resistivities are displayed in Table 1. Where the physical space was too short for the long VES lines the reason is stated in Table 1.

The resistivity values recorded at given electrode spacing can be allocated to approximate depth values. For the Wenner array, the average resistivity taken at a particular A-spacing is equal to the average resistivity for a depth range between the ground surface and the A-spacing. Therefore, the average resistivity value recorded in the last column of Table 1 corresponds to the depth range between 0m bgl and the value in the first column. The depth mentioned in this report is given for visualisation purpose but may change when using the resistivity values in the design of the earthing system.

4. REFERENCES

1. **IEEE, 1983.** ANSI/IEEE Std. 83-1983. IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potential of a Ground System. The Institute of Electrical and Electronics Engineers Inc.

Table 1: Ground Resistivity Testing Results

Location/Name:	Direction:	ITM Coordinates East:	ITM Coordinates North:	Date:	Instrument:
VES 1	**SW-NE**	**649473**	**738411**	**09/10/2023**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ohm)	Apparent Resistivity (Ohm*m)
0.3	0.15	0.45	0.9	57.18	108
0.5	0.25	0.75	1.5	34.12	107
0.7	0.35	1.05	2.1	27.53	121
1	0.5	1.5	3	16.55	104
2	1	3	6	5.445	68
3	1.5	4.5	9	4.427	83
4	2	6	12	4.134	104
5	2.5	7.5	15	3.479	109
7	3.5	10.5	21	2.803	123
10	5	15	30	1.986	125
15	7.5	22.5	45	1.583	149
20	10	30	60	1.29	162
30	15	45	90	0.917	173
40	20	60	120	0.696	175
50	25	75	150	0.576	181
60	30	90	180	0.483	182
70	35	105	210	0.409	180
80	40	120	240	0.359	180
100	50	150	300	0.335	210

Table 1: Ground Resistivity Testing Results

Location/Name:	Direction:	ITM Coordinates East:	ITM Coordinates North:	Date:	Instrument:
VES 2	**S-N**	**649622**	**738391**	**09/10/2023**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ohm)	Apparent Resistivity (Ohm*m)
0.3	0.15	0.45	0.9	24.7	47
0.5	0.25	0.75	1.5	20.17	63
0.7	0.35	1.05	2.1	23.17	102
1	0.5	1.5	3	17.04	107
2	1	3	6	9.62	121
3	1.5	4.5	9	6.22	117
4	2	6	12	4.39	110
5	2.5	7.5	15	3.76	118
7	3.5	10.5	21	2.59	114
10	5	15	30	2	126
15	7.5	22.5	45	1.41	133
20	10	30	60	1.11	139
30	15	45	90	0.73	138
40	20	60	120	0.59	148
					Boundary

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CLIENT	Irish Drilling Ltd. Main Site
PROJECT	Derrygreenagh Thermal Power Plant Ground Electrical Resistivity Survey
TITLE	Map 1: VES Wenner Survey Location Map

SCALE:	1:1000 @ A3
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695a_Drawings.dwg
STATUS:	Final

Ground Electrical Resistivity Location:

VES1 — Location1 with Cable Layout and Center Point

Locations are in Irish Transverse Mercator (ITM)

Appendix 5
Acoustic Televiewer Survey

EUROPEAN GEOPHYSICAL SERVICES

REPORT ON THE

GEOPHYSICAL LOGGING

OF

TWO BOREHOLES

AT

DERRYGREENAGH POWER STATION

Prepared For:

IRISH DRILLING LIMITED

Old, Galway Rd, Pollroebuck, Loughrea, Co. Galway

June_2023/IDR2302_Derrygreenagh_Power_Station_rpt/IRE

	Name	Date
Logged by:	Nick Clark	14.06.2023 15.06.2023
Report by:	Dave Hingley	21.08.2023
Checked by:	Myles Kynaston	21.08.2023

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www.europeangeophysical.com

Registered in England & Wales No. 2962962 VAT No. GB648 4148 18

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1. INTRODUCTION 1

2. THE GEOPHYSICAL LOGGING METHODS 2

3. SITE DETAILS 5

4. PROCESSING AND PRESENTATION OF RESULTS 6

5. BOREHOLE LOGGING CONSTRAINTS 7

LIST OF FIGURES

Figure 2.1 Example Sonic Log showing variations in the formation returns through plastic lining

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Figure 3.1 Location map showing Derrygreenagh Power Station approximate location. © 2023 Microsoft

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Appendix 1 Geophysical Logs

1.0 INTRODUCTION

At the request of Irish Drilling Ltd, geophysical logging was carried out in BH103 and BH111A at Derrygreenagh Power Station, Co. Offaly.

The work was carried out by European Geophysical Services on the 14th and 15th June 2023.

The following logs were run:-

BH103

Tool / Log (unit)		Log Depths (m)*	
Full Wave Sonic	Formation Velocity (m/s)	9.5	38.9
P & S Logger	Formation Velocity (m/s)	9.5	38.9

BH111A

Tool / Log (unit)		Log Depths (m)*	
Full Wave Sonic	Formation Velocity (m/s)	9.0	14.0
P & S Logger	Formation Velocity (m/s)	9.0	14.0

2.0 THE GEOPHYSICAL LOGGING METHODS

The Equipment and Field Procedure

A fully digital logging system with a 600m capacity motorised winch mounted in a 4x4 van was used.

All logging data was recorded digitally for reprocessing and archiving purposes.

All logs were run from the bottom of the boreholes upward.

Full Wave Sonic (FWS) - unlined

This tool has been specially designed to provide a full wave form recording of sonic signals and uses fixed spaced transmitter – receivers.

The received signals are digitised at a fast sampling rate with high resolution. Data may be sampled at typically 5cm or 10cm intervals dependant upon resolution required.

Within the unlined section of the borehole the full wave form is recorded and analysed for the first arrival i.e. P Wave. The time of this arrival is corrected for tool stand off and inverted to produce the P Wave velocity of the formation.

The data is processed for P wave velocity (or transit time) and amplitude.
This tool can only be used in fluid filled unlined boreholes.

Estimates of S wave velocity ***may only be obtained under suitable conditions***. These waves are normally identified by higher amplitudes and phase changes after the P wave arrivals.

Shear wave arrivals occur after the P-wave. They are waves that have travelled across the borehole fluid to the rock as P-waves and have undergone P to S conversion. Shear waves which refract at the fluid/rock boundary at the S-wave critical angle travel through the rock at V_s and if modal conversion back to P wave occurs the waves can be received by the tool.

Results can be affected by the competency of the rock material, low velocity zones, irregular boundary conditions and complex interactions of non-direct P-waves and other fast waves. This last factor can be the main limiter on Shear wave identification in wireline logging.

2.0 THE GEOPHYSICAL LOGGING METHODS

Full-Wave Sonic (FWS) logging in plastic lined boreholes

The full-wave sonic tool comprises a sonic transmitter and receiver spaced at 1.0m. The tool can only be used in water filled boreholes.

The data is presented as a variable density log (VDL) which is a derivative of the full-wave form (wiggle trace) with a colour scale for the signal amplitude and the horizontal axis for time (TT). The time (TT) of the first P wave arrival can also be displayed and inverted to produce an apparent P Wave velocity.

Where formation arrivals are detected sonic coupling between the tool and the formation exists and therefore it is assumed that the plastic lining is 'flush' with the borehole wall.

This form of sonic logging also provides useful control data for aiding in the design of cross-hole surveys - positioning of geophones and the subsequent interpretation.

Sections of the sonic log which show no formation arrivals may be areas where there is either annular space between the formation and plastic lining, poorly bonded plastic casing or soft / unconsolidated formation of low sonic velocity below 1500ms^{-1} (the velocity of water).

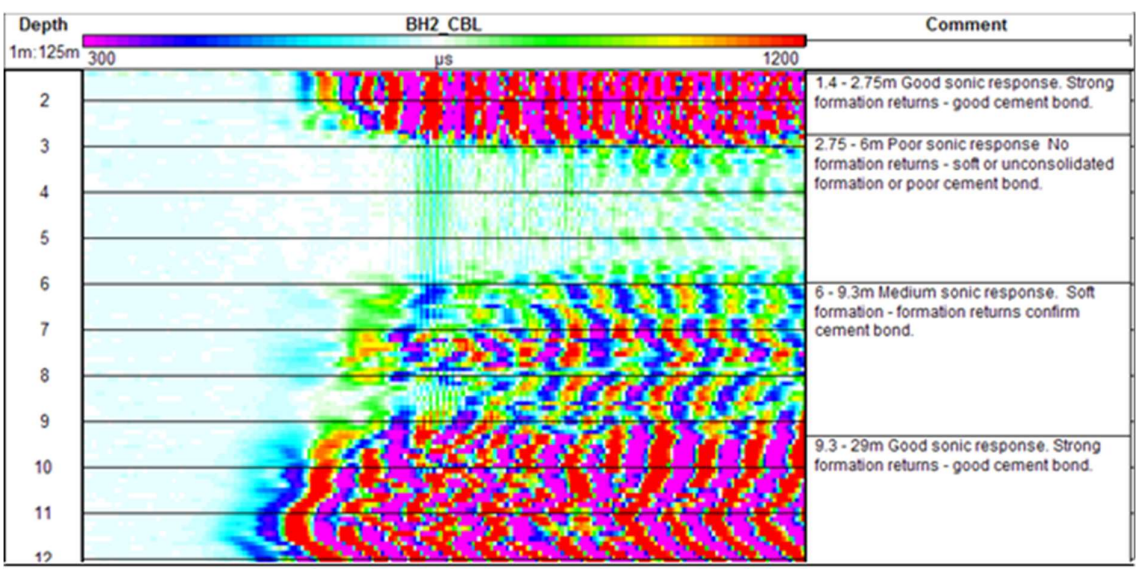

Figure 2.1 Example Sonic Log showing variations in the formation returns through plastic lining

2.0 THE GEOPHYSICAL LOGGING METHODS

P & S Wave (Vp & Vs)

This tool is suspended stationary in the borehole at depth positions of interest and allows simultaneous measurement of P wave (Vp) and S wave (Vs) velocities.

There two sets of receivers at a spacing of 2m and 3m from a transmitter. Each receiver contains two transducers, a piezo-electric device for the detection P waves, and a geophone for the detection of S waves. The time of the P and S wave first arrivals to the receivers are recorded. The distance between the receivers is 1m and the time taken is the difference between the arrival times to the two sets of receivers. As the distance travelled and the time taken is known the speed of the P and S waves can be calculated. By using the difference in arrival times between the two receivers any borehole effects are greatly reduced.

The transmitter operates as a dipole source producing energy in two directions, 180° out of phase. The transmitter pulses are directed perpendicular to the borehole wall. This type of source generates strong shear waves within the formation.

Results can be affected by the competency of the rock material, fractured zones, low velocity zones and irregular borehole diameters.

The P and S Suspension tool is 4.5m long. Readings cannot be taken closer than 2m to the water level and no deeper than 3m from the base. This tool can only be used in fluid filled boreholes**.** Efficacy in plastic lined boreholes relies on acoustic coupling between the plastic lining and the borehole wall.

3.0 SITE DETAILS

Derrygreenagh Power Station **Post Code: N91 YX30**

Figure 3.1 Location map showing Derrygreenagh Power Station approximate location. © 2023 Microsoft

4.0 PROCESSING AND PRESENTATION OF RESULTS

Software used:

- GeoVista Seismic Suite – Version 1.1.0.54
- WellCAD – Version 5.5

Processing The Full Wave Sonic Data

SG2 and LAS files were imported into WellCAD. The data was assessed for each receiver to ensure there was no missing and or noisy data. P-Wave velocities were then calculated by comparing the arrival times over the four receivers.

Processing The P & S Wave Data

A separate processing project was created to process each borehole. All the acquired P&S wave data was imported into the projects for each borehole. The data was then assessed for missing and or noisy data. Data that did not pass a quality check was then ignored in the project. The remaining data was used to create a stack from which the first arrival time of P and S waves could be obtained (a summary of which can be found in in the digital deliverables for each borehole). A Boxcar filter may have been applied to the stacked data to aid with interpretation. The filter would have been manipulated for each individual stacked trace to attain the best possible outcome. The time of the P and S wave first arrivals to the receivers were then picked. The distance between the receivers is 1m and the time taken is the difference between the arrival times to the two sets of receivers. As the distance travelled and the time taken is known the speed of the P and S waves was calculated.

The Geophysical logs have been produced at a vertical scale of 1:100 and included P and S wave data and constructional details.

All raw files, processing projects and velocity results in CSV format have been presented.

5.0 BOREHOLE LOGGING CONSTRAINTS

BH103 – Good data below 35m. BH conditions not adequate for full functionality of the P&S tool over complete BH interval. Where unstable formation was encountered during drilling, PVC lining was inserted to preserve borehole stability. However either the annular space between PVC and formation was too great to allow transfer of signal between tool and formation or soft / unconsolidated formation of low sonic velocity (below $1500ms^{-1}$) was encountered. No data collected above 10m due to lack of BH fluid.

BH111A – P Wave only data below 9m. BH conditions not adequate for full functionality of the P&S tool over complete BH interval; unstable formation encountered in borehole above 9m; steel casing left in hole to avoid BH collapse. Full Wave Sonic tool has no functionality in steel casing and in unsaturated BH. Unable to deploy P&S logger due to insufficient open/pvc lined BH.

Appendix 1

Geophysical Logs

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Client:	**Irish Drilling**	Log Type: ***Seismic***
Borehole:	**BH103**	

Location: **Derrygreenagh Power Station** Area: **Co. Offaly** Grid Ref: Elevation:

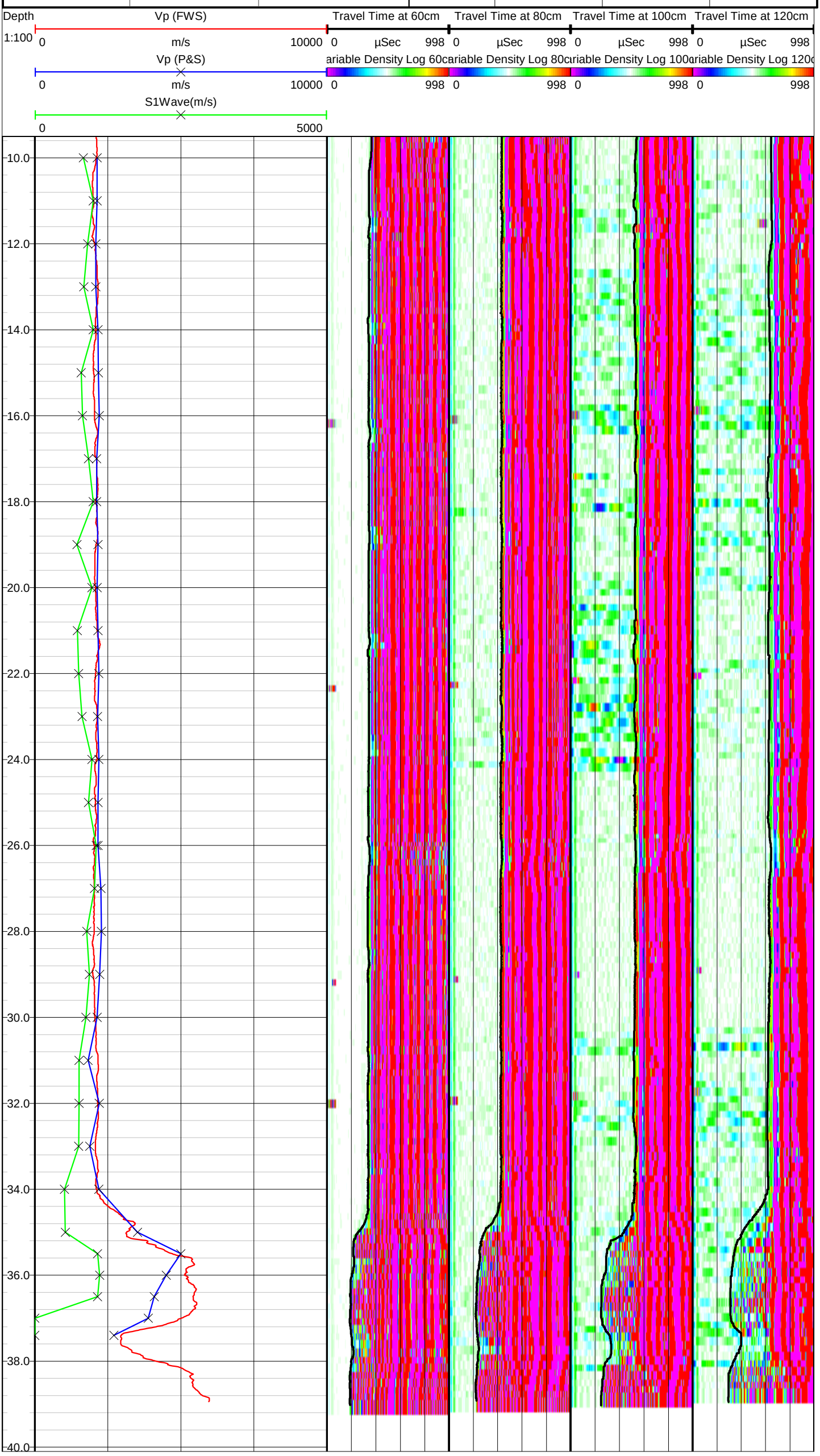
Drilled Depth: (m)	**40.0**	Date:	**13-14.06.23**
Logged Depth: (m)	**38.9**	Recorded By:	**N. Clark**
Logging Datum:	**Ground Level**	Remarks:	No P&S-wave formation velocity insde PVC lining
Logged Interval: (m)	**9.5 - 38.9**		
Fluid Level: (m)	**9.5**		

BOREHOLE RECORD

Bit: (mm)	From: (m)	To: (m)
Unknown	**35.0**	**40.0**

CASING RECORD

Type	Size: (mm)	From: (m)	To: (m)
PVC	**80**	**0.0**	**35.0**



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Client:	**Irish Drilling**	Log Type: ***Seismic***
Borehole:	**BH111A**	

Location: **Derrygreenagh Power Station** Area: **Co. Offaly** Grid Ref: Elevation:

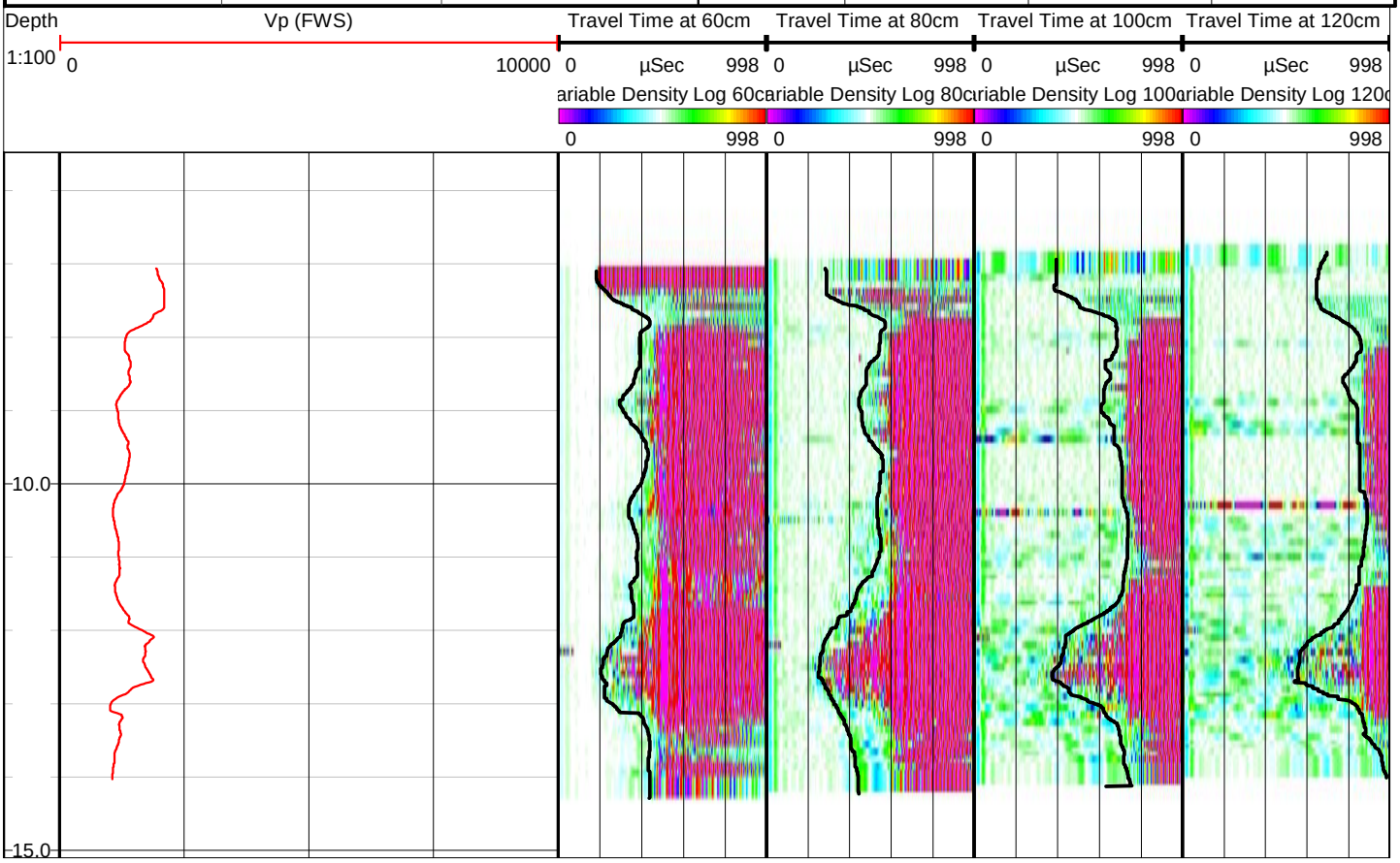
Drilled Depth: (m)	**15.6**	Date:	**15.06.23**
Logged Depth: (m)	**14.0**	Recorded By:	**N. Clark**
Logging Datum:	**Ground Level**	Remarks:	
Logged Interval: (m)	**7.0 - 14.0**		
Fluid Level: (m)	**Unknown**		

BOREHOLE RECORD

Bit: (mm)	From: (m)	To: (m)
Unknown	**8.6**	**15.6**

CASING RECORD

Type	Size: (mm)	From: (m)	To: (m)
Steel	**70**	**-0.9**	**8.6**



EUROPEAN GEOPHYSICAL SERVICES

REPORT ON THE

GEOPHYSICAL LOGGING

OF

PW01

AT

DERRYGREENAGH POWER STATION

Prepared For:

IRISH DRILLING LIMITED

Old, Galway Rd, Pollroebuck, Loughrea, Co. Galway

June_2023/IDR2304_Derrygreenagh_Power_Station_PW01_rpt/IRE

	Name	Date
Logged by:	N. Clark	14/06/23
Report by:	C. Clinton	22/06/23
Checked by:	D. Hingley	22/06/23

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Figure 3.1	Location map showing Derrygreenagh Power Station approximate location.
Figure 5.1	Composite Geophysical Log
Figure 5.2	Image log with associated comments

1.0 INTRODUCTION

At the request of Irish Drilling Ltd, an imager survey and geophysical logging were carried out in PW01 at Derrygreenagh Power Station.

The aim of the survey was to check the physical condition of the borehole, its construction, and some associated hydrogeological parameters.

The work was carried out by European Geophysical Services Ltd on 14th June 2023

Tool / Log (unit)		Log Depths (m)	
Optical Imager	Optical Image	1.2	65.8
Static Fluid Temperature / Conductivity	T (°C) / EC25 (µS/cm)	7.2	65.2
Static Impellor Flowmeter	Fluid Velocity (mm/s)	7.3	64.6
Natural Gamma	Gam (API)	0.0	65.2
3 Arm Caliper	3AC (mm)	1.6	66.2

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2.0 THE GEOPHYSICAL LOGGING METHODS

The Equipment and Field Procedure

A fully digital logging system with a 600m capacity motorised winch mounted in a 4x4 van was used.

All logging data was recorded digitally for reprocessing and archiving purposes.

Optical Borehole Imager (OBI)

A precision-machined prism and CCD camera assembly permits a high-definition video image of the borehole wall to be captured in a variety of horizontal and vertical resolutions. The resulting image is digitised in the sonde for transmission to the surface acquisition system.

The image is then orientated to Magnetic North and displayed as an unwrapped image log. This enables a detailed structural interpretation to be made if required.

For the best results the optical imager should be run above the water level or in clean, clear fluid. The logging tool is centralised during data acquisition by two sets of bow springs. The bow springs are adjusted to a variety of borehole diameters prior to acquisition. The image is recorded on the way down the borehole to limit disturbance to the clarity of the water in the borehole by the logging tool.

Images and associated data are viewed in real time during the data acquisition.

The orientation system employs a flux gate magnetometer and therefore data within approximately one metre of magnetic steel casing is un-orientated.

Fluid Temperature (T)

There is a natural geothermal gradient of increasing temperature with depth. This gradient varies with the thermal conductivity of the geological formation and is modified by water flowing in, out or vertically though the borehole.

This log is used to determine flow patterns within the borehole and to identify flow zones.

Differential logs are produced over a one metre spacing, these are an interpretative aid to detect gradient changes.

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2.0 THE GEOPHYSICAL LOGGING METHODS

Fluid Conductivity (EC or EC25)

The electrical conductivity (EC) of the water is related to its salinity and dissolved solids and is therefore a measure of the quality of the borehole water. The shape of the log trace can indicate zones of inflow.

Using data from the temperature log the electrical conductivity is corrected to 25°C (EC25).

This log is used to identify different zones of water quality.

Differential logs are produced over a one metre spacing, these are an interpretative aid to detect gradient changes.

Impeller Flowmeter (FV)

This log is used to determine any flow pattern within the borehole and identify flow zones. The tool uses an impeller and is normally run at a constant logging speed against the anticipated flow for the best response. The data is corrected for logging speed and a fluid velocity (FV) log is produced.

Caliper (Cal)

This tool measures the mean diameter of the borehole. It is used to check the integrity of the borehole lining, and where the borehole is unlined to identify zones of washout, breakout or fissures.

Natural Gamma (Gam)

The tool measures the naturally occurring gamma radiation found in rocks and sediments. It is mainly used to detect the clays that contain potassium K^{40}, though the U^{238} and the Th^{232} series of elements present in certain rocks also emit gamma radiation.

The higher the concentration of these clay minerals the greater the responses on the natural gamma log.

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3.0 BOREHOLE DETAILS

Derrygreenagh Power Station – PW01 **Post Code: N91 YX30**

Figure 3.1 Location map showing Derrygreenagh Power Station approximate location. © 2023 Microsoft

PW01		
Date Logged:	14.06.23	
Datum:	Ground Level	
Current Logged Depth:	65.8	
	Internal Diameters (mm)	*Depths (m)*
Plain Steel Lining*:	300	-0.3 - 28.0
Plain Steel Lining*:	250	-0.3 - 41.0
Plain PVC Lining:	200	-0.3 - 32.2
Slotted PVC Lining:	200	32.2 - 65.8
Water Level:	7.3m	*Rest water level*
Logged By:	N. Clark	

*Information provided by client

Figure 3.5 Table of the borehole construction from data obtained during the survey.

4.0 BOREHOLE LOGGING CONSTRAINTS

- **Vehicle access constraints**

  None

- **Tool access constraints**

  None

- **Borehole quality constraints**

  None

- **Sonde risk**

  None

- **Lack of fluid filled column**

  None

- **Time constraints**

  None

- **Construction constraints**

  None.

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5.0 RESULTS

5.1 Presentation of Results

A composite geophysical log has been presented in Figure 5.1 and an Image log with associated comments is presented in Figure 5.2.

5.2 Discussion

The bore hole had several linings from surface, a summary of which can be found in Figure 3.5. The PVC lining was imaged and looked to be in good condition. There were two sections of PVC lining; a plane section from -0.3 - 32.2m (200mm i.d.), and a slotted section from 32.2 – 65.8m (200mm i.d.). The caliper log did not highlight any areas of damaged lining, or separated joins, reading a consistent measurement throughout.

All joins in the PVC linings were in good condition with no signs of wear. For the most part, the slots in the lower section of PVC lining appeared to have some fine sediment accumulation causing narrowing or blockage. In addition, between 36.0m and 40.5m there was a growth on lining that blocked the slots, this was most severe around 39.0m. The PVC was stained below 40.0m with an orange appearance.

The final surveyable depth was 65.8m where a soft sediment was resting at the base.

The borehole was considered vertical in the plain PVC section with maximum tilt of 1°. In the Slotted PVC lining the tilt Slowly increased to a maximum of 3.4° near the base.

Natural gamma values were low in the upper section of the borehole before a slight increase below 27.0m and again at 40.0m. These steps were coincident with the borehole construction information and are most likely related to the attenuation effects of the steel lining. Below 41.0m increases in natural gamma indicated an increase in the clay content of the formation; likely indicating variations in the formation (i.e. Marl bands).

Water quality in terms of electrical conductivity was of the range 410 - 783µS/cm at 25°C remaining near constant at the higher end of those values in the slotted PVC lining.

Under static conditions, the fluid temperature log indicated that vertical fluid movement was present due to the lack of geothermal gradient in the profile of the log. However, any flow was considered to be below the threshold of the flowmeter at 10mm/s, and so flow direction was unable to be ascertained.

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Client:	**Irish Drilling**	Log Type: ***Composite***
Borehole:	**PW01**	

Figure 5.1

Location: **Derrygreenagh** Area: **Ireland** Grid Ref: Elevation:

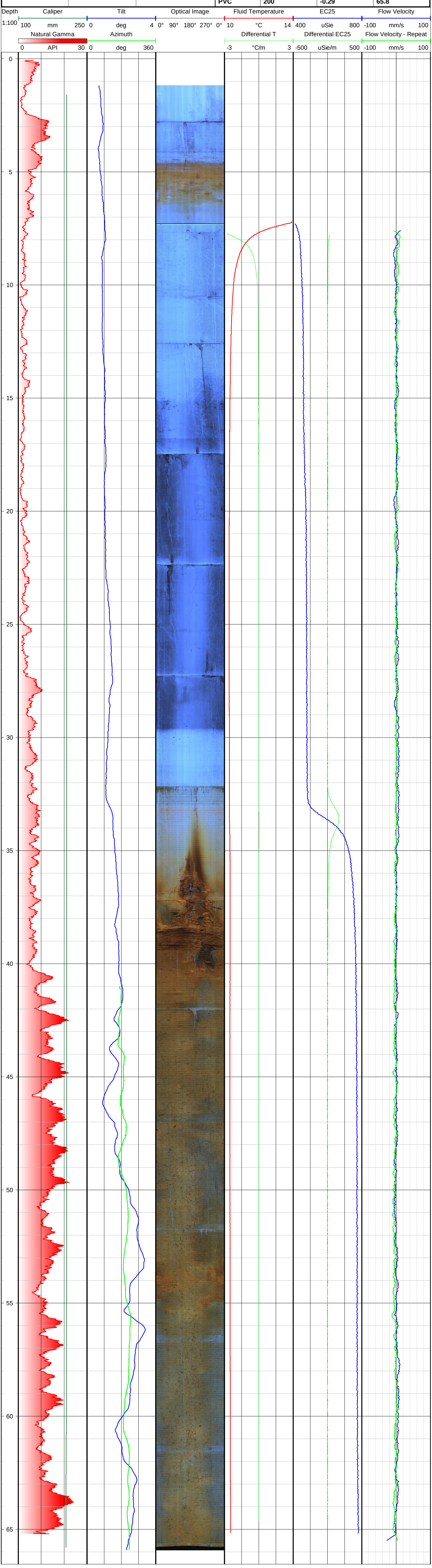
Drilled Depth: (m)	**65.8**	Date:	**14-06-2023**
Logged Depth: (m)	**65.8**	Recorded By:	**N. Clark**
Logging Datum:	**Ground Level**	Remarks:	Slotted lining below 32.2m. Soft sediment below 65.8m. Azimuth and Tilt provided by Imager tool Azimuth data only below 41.0m due to steel lining
Logged Interval: (m)	**0.1 - 66.2**		
Fluid Level: (m)	**7.3**		

BOREHOLE RECORD

Bit: (mm)	From: (m)	To: (m)
240	**41.0**	**66.3**

CASING RECORD

Type	Size: (mm)	From: (m)	To: (m)
STEEL	**300**	**-0.29**	**28.0**
STEEL	**250**	**-0.29**	**41.0**
PVC	**200**	**-0.29**	**65.8**



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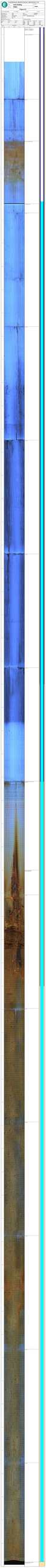
Core Photo

Figure 5.17

Project Number:	1	Date:	2/2/2011
Client:	Shell	Operator:	Shell
Well Name:	Ceres	Depth:	1
Field:	Ceres	Core Number:	1
Interval:	1	Recovery:	100%
Core Photo Number:	1	Photo Date:	2/2/2011
Photo Time:	1	Photo Operator:	Shell
Photo Type:	Core Photo	Photo Direction:	Vertical
Photo Orientation:	Core Photo	Photo Quality:	Good
Photo Comments:	Core Photo		



6.0 CONCLUSIONS

6.1 The final surveyable depth of the borehole was recorded at 65.8m.

6.2 There were two sections of PVC lining; a plane section from -0.3 - 32.2m (200mm i.d.), and a slotted section from 32.2 – 65.8m (200mm i.d.).

6.3 All joins in the PVC linings were in good condition with no signs of wear.

6.4 Between 36.0m and 40.5m there was a growth on lining, which was most severe around 39.0m.

6.5 The slots in the lower section of PVC lining appeared to be unblocked, however it is possible that a fine sediment was obstructing them.

6.6 The borehole was considered vertical in the plain PVC section with maximum tilt of 1°. In the Slotted PVC lining the tilt Slowly increased to a maximum of 3.4° near the base

6.7 Natural gamma values were low in the upper section of the borehole before a slight increase below 27.0m and again at 40.0m; likely related to borehole construction.

6.8 Water quality in terms of electrical conductivity was of the range 410 - 783µS/cm at 25°C.

6.9 Although no flow was detected by the flow meter, the fluid temperature log indicated that vertical fluid movement was present.

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Appendix 6
GPR Survey

GPR-Utility Surveys | Chartered Geophysicists

SURVEY REPORT

GPR-UTILITY SURVEY

At

Bord Na Mona Facility

Derrygreenagh, Co.Offaly

for

Irish Drilling Ltd.

July 2023

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Author	Checked	Report Version	Date
Ronan Gaffney, BSc Surv	Declan Timlin, BSc Surv	1.0	July 18th, 2023

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1 Executive Summary

- Scantech Geoscience was requested by Irish Drilling Ltd. to carry out a GPR-Utility survey at a Bord Na Mona facility at Derrygreenagh, Co. Offaly.

- The objective of the survey was to map the location of underground services within the survey areas.

- The GPR-Utility survey results have been presented in the final AutoCAD drawing file associated with this report.

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2 Survey Acquisition

2.1 Objectives

The objective of the survey was to map the location of underground services at Bord Na Mona facility at Derrygreenagh, Co. Offaly.

2.2 Survey Area, Site Conditions and Survey Comments

Figure 1. The survey area.

Survey Conditions/Comments:

The survey area mainly consisted of asphalt roads, concrete hard standing, paths and grassed areas. Most areas were generally accessible. Some areas had some traffic.

Water: Scantech have identified water from manhole/hydrant/SV information together with GPR data. Water record location has also been shown where GPR was unable to locate possible location of water service according to the record information. Small feeds off main lines to buildings have not been located.

Gas: Gas was not identified on site.

Telecoms: A consistent signal was picked up while carrying out a power and radio sweep to the west of the site and we believe this to be a Telecom feed to the facility.

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Other Telecoms: No other Telecoms information was collected.

Power: Scantech have identified Power from manhole/Mini Pillar and Substation information together with GPR data. Opened accessible manholes were logged, clamped and traced. A power sweep was carried out across the site to locate power lines. Where a record power line could not be verified on site using EML or GPR, the possible location of the power has been shown as per the record drawing.

Foul/Storm: Scantech have identified Drainage from manhole information together with GPR data. Opened accessible manholes were logged and photographed. Where possible, they were linked through sound-link and traced with sondes.

Traffic: No Traffic information was collected.

Fibre Optic: No Fibre Optic information was collected.

General: Scantech have also shown some Unknown Services which were picked up using the GPR equipment. The Unknown Services are represented on the drawing with an Orange coloured line.

2.3 Survey Crew

The fieldwork crew was as follows:

Name	Role	
Brice Le Comte	Lead Surveyor	Manhole Surveys & GPR Acquisition
Pat Judge	Surveyor	Manhole Surveys & EML
Ellen Lavelle	Surveyor	Manhole Surveys & GPR Acquisition
Andrew Whyte	Surveyor	Manhole Surveys & GPS Surveying

2.4 Survey Type, Methodology and Limitations

The main survey areas were carried out to a Category B survey (PAS 128:2014 Specification for underground Utility detection, verification and Location, BSI 2014)

Survey was carried out in April 2023.

2.4.1 Existing Data Review

Scantech requested existing services information from Utility providers.

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2.4.2 EM Location Survey

Electromagnetic location (EML) surveying was carried out using Radiodetection RD8100 EM passive and active radio frequency transmitters and receivers. This method is used to detect metallic/conducting utilities e.g., power, telecoms, metallic services.

The absence of CAT signal response is not conclusive proof of the absence of cables in the ground.

2.4.3 Manhole Survey

Visible manholes and access chambers on-site were inspected and surveyed. This involved opening each lid where possible and recording all relevant information; utility type, size, material, direction, invert levels etc. Manholes were not entered.

2.4.4 GPR Geophysical Survey

Ground Penetrating Radar is a geophysical technique used by geophysicists to image the subsurface. A high frequency electromagnetic pulse is transmitted into the ground. The pulse is reflected at the boundaries between materials of different dielectric permittivity and the receiver records the returned energy. Combining the impulse response traces along a profile allows the geophysicist to build up a 2D or 3D geophysical image of the subsurface (radargram). Careful data analysis and interpretation is required for GPR application.

The survey was carried out using Mala Ground Explorer ground penetrating radar (GPR) antenna system with central frequency of 450MHz.

GPR profiles were recorded in the survey area. Profiles were acquired in orthogonal directions within the survey area. All GPR data was recorded and saved for off-site post processing. GPR recording times ranging from 0 to 90 nanoseconds were used.

GPR is effective in resolving sub surface utilities, but its effectiveness is reduced by the presence of highly conductive materials e.g. wet clay/soil, reinforced concrete. Clay or plastic material pipes in wet or clay rich soil are unlikely to be identified. Pipes of diameter less than 100mm are difficult to identify. The absence of features on the recorded GPR data is not conclusive proof of the absence of these features as they may lie outside the range or resolution of the GPR signal lie between GPR profiles or masked by shallower services or poor ground conditions. We therefore cannot accept liability for damage caused to utilities not identified by GPR survey.

2.4.5 Site Mark-up

Utilities were marked on the ground to indicate the utility location based on the detected signal return in the field. The survey area was marked using non-permanent spray paint and chalk.

2.5 Base Map and Survey Location Mapping

A base AutoCAD topographical map was not provided.

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The survey equipment used was a GQM8 RTK GPS receiver with K8 Field Controller. This equipment was also used to survey all utility ground marks and GPR profiles.

3 Data processing

3.1 Off-Site GPR Analysis

All GPR data was processed and interpreted in the office. Off-site GPR analysis, also referred to as post-processing, involves applying a range of mathematical filters to the data to improve the signal to noise ratio which facilitates effective interpretation. It also involves velocity analysis for depth conversions, see 3.3 below. The quality of the data processing and interpretation is directly dependent on the qualification of the personnel involved and their experience.

3.2 GPR Data Processing

Data processing included the following steps;

a.) DC adjustment
b.) Time-zero adjustment
c.) 2D spatial filtering
d.) Amplitude correction
e.) Predictive deconvolution
f.) Bandpass filtering
g.) Background removal
h.) F-K Migration

The GPR profiles were then processed using time varying gain functions to improve the target signal to noise ratio. This process aids interpretation of the enhanced GPR signatures.

3.3 GPR Depth Calibration

The speed of a radar wave through the subsurface will vary depending on the type of material it travels through. Velocities can be highly variable and depend strongly on the clay and water content of the subsurface.

In order to determine the depth to a GPR anomaly, the recorded two way travel times must be converted to depth using an accurate estimate of the average subsurface velocity.

The velocity ranges for the survey were determined using a combination of direct calibration (from manholes) and hyperbolic curve fitting algorithms applied to radargrams with reflection signatures which indicated different ground conditions.

A direct velocity calibration was carried out on site. All GPR profiles acquired during the survey was converted from travel time to depth using velocities ranging between 90 cm/ns and 100 cm/ns.

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To convert the measured two way time to depth, the following formula is used:

Depth [m] = Velocity [cm/ns] * Two-Way-Time [ns] * 0.005

The depth values presented should be checked and revised once additional trial pit or other excavation information within the enclosed site becomes available. The effective depth of penetration varied across the site and ranged from 0.2 m to 2.2 m bgl.

4 Data interpretation

4.1 GPR Data Interpretation

Interpretation of GPR data involves the identification and characterisation of anomalies with respect to amplitude, frequency, phase, position, depth, geometry and coherency. Anomalies with similar attributes are interpolated across profiles. These linear features can then be constrained by manhole information or other ground truthing.

GPR anomalies consistent with known services were identified in the specific Utility layer.

GPR anomalies consistent with unknown possible services were identified and these have been shown on survey drawing in orange as ‘unknown services’.

Some isolated GPR anomalies were identified and these have been shown as drawing as Unknown GPR anomolies.

4.2 Data Merge/Quality Control

Information from all sources (GPR, EML, Manholes) were correlated and merged onto the final drawing.

4.3 Metadata and Drawing File Nomenclature

The final survey drawings are called SCT-23123_Derrygreenagh-01_01 to SCT-23123_Derrygreenagh-01_09 and contain layers as listed below.

Utility Type	Line Colour
Foul Sewer	Green
Cable TV	Purple
Telecom - Eircom	Magenta
Water	Blue
Power	Red
Unknown Service	Orange
Fibre Optic	Blue/Green

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Alternate Telecom	Pink
Combined Sewer	Brown
Storm Sewer	Cyan
Gas	Yellow

Notes:

- Unknowns are linear GPR anomalies identified across some GPR profiles but of unknown source.
- R denotes sections of services that have been taken from record.
- UTT denotes services that we have been “Unable to Trace” usually due to blockages or poor signal quality.
- UTO denotes services lids that we have been “Unable to Open”.

5 Conclusions & Recommendations

A GPR-Utility survey was carried out at a Bord Na Mona facility at Derrygreenagh, Co. Offaly. The objective of the survey was to map the location of underground services within the survey area. The survey has achieved this principle objective as shown on the survey drawings together with this associated survey report. Scantech reserves the right to revise the interpretation if additional relevant information is provided.

Respectfully submitted,

Ronan Gaffney, BSc. Surv.

_____

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Appendix 7
CPT Test Records

IN SITU
SITE INVESTIGATION

STATIC CONE PENETRATION TEST

FACTUAL REPORT

CLIENT: Irish Drilling Limited

PROJECT: Derrygreenagh Power

Project	**Derrygreenagh Power**
Project No.	**1230267**
Client	**Irish Drilling Limited**

Attention: Mr Ronan Killeen

Dear Mr Killeen,

We have pleasure in providing a digital copy of our report and data in AGS format for the above project.

We hope that you are satisfied with the performance of our staff, equipment and reporting on this project. If you should have any queries about any aspect of the works carried out, please do not hesitate to contact us. We look forward to being of service to you in the future.

Yours faithfully,

In Situ Site Investigation Limited

Darren Ward

Director

Report Issue

Issue	Date	Prepared	Sign	Checked	Sign	Approved	Sign
01	03/07/2023	Chloe Donovan		Darren Ward		Darren Ward	

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1.0 INTRODUCTION

In Situ Site Investigation Limited (In Situ) was engaged in a geotechnical site investigation at Derrygreenagh Power at the request of Irish Drilling Ltd. The site investigation consisted of completing 18 Static Piezocone Penetration Tests (CPTU), to provide information on the soil conditions and derived geotechnical parameters at:

Derrygreenagh Power
County Offaly

All test locations were provided by the client. A site map is included in the end of Appendix A of this report (if provided by the client). The tests were stopped when they reached the target depth as per the client's technical specifications or for other technical reasons, as detailed in the *Project Summary Table* in *Appendix A.1* and on each CPTU log included in Appendix B of this report.

The fieldwork was carried out from 20th June 2023 to 21st June 2023 as per the client's request.

The work on site and the final factual reporting have been undertaken in accordance with the international technical standard *ISO 22476-1:2022(E)*.

2.0 FIELDWORK

2.1 CONE PENETRATION TESTS

The fieldwork activity is summarised in Table 2.1.

Table 2.1 Fieldwork Summary	
CPT Operator/s	Roger Shepherd
Date Started	20th June 2023
Date Finished	21st June 2023
In Situ S.I. Project Manager	Darren Ward
Main Contractor's Site Manager	Maurice Murray

2.1.1 Rig Information

Details of CPTU rig used in this project are shown in Table 2.2. Full data sheet for the rig is presented in *Appendix A.2*.

Table 2.2 Rig Summary	
Rig Name	**Rig Description**
CPT017	20 Tonne Track Mounted CPT Rig

2.1.2 CPTU Cone

Details of electric CPTU cone (Type TE2) used in this project conforming to the requirements of Application Class 2 of *ISO 22476-1:2022*, are shown in Table 2.3.

Table 2.3 Cone Summary		
Number	**Cross-section area**	**Filter position**
S15-CFIP.2175	15cm^2	u_2

A full datasheet of the cone used is shown in *Appendix A.3*.

The cone's measured parameters are shown in Table 2.4.

Table 2.4 Completed Fieldwork Summary
18 CPTU to a maximum depth of 17.01m. Each test measured Cone Resistance, q_c, Sleeve Friction, f_s, Porewater Pressure in the shoulder position, u_2, Inclination in X and Y axes.
Provision of factual report with estimated soil type, derived geotechnical parameters & AGS data file.

2.1.3 CPTU Cone Calibration

The cone resistance and sleeve friction are recorded by calibrated load cells in the cone. The CPTU load cells and pressure transducers are regularly calibrated in line with *ISO 22476-1:2022(E)* standard by the cone manufacturer. The cone calibration certificate for the cone used at this site are presented in *Appendix A.4*.

2.1.4 CPTU Cone Saturation

The pore water pressure is recorded using a calibrated pressure transducer located in the piezocone. To ensure pore water pressure measurements are not affected by the presence of air in the measuring transducer, a de-airing procedure is carried out prior to each test. The cone and filter are saturated using a glycerine fluid with a viscosity of 10,000 CST.

2.1.5 Test Procedure

The tests are carried out in accordance with the *International Standard for Electrical Cone and Piezocone Penetration Test ISO 22476-1:2022(E)*.

The final depths of the tests were determined by either completion to the specified test depth or when the maximal safe capacity of the equipment was reached. A schedule of the tests performed is shown in *Appendix A.1*, which has been compiled from the operators' daily progress reports.

The data is transmitted from the digital CPTU through an umbilical cable that runs through the push rods to the data acquisition system. Results are displayed instantaneously on the computer logging screen. The results are recorded on the computer hard disc.

The rate of penetration is kept constant at 20 mm/s ± 5 mm/s except when penetrating very dense or hard strata. Before each test is carried out zero values are taken of the cone to check if it is within calibration. At the end of each test, zero values are taken again to see if there has been any drift during the test. These values are inspected during the post processing stage. This is a quality check on the data and the testing procedure. Individual test zero values are shown on their corresponding test results in *Appendix B*.

2.1.6 In Situ Pore Pressure (u_0)

The in situ or hydrostatic pore pressure is required for the calculation of several derived parameters included in this report. For this report, the groundwater level is assumed at 0.5m below ground surface, for calculation purposes. The in situ pore pressure, u_0 values are presented on the pore pressure plot, on *CPT Log 01,* which is included in *Appendix B*.

2.2 POSITIONING

Positioning and surveying of all investigated locations was the responsibility of the client. The site map and position of the tests are presented in Appendix A.9. All tests coordinates are included in the summary sheet in Appendix A.1.

3.0 CONE PENETRATION MEASURED PARAMETERS

All measured parameters of tests carried with the CPTU cone are shown in *Appendix B* and all the information about data processing and results are given in sections *3.1*, *3.2* and *3.3*.

3.1 DATA PROCESSING

The measured parameters, cone end resistance, q_c, sleeve friction, f_s, porewater pressure measurements with filter in shoulder position, u_2 and inclination for *x* and *y* axis, I_x, I_y, were recorded for every *10 mm* of penetration keeping a constant speed of *20 mm/s ± 5 mm/s*, which may slightly change when the cone is penetrating hard strata.

The measured data from the site works is processed and presented using specialised CPT software. The interpretations on the CPTU results were carried out following the recommendations of *ISO 22476-1:2022(E)*, *Lunne et al. (1997)* and *Robertson (2015)*. Measured parameters, mentioned in *Sections 3.2* and *3.3*, were used to derive all the geotechnical parameters, which are presented in *Chapter 4.0*. The soil behaviour type method used on this report is *Robertson et al. (1986)*, shown in *Figure 3.2*.

3.1.1 Zero Measurements

Before and after each CPTU test, zero measurements are recorded for each channel of the cone. The zero measurements are presented on the logs in *Appendix B*. This is a routine quality check carried out on site.

3.2 MEASURED PARAMETERS

3.2.1 Cone Resistance (q_c)

Cone resistance, q_c, is measured as the total force acting on the cone, divided by the projected area of the cone. The results are presented in *MPa*, on *CPT Log 01*, in *Appendix B*, scale *0-20 MPa* with a minor scale printing on the same graph at *0-4 MPa*.

3.2.2 Sleeve Friction (f_s)

Sleeve friction, f_s, is measured as the total frictional force acting on the friction sleeve divided by its surface area. The results are presented in *kPa*, on *CPT Log 01*, in *Appendix B*, using a scale of *0-500 kPa*.

3.2.3 Porewater pressure (u_2)

The pore pressure, u_2, is measured during the test. If the material is free draining and saturation is maintained it will normally measure hydrostatic pore pressure. In materials that are not free draining, it will record the total pore pressure (hydrostatic plus any excess pore pressures generated) created by the cone penetration through this material.

The filter element can be mounted in one of three positions. For all tests carried out in this project the filter was mounted in the u_2 position (see *Figure 3.1*).

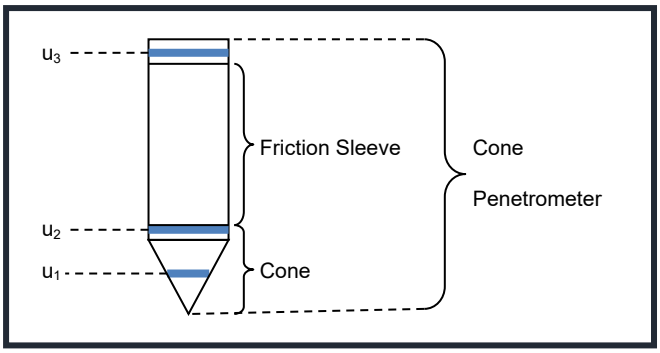

Figure 3.1: *Diagram showing pore pressure filter locations (after Lunne et al., 1997)*

3.2.4 Inclination (I_x, I_y)

The CPT rig was set up to obtain a thrust direction as near as possible to vertical. The CPTU cones have inclinometers incorporated to measure the non-verticality of the test. For test depths less than *15 m*, significant non-verticality is unusual, provided the initial thrust direction is vertical.

3.3 ESTIMATED SOIL BEHAVIOUR TYPE

3.3.1 Friction Ratio (R_f)

The friction ratio, R_f is the ratio between the sleeve friction and the cone resistance (Lunne *et al.,* 1997).

$$Fricton\ Ratio\ (R_f) = \left(\frac{Sleeve\ Friction\ (f_s)}{Cone\ Resistance\ (q_c)}\right) \times 100$$

3.3.2 Estimated Soil Behaviour Type (SBT)

The estimation of soil behaviour type, *SBT*, using measurements of cone resistance and sleeve friction is based upon the variations of the friction ratio and cone resistance. The friction

ratio varies depending upon whether the soil is cohesive or granular. The cone resistance varies depending on the strength and densities of the soil.

The interpretation used in this report is *Robertson et al. (1986)*, which is shown in Figure 3.2. The results are presented on *CPT Log 01*, in *Appendix B*.

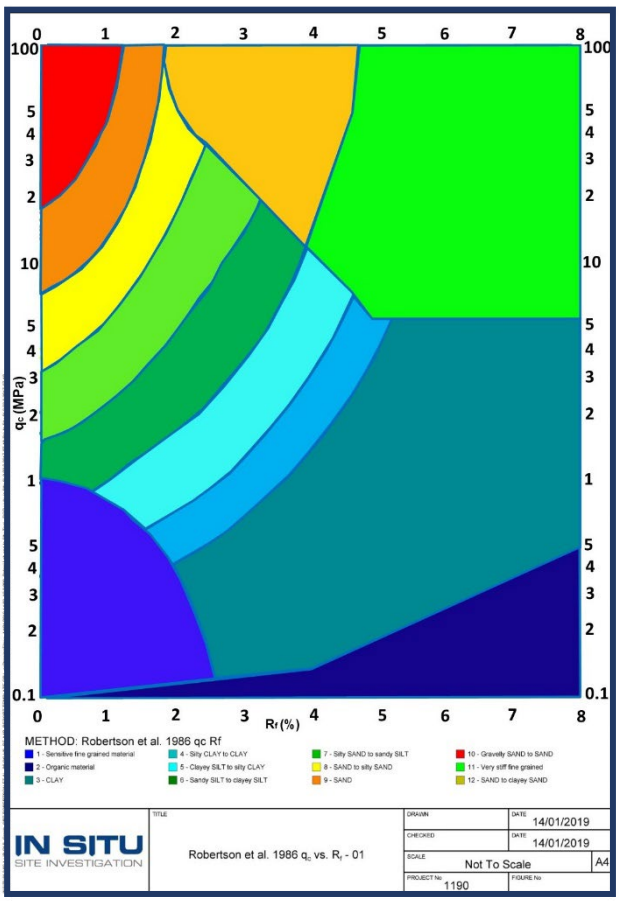

Figure 3.2: *Robertson et al., 1986 soil behaviour type chart.*

3.3.3 Pore Pressure Ratio (B_q)

Pore pressure ratio, B_q is the ratio between the measured pore pressure generated during penetration and the corrected cone resistance minus the total overburden stress.

Pore pressure ratio as defined by *Senneset and Janbu (1985)* is defined as:

$$B_q = \frac{u_2 - u_0}{q_t - \sigma_{vo}}$$

where

u_2	is pore pressure measured between the cone and the friction sleeve
u_0	is equilibrium pore pressure
σ_{vo}	is total overburden stress
q_t	is cone resistance corrected for unequal end area effects

3.4 APPLIED CORRECTIONS

3.4.1 Corrected Cone Resistance (q_t)

For each penetration test, the measured cone resistance, q_c, can be corrected for the ''unequal area effect'' due to the influence of the ambient pore water pressure acting on the cone.

The correction has been applied using the following equation by Lunne et *al.,* 1997:

$$q_t = q_c + [u_2.(1 - \alpha)]$$

where

α is the cone area ratio

The cone area ratio used for this project is stated on both the cone calibration certificate and the data footer. This value is geometrically measured.

3.4.2 Depth Correction

All tests in the report have been corrected for depth difference caused by inclination. This has been calculated using the method described in *ISO 22476-1:2022*.

To calculate the corrected depth the following formula is used:

$$z = \int_0^l C_{inc} \cdot dl$$

where

z is penetration depth, in *m*

l is penetration length, in *m*

C_{inc} is correction factor for the effect of the inclination of the CPTU relative to the vertical axis.

The equation for calculating the correction factor for the influence of the inclination for a bi-axial inclinometer is:

$$C_{inc} = \frac{1}{\sqrt{(1 + tan^2\beta_1 + tan^2\beta_2}}$$

where

β_1 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees

β_2 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees

4.0 GEOTECHNICAL DERIVED PARAMETERS

A number of empirical correlations can be used to derive geotechnical parameters from CPTU data. This report includes only the parameters which are described in this chapter. The results of all correlations used to obtain the geotechnical derived parameters are presented on *CPT Log 02* and *CPT Log 03* in *Appendix B*.

Please, note that each empirical correlation is derived for a certain type of soil, and may not be appropriate for all the soil types encountered on this project.

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c)

The soil behaviour type index, I_c, was derived by *Jefferies and Davies (1991)*, and was created to simplify the application of CPTU SBT chart shown in *Chapter 3*, *Figure 3.2*. This approach has been modified for use with the *Robertson (1990)* normalised CPT soil classification chart, *Figure 4.1*. The normalised cone parameters Q_t and F_r (for definitions see *Appendix A5* Symbol List) can be combined into one Soil Behaviour Type Index, I_c, *(Lunne et al., 1997)*.

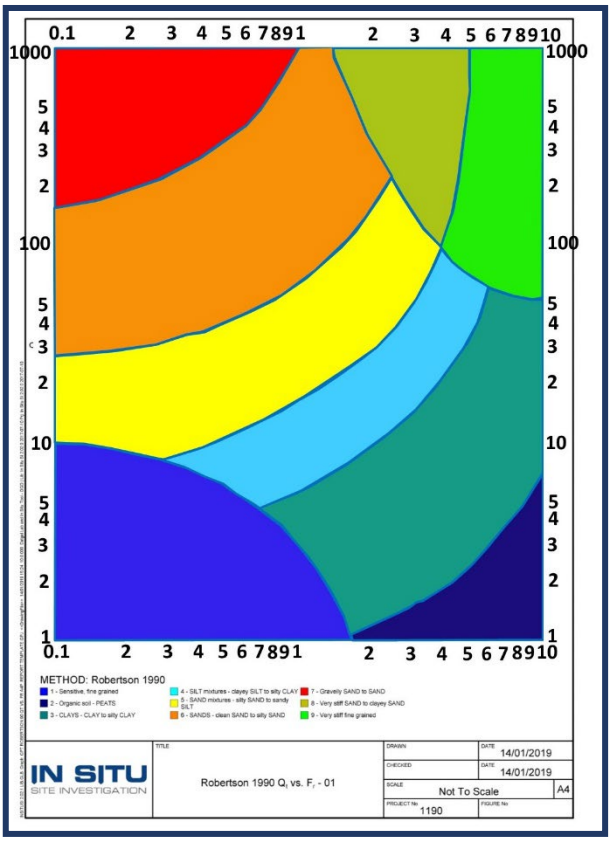

Figure 4.1: *Robertson 1990 soil behaviour type chart.*

The soil behaviour type index, I_c, can then be defined using *Robertson (2010)* formula, given below:

$$I_c = ((3.47 - logQ_t)^2 + (logF_r + 1.22)^2)^{0.5}$$

where

Q_t is the normalized cone resistance which represents the simple normalization with a stress exponent (n) of *1.0*, which applies well to clay-like soils

F_R is the normalized friction ratio, in *%*

The boundaries of soil behaviour type are then given in terms of the index, I_c, presented in *Table 4.1* below.

The soils behaviour type index does not apply to zones *1*, *8* and *9*. The profiles of I_c provide a simple guide to the continuous variation of soil behaviour type in a given soil profile based on CPTU results, with a reliability greater than *80%* compared with soil samples *(Robertson, 2015).*

Zone	Soil Behaviour Type	I_c
1	Sensitive fine grained	N/A
2	Organic Soils – clay	>3.6
3	Clays – silty clay to clay	2.95 – 3.6
4	Silt mixtures – clayey silt to silty clay	2.60 – 2.95
5	Sand mixtures – silty sand to sandy silt	2.05 – 2.6
6	Sands – clean sand to silty sand	1.31 – 2.05
7	Gravelly sand to dense sand	<1.31
8	Very stiff sand to clayey sand*	N/A
9	Very stiff fine grained *	N/A

** Heavily over consolidated or cemented*

Table 4.1: *Normalized CPTU Soil Behaviour Type (SBT_n) Index values, I_c.(Robertson, 2010)*

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60})

The derived *N* value of *SPT*, N_{60}, is strongly and directly related to the cone resistance, q_c.

In this report the N_{60} value is derived using the following correlations, developed by *Robertson and Wride (1998)*, *Jefferies and Davies (1998)* and Robertson (2012):

1) *Robertson & Wride (1998)*

$$N_{60} = \frac{q_c}{8.5 \cdot p_a \left(1 - \frac{I_C}{4.6}\right)}$$

2) *Jefferies and Davies (1993)*

$$N_{60} = \frac{q_c}{0.85 \cdot \left(1 - \frac{I_C}{4.75}\right)}$$

3) *Robertson (2012)*

$$N_{60} = \frac{\frac{q_c}{p_a}}{10^{1.1268 - 0.2817 I_C}}$$

where

q_c	is the cone resistance
p_a	is the atmospheric pressure equal to *100 kPa*
I_c	is the soil behaviour type index calculated as given in *section 4.1*

It is suggested that these methods provide a better estimation of the N_{60} value than the actual measured *N*, due to the poor repeatability of SPT test. However, in fine grained soil with high sensitivity these methods may overestimate N_{60} *(Jefferies and Davies, 1991).* The third method suggested by *Robertson (2012)* provides improved estimates of N_{60} for insensitive clays.

4.3 RELATIVE DENSITY (D_r)

Relative density, D_r, is an intermediate parameter for coarse grained soils, widely used to describe sand deposits. All the research on deriving the relative density from CPTU tests results are carried out for ***clean predominantly quartz sands***. The studies have shown that CPTU resistance in granular soils is controlled by sand relative density, in situ effective stresses and compressibility. The more compressible sands tend to give lower penetration resistance for a given relative density then less compressible sands.

In this report relative density is calculated using the methods suggested by *Baldi et al., (1986)*, *Jamiolkowski et al., (2001)* and *Kulhawy and Mayne (1990)* as shown in the equations below:

1) Baldi et al., (1986)

$$D_r = \frac{1}{C_2} \cdot ln\left(\frac{q_c \cdot Wehr}{C_1 \cdot (\sigma'_{v0})^{0.55}}\right) \cdot 100$$

where

C_1 is a consolidation coefficient which is *157* for normally consolidated soils and *181* for over consolidated soils

C_2 is a consolidation coefficient which is *2.41* for normally consolidated soils and *2.46* for over consolidated soils

Wehr is a correction coefficient for calcareous soils

2) Jamiolkowski et al., (2001)

$$D_r = 100 \cdot \left[0.268 \cdot ln\left(\frac{q_t/\sigma_{atm}}{\sqrt{\sigma'_{v0}/\sigma_{atm}}}\right) + C_1\right]$$

where

C_1 is a compressibility coefficient which is *-0.675* for average compressible soils, *≤1.0* for high compressible soils and carbonate or calcareous sands and *≥-2.0* for low compressible soils

q_t is corrected cone resistance

σ_{atm} is the atmospheric pressure

3) Kulhawy and Mayne, (1990)

$$D_r = \left[\frac{q_{c1}}{305 \cdot C_1 \cdot OCR^{0.18} \cdot \left(1.2 + 0.05 \cdot log(t/100)\right)}\right]^{0.5} \cdot 100$$

where

q_{c1} is the cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{c1} = \frac{q_c}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

C_1 is a compressibility coefficient which is *-0.91* for low compressible sands, *1.0* for medium compressible sands and *1.09* for high compressible sands

t is time in years

4.4 FRICTION ANGLE (φ')

Friction angle, *φ*', is used to express the shear strength of uncemented, coarse grained soils. In this report friction angle is derived by the correlations of *Mayne and Campanella (2005)*, *Robertson and Campanella (1983)* and *Kulhawy and Mayne (1990)*.

1) Mayne and Campanella, (2005)

$$\varphi' = 29.5^0 \cdot B_q^{0.121} \cdot \left[0.256 + 0.336 \cdot B_q + logQ_t\right]$$

where

B_q is the pore pressure ratio, calculated as in Session 3.3

Q_t is the normalized cone resistance

2) Robertson and Campanella, (1983)

$$\varphi' = \tan^{-1}\left(0.1 + 0.38 \cdot log\left(\frac{q_t}{\sigma'_{v0}}\right)\right)$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

3) Kulhawy and Mayne, (1990)

$$\varphi' = 17.6^0 + 11.0^0 \cdot log(q_{t1})$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

The method suggested by *Mayne and Campanella (2005)* will not provide reliable results for heavily over consolidated soils, fissured geomaterials and highly cemented or structures clays. This approach gives reliable results when pore pressure is positive and varies $0.1 < B_q < 1.0$. The correlation suggested by *Robertson and Campanella (1983)* estimates the peak friction angle for uncemented, unaged, moderately compressible, predominately quartz sands. For sands of higher compressibility, the method will tend to predict low friction angles. The method suggested by *Kulhawy and Mayne (1990)* is an alternate relationship for clean, rounded, uncemented, quartz sands.

4.5 FINES CONTENT (*FC*)

The fines content, *FC*, in this report is estimated using two different methods, one from *Robertson and Wride (1998)* and the other, *Suzuki et al. (1998)* as presented below:

1) Robertson and Wride (1998)

$$I_C < 1.26: FC = 0$$

$$1.26 \leq I_C \leq 3.5: FC(\%) = 1.75 I_C^{3.25} - 3.7$$

$$3.5 < I_C: \ FC = 100\%$$

2) Suzuki et al. (1998)

$$FC(\%) = 2.8 I_C^{2.6}$$

where

I_c is the soil behaviour type index, calculated as in section 4.1

4.6 UNDRAINED SHEAR STRENGTH (s_u)

Estimation of undrained shear strength, s_u, from CPTU tests using corrected cone resistance is carried out using the following correlation from *Lunne et al. (1981)*:

$$S_u = \frac{(q_t - \sigma_{v0})}{N_{kt}}$$

where

N_{kt} is the empirical cone factor, which varies from *10* (*6* for very soft sensitive fine grained soils) to *20*. In this report 3 values are considered: *15*, *17.5* and *20*. N_{kt} tends to increase with increasing plasticity and decrease with increasing soil sensitivity. It decreases as B_q increases. (*Lunne et al., 1997*)

σ_{vo} = total overburden stress.

This report only presents the undrained shear strength data on soils with soil behaviour type index, I_c values greater than *2.60*.

The value of undrained shear strength, s_u to be used in analysis depends on the design problem. In general, the simple shear in the direction of loading often represents the average undrained strength. For larger, moderate to high risk projects, where high quality field and laboratory data may be available, site specific correlations should be developed based on appropriate and reliable values of s_u.

4.7 SENSITIVITY (S_t)

The sensitivity, S_t of clays is defined as the ratio of undisturbed peak undrained shear strength to totally remoulded undrained shear strength.

In this report S_t is calculated using two correlations developed by *Schmertmann (1978)* and *Mayne (2007)*.

1) Schmertmann (1978)

$$S_t = \frac{s_u}{s_{u(rem)}} = \frac{q_t - \sigma_v}{N_{kt}} \left(\frac{1}{f_s}\right)$$

where

$s_{u(rem)}$ is the remoulded undrained shear strength. It can be assumed equal to the sleeve resistance, f_s.

2) Mayne (2007)

$$S_t = \frac{0.073 \cdot (q_t - \sigma_{v0})}{f_s}$$

For relatively sensitive clays, $S_t > 10$, the value of f_s can be very low and not very accurate, hence the estimate of sensitivity should be used as a guide only.

4.8 SOIL UNIT WEIGHT (γ)

Soil unit weight, γ in this report is calculated by using one method for sands, considered under dry conditions and two methods for clays, considered under saturated conditions. These relationships are developed by *Mayne (2007)* and the equations are presented below:

Dry unit weight for sands:

$$\gamma_{dry} = 1.89 \cdot log(q_{t1}) + 11.82$$

Saturated unit weight for clays method 1

$$\gamma_{sat} = 8.32 \cdot log(V_S) - 1.61 \cdot log(z)$$

Saturated unit for clays method 2

$$\gamma_{sat} = 2.60 \cdot log(f_s) + 15 \cdot G_s - 26.5$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula:

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

z is the depth

V_s is the shear wave velocity, calculated as $V_S = 118.8 \cdot log(f_s) + 18.5$

G_s is the specific gravity of solids, typically between *2.40* and *2.90*

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APPENDIX A

APPENDIX A1 – Project Summary Sheet

Piezocone Tests Summary Sheet

HOLE ID	Final Depth (m)	Date of Test	Cone Used	Test Remarks
CPT201	7.04	21/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT202	8.55	20/06/2023	S15-CFIP.2175	Test stopped due to buckling
CPT203	17.01	21/06/2023	S15-CFIP.2175	Test stopped due to buckling
CPT204	3.50	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT205	7.40	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT206	4.57	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT207	6.10	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT209	1.82	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT211	1.75	21/06/2023	S15-CFIP.2175	Test refused on inclination.
CPT211A	4.26	21/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT212	2.89	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT213	0.24	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT213A	1.18	20/06/2023	S15-CFIP.2175	Test refused on inclination.
CPT213B	1.30	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT216	1.52	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT217	4.62	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT218	2.51	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT219	4.19	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.

Piezocone Test Coordinates

HOLE ID	Eastings	Northings
CPT201	649372.34	738411.92
CPT202	649497.16	738454.09
CPT203	649588.85	738470.97
CPT204	649370.35	738330.96
CPT205	649424.96	738387.46
CPT206	649305.32	738253.41
CPT207	649641.76	738293.38
CPT209	649665.74	738226.95
CPT211	649419.63	738168.54
CPT211A	649419.63	738168.54
CPT212	649349.21	738191.27
CPT213	649295.36	738124.93
CPT213A	649295.36	738124.93
CPT213B	649295.36	738124.93
CPT216	649477.73	738069.49
CPT217	649514.27	738131.05
CPT218	649615.44	738107.62
CPT219	649714.46	738144.61

APPENDIX A2 – CPT Rig Datasheet

RIGS

20 TONNE CPT TRACK MOUNTED RIG (CPT017)

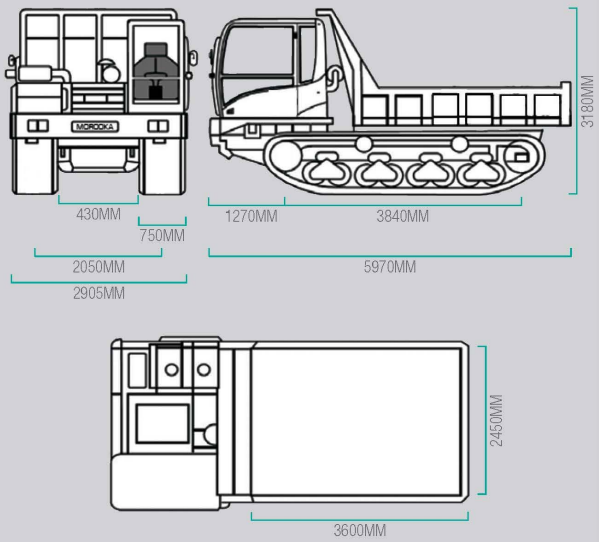
We have a variety of rigs giving us the capacity to meet our clients' needs and specifications for each individual project.

This rubber tracked rig weighs 20 tonnes and is able to push up to a depth of 40 metres, depending on the ground conditions. It has low ground bearing pressure and is ideal for soft, boggy sites which are inaccessible for our wheeled rigs.

CPT RIG DETAILS

DRIVE SYSTEM	RUBBER TRACKED
TOTAL WEIGHT	20 TONNES
GROUND BEARING PRESSURE	35kPA
CPT RAM THRUST CAPACITY	20 TONNES
MAXIMUM PENETRATION	30-40M DEPENDING ON THE GROUND CONDITIONS.
PERFORMANCE RATES	100-150M OF TESTING A DAY, DEPENDING ON ACCESS TO POSITIONS.
TYPICAL SITES FOR THIS RIG	SOFT, BOGGY SITES. THE RIG HAS LOW GROUND BEARING PRESSURE.

CPT RIG DIMENSIONS



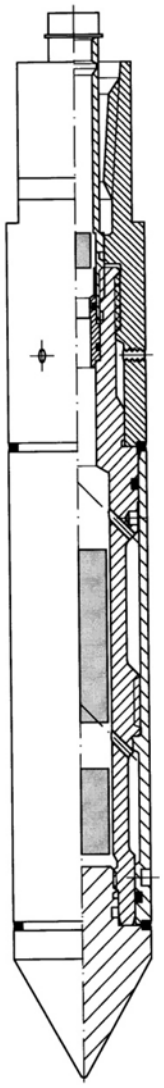
Shrewsbury

Heading North on our low loader

Falkirk, Scotland

APPENDIX A3 – Cone Datasheet

GeoPoint Systems bv
Rijksstraatweg 22F
2171 AL Sassenheim
Tel. : +31 71 301 92 51
Fax : +31 71 301 92 52
E-mail : info@geopoint.nl
ING bank : 68.23.01.396
Postbank : 5226758
BTW nr. : NL806331677B01



SPECIFICATIONS S15 SERIES ELECTRICAL CONES

The electronic subtraction cones have been developed to address the durability problems inherent in other cone designs. The unit consists of a single element temperature compensated strain gauge transducer for measuring both cone resistance and local sleeve friction. This design is therefore more robust than a compression type cone. The cone support electronics package is located directly behind the transducer. The precision strain gauge amplifiers and power supply eliminate the effects of cable resistance on the measurements. A standard subtraction cone is capable of measuring simultaneously the following channels: Tip, Local friction, Pore pressure, Temperature and Inclination.

GENERAL SPECIFICATIONS

Cone Tip Section Area	1,500 mm2
Friction Sleeve Surface	22,500 mm2
Total Length	325 mm
Weight	4200 g
Power Supply	± 15 VDC, 100 mA.
Output	0 – 10 VDC*
Working Temperature	0 - 60˚C
Storage Temperature	- 40 to + 85˚C
Connector	Lemo 10 pins (others on request)

TIP RESISTANCE

Range	100/150* kN
Accuracy	0.25 % FS
Maximum Load	150 % of range
Cone Area Ratio	0.75

LOCAL SLEEVE FRICTION

Range	100/150* kN
Accuracy	0.50 % FS
Maximum Load	150 %
Sleeve Area Ratio	1.0 (EA)

PORE PRESSURE

Range	1/2/5/10* MPa
Accuracy	0.5 % FS
Maximum Load	150 % of range

INCLINATION

Range	25 ˚ (biaxial)
Accuracy	< 2 ˚

All our equipment complies with the ISSMGE, ASTM, DIN and NEN Standards.

**Other output and voltage ranges available on request. Loadcells may be calibrated for lower ranges.*

APPENDIX A4 – Cone Calibration Certificate

Eijkelkamp GeoPoint
SoilSolutions

Rijkstraatweg 22F
2171 AL Sassenheim
The Netherlands

T +31 71 301 9251
E info@eijkelkamp-geopoint.com
I eijkelkamp-geopoint.com

Cone Calibration Certificate

Certificate:	**GS-2175-002**	
Instrument Type:	Electric Subtraction Cone	
Model:	S15-CFIIP	
Serial number:	2175	
Calibration date:	06-04-2023	
Client:	In Situ	
Calibrated by:	R.Wesselink	
Calibration instruments		
Manufacturer:	Hottinger Baldwin Messtechnik GmbH	
NMi certificate	2461165.00501	
Calibration conditions		
Ambient temperature:	21	°C
Atmospheric pressure:	1015	mBar
Cone specifications		
Cone base area:	1500	mm2
Load tip resistance (nom.):	100	kN
Friction sleeve area:	22500	mm2
Load tip + local friction (nom.):	100	kN
Load friction sleeve (nom.):	22.5	kN
Load pore pressure (nom.):	2	MPa
Inclination (nom.):	+/- 20	°
Temperature compensation (all channels):	0...+40	°C
Maximum overload capacity (all channels):	100	%
Cone area ratio (a):	0.79	
Max. Inaccuracy, relative to measurement value:	1.0	%

	Tip:		Sleeve:		Pore Pressure:		Inclinometer:		
	qc in kN	mV	fs in kN	mV	MPa	mV	Degrees	X (mV)	Y (mV)
Zero points:		0241		0237		0315			
	0	0	0	0	0	0	0	2395	2343
	5	0290	5	0298	0.4	1519	-20	0423	0442
	10	0580	10	0598	0.8	3026	20	4431	4270
	15	0868	15	0896	1.2	4532			
	20	1159	20	1197	1.6	6027			
	25	1449	25	1495	2	7525			
	30	1737	30	1794					
	35	2025	35	2093					
	40	2315	40	2391					
	45	2604	45	2690					
	50	2893	50	2988					
	75	4337	75	4480					
	100	5778	100	5969					

Max. eror, abs. qc:	35 kPa
Max. error, abs. fs:	5 kPa
Max. error, abs. u2:	10 kPa
Max. error, abs. I:	1 °

This calibration is compliant with Eijkelkamp GeoPoint SoilSolutions internal quality system, internal calibration procedures and meets the requirements of NEN2649, NEN-EN-ISO 22476-1, NORSOK G-001, ISSMFE and ASTM using calibration equipment traceable to (Inter-)National Standards.

Approved by: R. Mosterd
Date: 06-04-2023

Eijkelkamp GeoPoint SoilSolutions
V.A.T. NO. NL 8584.21.422.B01
Trade Reg. Arnhem no. 70686149

IBAN NL43 RABO 0326 7904 38
BIC: RABONL2U

APPENDIX A5 – Symbol List

English

a	is area ratio of the cone ($= {A_n}/{A_c}$)
A	is area
A_c	is projected area of the cone
A_n	is cross sectional area of load cell or shaft
A_s	is area of friction sleeve
A_{sb}	is bottom end area of friction sleeve
A_{st}	is top end area of friction sleeve
B_q	is pore pressure parameter ($= {(u_2 - u_0)}/{(q_t - \sigma_{v0})}$)
c_h	is horizontal coefficient of consolidation
c_v	is vertical coefficient of consolidation
D	is diameter
D_r	is relative density ($= \frac{e_{max} - e}{e_{max} - e_{min}} x100\%$)
e	is void ratio
e_{max}	is maximum void ratio
e_{min}	is minimum void ratio
E	is Young's modulus
f_s	is unit sleeve friction resistance
f_t	is sleeve friction corrected for pore pressure effects
F_s	is total force acting on friction sleeve
F_R	is normalized friction ratio ($= {f_s}/{(q_t - \sigma_{v0})}$)
FoS	is factor of safety
FC	is fines content
g	is acceleration due to gravity
G_0	is initial or maximum shear modulus, shear stiffness
I_c	is soil behavior type index
I_r	is rigidity index ($= {G}/{s_u}$)
I_p	is plasticity index
k	is coefficient of permeability
k_h	is coefficient of permeability in horizontal direction
k_v	is coefficient of permeability in vertical direction
K_0	is coefficient of earth pressure at rest ($= {\sigma'_{h0}}/{\sigma'_{v0}}$)
L	is length
m_v	is coefficient of volume change
M	is constrained deformation modulus
M7.5	is earthquake magnitude of 7.5 Richter scale
N	is number of blows of SPT
N_{60}	is SPT energy ratio
N_k	is cone factor
N_{ke}	is cone factor
N_{kt}	is cone factor
$N_{\Delta u}$	is cone factor
p_a	is reference stress ($= 100\ kPa$)
q_c	is measured cone resistance
q_e	is effective cone resistance ($= q_t - u_2$)
q_n	is net cone resistance ($= q_t - \sigma_{v0}$)
q_t	is corrected cone resistance ($= q_c - (1 - a)u_2$)
Q_c	is total force acting on the cone
Q_t	is normalized cone resistance ($= {q_t - \sigma_{v0}}/{\sigma'_{v0}}$)

R_f	is friction ratio ($= \left({f_t}/{q_t}\right) x100\%$ or alternatively $= \left({f_t}/{q_t}\right) x100\%$)
s_u	is undrained shear strength
s_{ur}	is remoulded undrained shear strength
S_t	is sensitivity
t	is time
t_{50}	is time for 50% dissipation of excess pore water pressure
T_{50}	is time factor at $U = 50\ \%$
u	is pore water pressure
u_0	is in situ pore pressure
u_1	is pore pressure measured on the cone
u_2	is pore pressure measured behind the cone
u_3	is pore pressure measured behind sleeve friction
Δu	is excess pore water pressure
U	is normalized excess pore pressure
V_s	is shear wave velocity
z	is depth

Greek

α	is constant
α	is cone roughness
β	is constant
β_1	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees
γ	is unit weight of soil
γ_w	unit weight of water
Δ	is change
Δu	is excess pore pressure ($= u - u_0$)
μ	is Poisson's ratio
ρ	is density
ψ	is state parameter
σ, σ'	is normal stress (total, effective)
σ_h, σ_h'	is horizontal stress (total, effective)
σ_v, σ_v'	is horizontal stress (total, effective)
σ_{v0},σ_{v0}'	is overburden stress (total, effective)
τ_{av}	is average cyclic shear stress
τ_{cy}	is cyclic shear stress
φ'	is effective friction angle

APPENDIX A6 – Abbreviations

ASTM	American Society for Testing and Materials
CPTU	Cone Penetration Test with Pore Pressure Measurement (Piezocone Test)
CRR	Cyclic Resistance Ratio
CSR	Cyclic Stress Ratio
GWT	Ground Water Table
NC	Normally Consolidated
OC	Over consolidated
OCR	Over consolidation Ratio
PL	Limit Pressure
SCPT	Seismic Cone Penetration
SDMT	Seismic Dilatometer Marchetti
SPT	Standard Penetration Test
TC	Technical Committee

APPENDIX A7 – Glossary

CPT
Cone Penetration Test.

Cone
The part of the cone penetrometer on which the end bearing is developed.

Cone Penetrometer
The assembly containing the *cone*, *friction sleeve*, any other sensors and measuring systems, as well as the connections to the *push-rods.*

Cone resistance, q_c
The total force acting on the cone, Q_c, divided by the projected area of the cone, A_c. $q_c = {Q_c}/{A_c}$

Corrected cone resistance, q_t
The *cone resistance*, q_c corrected for pore water pressure effects.

Corrected sleeve friction, f_t
The *sleeve friction* corrected for pore water pressure effects on the ends of the *friction sleeve*.

Data acquisition system
The system used to measure and record the measurements made by the *cone penetrometer*.

Dissipation Test
A test when the decay of the pore water pressure is monitored during a pause in penetration.

Filter element
The porous element inserted into the cone penetrometer to allow transmission of the pore water pressure to the pore pressure sensor, while maintaining the correct profile of the *cone penetrometer*.

Friction ratio, R_f
The ratio, expressed as a percentage of the *sleeve friction*, f_s, to the *cone resistance*, q_c, both measured at the same depth.

Friction reducer
A local enlargement on the push-rod surface, placed at a distance above the cone penetrometer, and provided to reduce the friction on the *push-rods*.

Friction sleeve
The section of the *cone penetrometer* upon which the *sleeve friction* is measured.

Normalized cone resistance, Q_c or Q_t
The *cone resistance* expressed in a non-dimensional form and taking account of stress changes *in situ*, $Q_c = {(q_c - \sigma_{v0})}/{\sigma'_{v0}}$, or when the *corrected cone resistance* is used $Q_t = {(q_t - \sigma_{v0})}/{\sigma'_{v0}}$. where σ_{v0} and σ'_{v0} are the total and effective vertical stress respectively.

Net cone resistance, q_n
The *corrected cone resistance* minus the vertical total stress. $q_n = q_t - \sigma_{v0}$

Normalized friction ratio, F_r
The *sleeve friction* normalized by the *net cone resistance*.

Piezocone
A *cone penetrometer* containing a pore pressure sensor.

Pore pressure, *u*
The pore pressure generated during penetration and measured by a pore pressure sensor, u_1 when measured on the cone, u_2 when measured just behind the cone and u_3 when measured just behind the friction sleeve.

Pore pressure ratio, B_q
The *net pore pressure* normalized with respect to the *net cone resistance*.

Push-rods
The thick-walled tubes or rods used for advancing the cone penetrometer.

Rig machine
The equipment which pushes the cone penetrometer and rods into the ground.

Sleeve friction, f_s
The total frictional force acting on the *friction sleeve*, F_s, divided by its *surface area*, A_s. $f_s = {}^{F_s}/_{A_s}$

APPENDIX A8 – Soils Description Tables

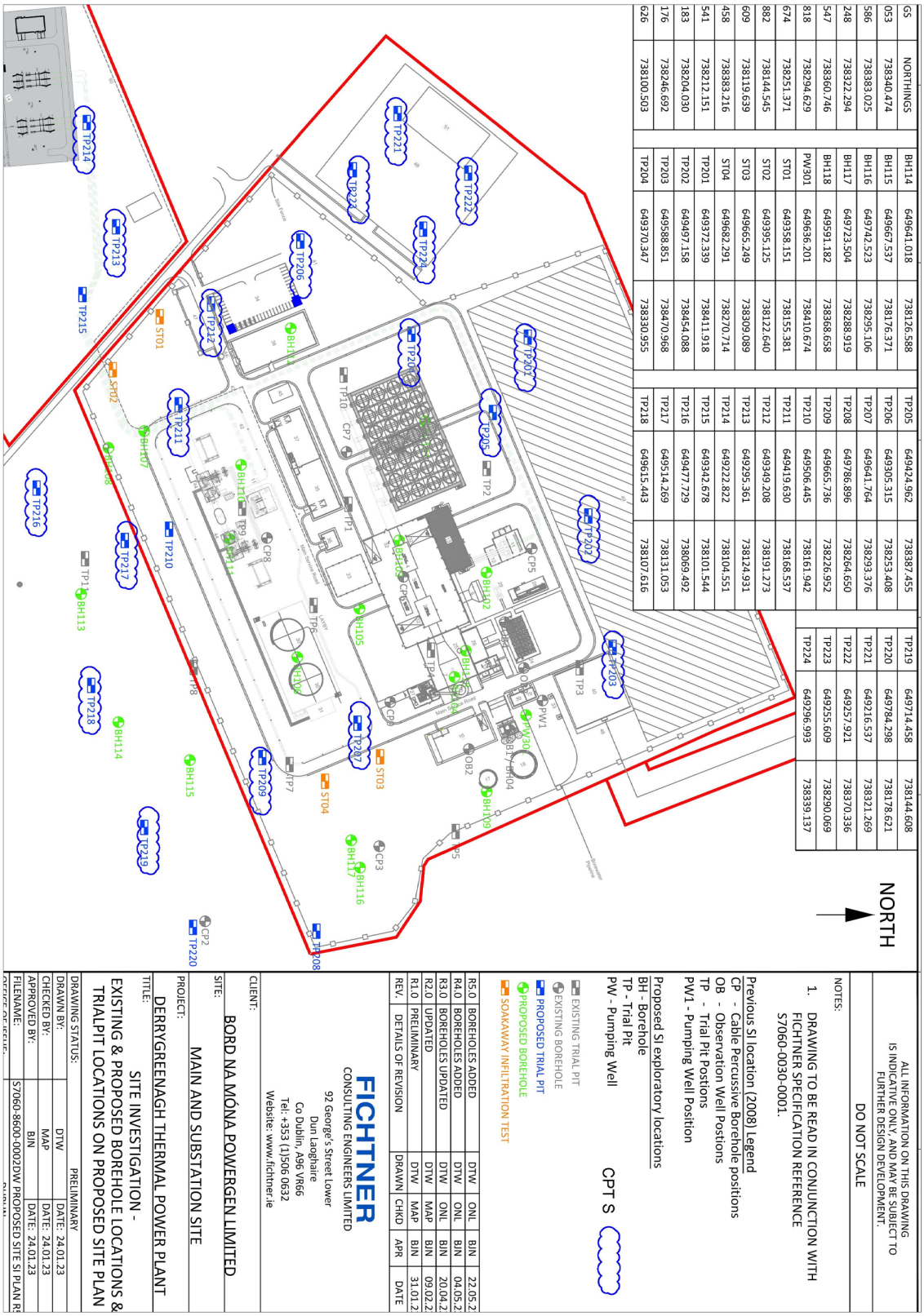
GRANULAR SOILS (Sands and Gravels)

Description	Relative Density D_r (%)	SPT N value, N_{SPT}
Very Loose	0 – 15	0 - 4
Loose	15 – 35	4 - 10
Medium Dense	35 – 65	10 - 30
Dense	65 – 85	30 - 50
Very Dense	>85	>50

COHESIVE SOILS (Clays and Silts)

Term based on measurement	Undrained Shear Strength Classification, s_u (kPa)
Extremely low	<10
Very low	10 - 20
Low	20 - 40
Medium	40 - 75
High	75 - 150
Very high	150 - 300
Extremely high	>300

APPENDIX A9 – Site Map



GS	NORTHINGS										
053	738340.474	BH115	649667.537	738176.371	TP206	649305.315	738253.408	TP220	649784.298	738178.621
586	738383.025	BH116	649742.523	738295.106	TP207	649641.764	738293.376	TP221	649216.537	738321.269
248	738322.294	BH117	649723.504	738288.919	TP208	649786.896	738264.650	TP222	649257.921	738370.336
547	738360.746	BH118	649591.182	738368.658	TP209	649665.736	738226.952	TP223	649255.609	738290.069
818	738294.629	PW301	649636.201	738410.674	TP210	649506.445	738161.942	TP224	649296.993	738339.137
674	738251.371	ST01	649358.151	738155.381	TP211	649419.630	738168.537			
882	738144.545	ST02	649395.125	738122.640	TP212	649349.208	738191.273			
609	738119.639	ST03	649665.249	738309.089	TP213	649295.361	738124.931			
458	738383.216	ST04	649682.291	738270.714	TP214	649222.822	738104.551			
541	738212.151	TP201	649372.339	738411.918	TP215	649342.678	738101.544			
183	738204.030	TP202	649497.158	738454.088	TP216	649477.729	738069.492			
176	738246.692	TP203	649588.851	738470.968	TP217	649514.269	738131.053			
626	738100.503	TP204	649370.347	738330.955	TP218	649615.443	738107.616			

APPENDIX B

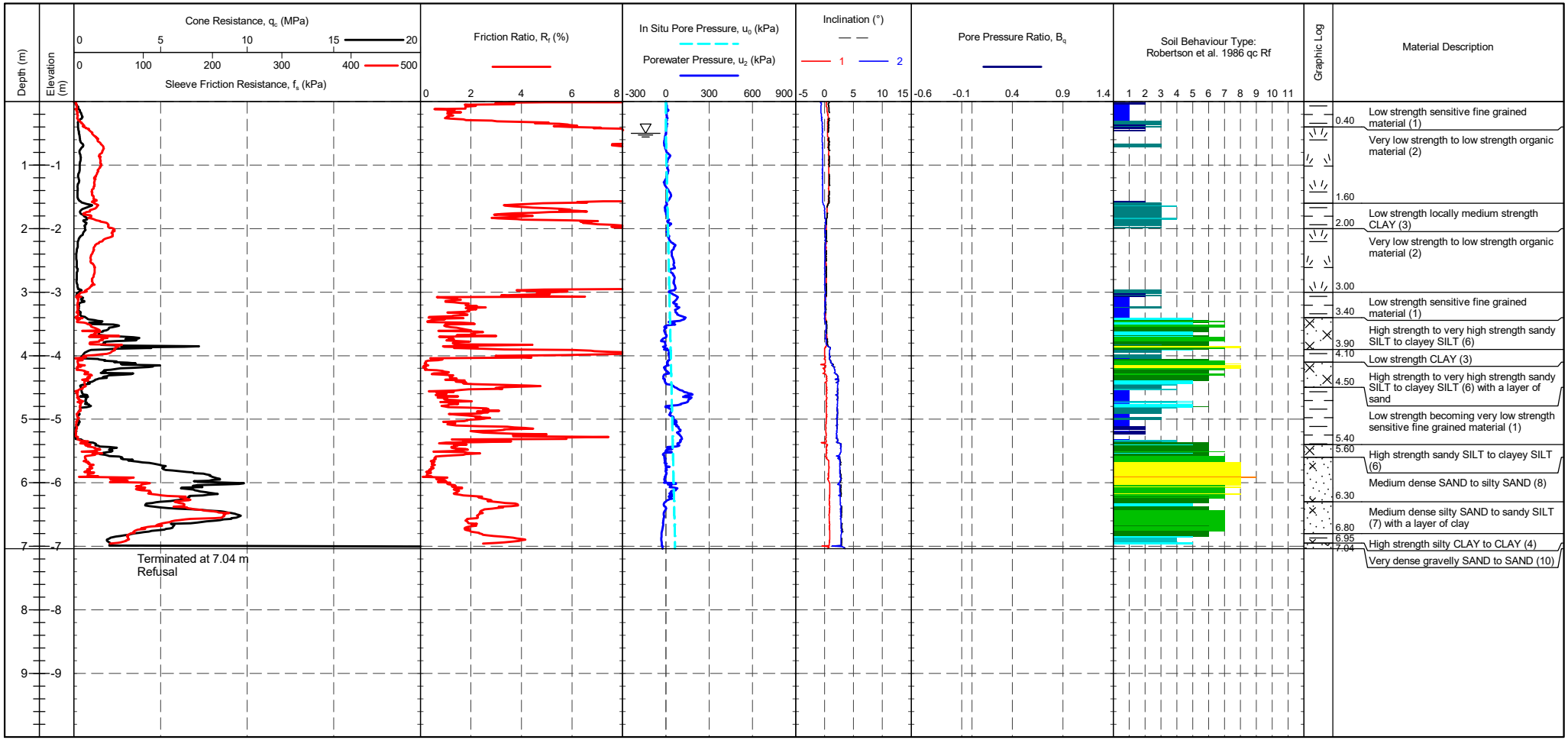
Cone Penetration Measured Parameters and Geotechnical Derived Parameters

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT201

CLIENT : Irish Drilling	EASTING : 649372.339 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738411.918 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 21/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2
CALIBRATION DATE	: 05/12/2022	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm²	OPERATOR	: RS
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Sunny & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	227 mV	-0.012 MPa
Sleeve	191 mV	191 mV	0 kPa
Pore Pressure 2	286 mV	312 mV	0.007 kPa
X-Y Inclinometer	2442 mV	2445 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

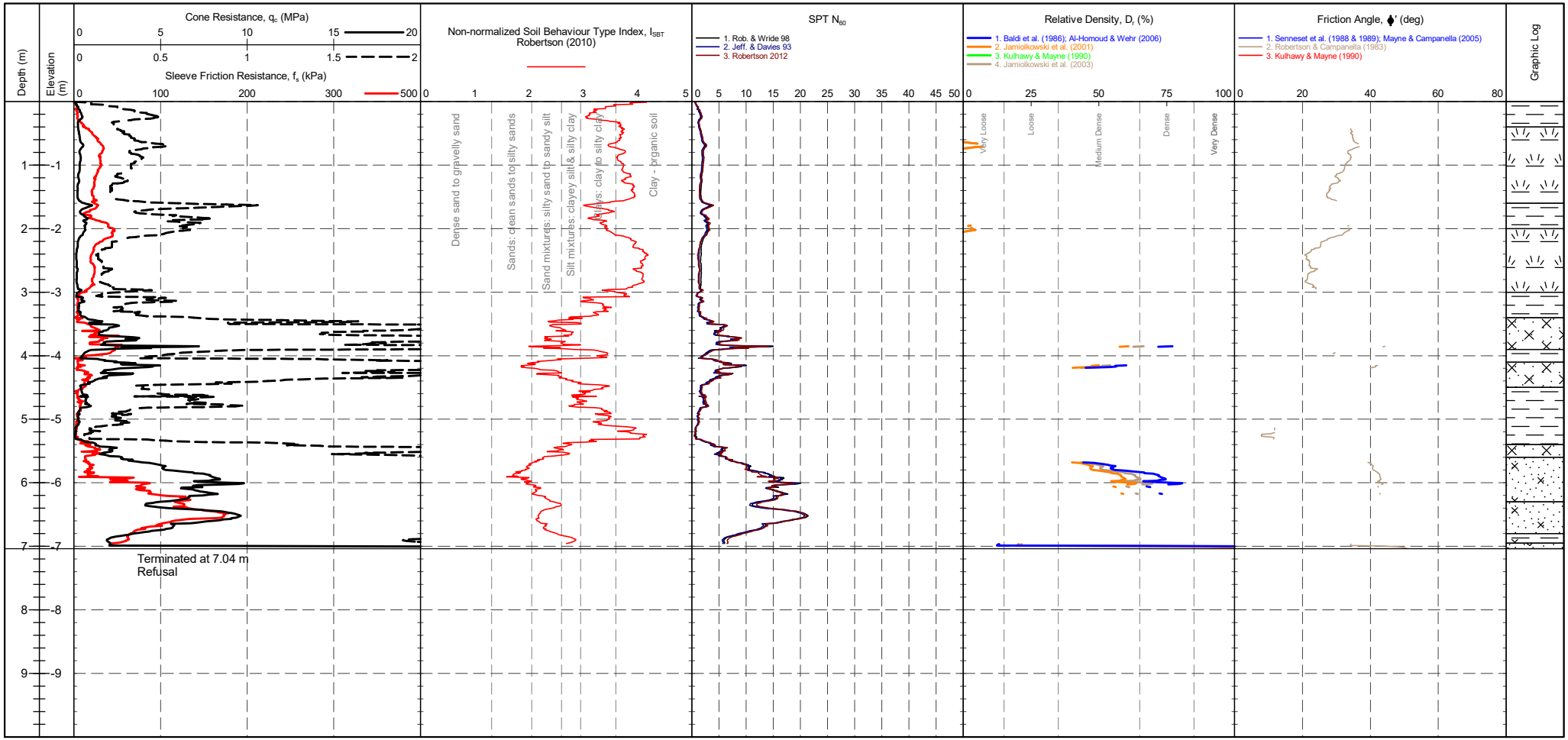
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT201**

CLIENT : Irish Drilling	EASTING : 649372.339 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738411.918 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 21/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	227 mV	-0.012 MPa
Sleeve	191 mV	191 mV	0 kPa
Pore Pressure 2	286 mV	312 mV	0.007 kPa
X-Y Inclinometer	2442 mV	2445 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

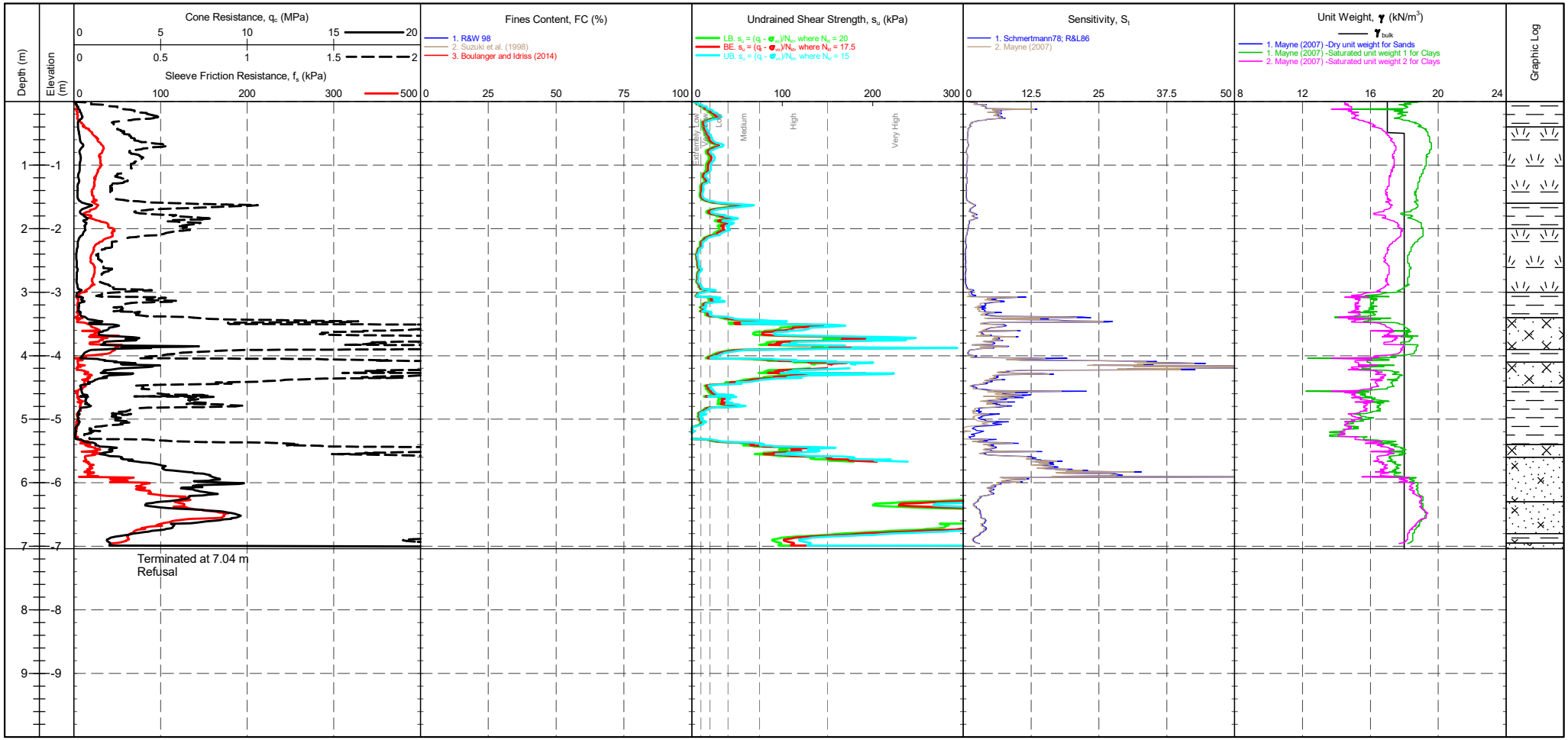
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

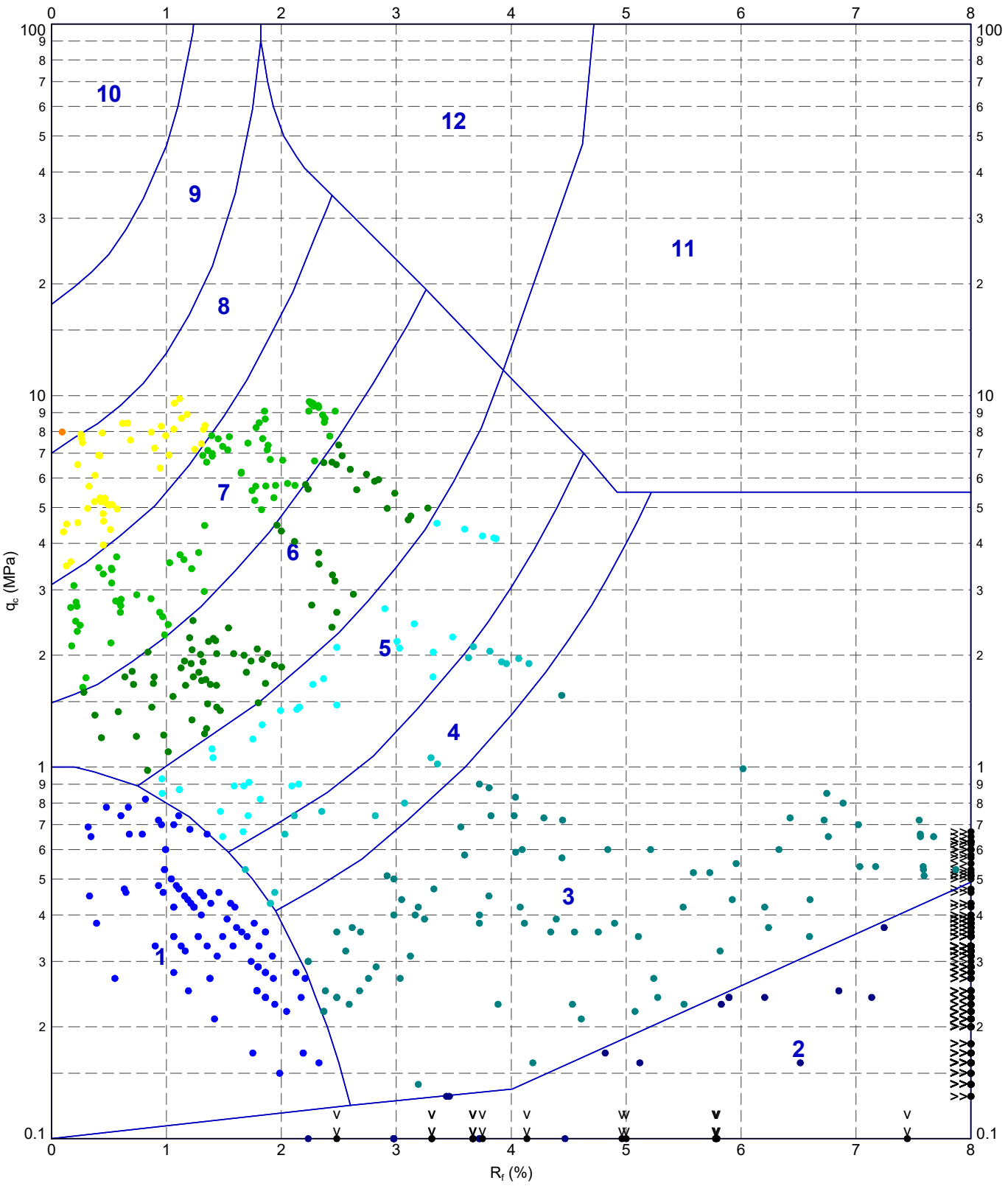
CPT LOG 03

PointID: **CPT201**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649372.339 m NORTHING : 738411.918 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 228 mV / 227 mV / -0.012 MPa Sleeve / 191 mV / 191 mV / 0 kPa Pore Pressure 2 / 286 mV / 312 mV / 0.007 kPa X-Y Inclinometer / 2442 mV / 2445 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT201	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 13:58 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

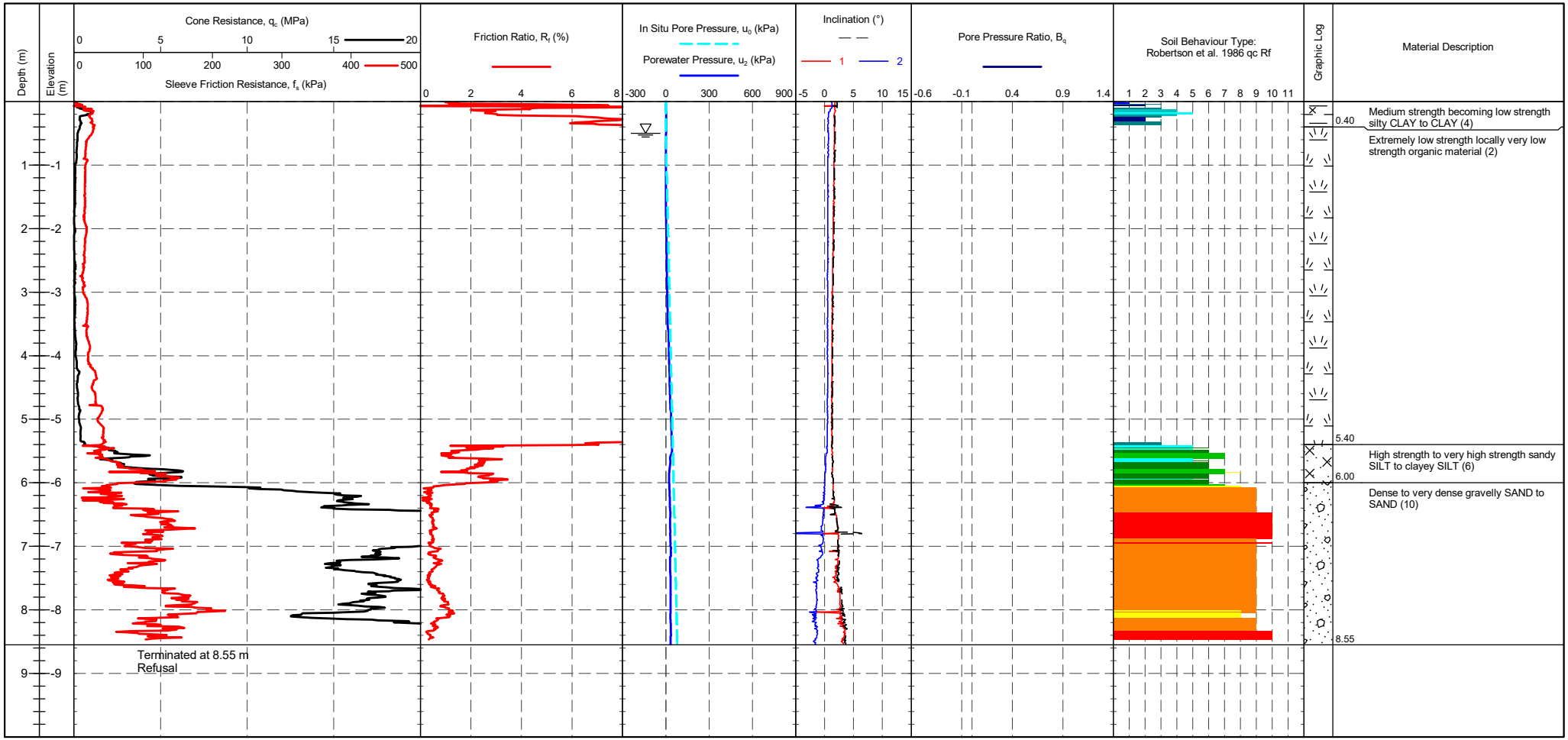
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT202**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649497.158 m NORTHING : 738454.088 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	222 mV	-0.035 MPa
Sleeve	187 mV	183 mV	-0.003 kPa
Pore Pressure 2	288 mV	359 mV	0.019 kPa
X-Y Inclinometer	2597 mV	2569 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

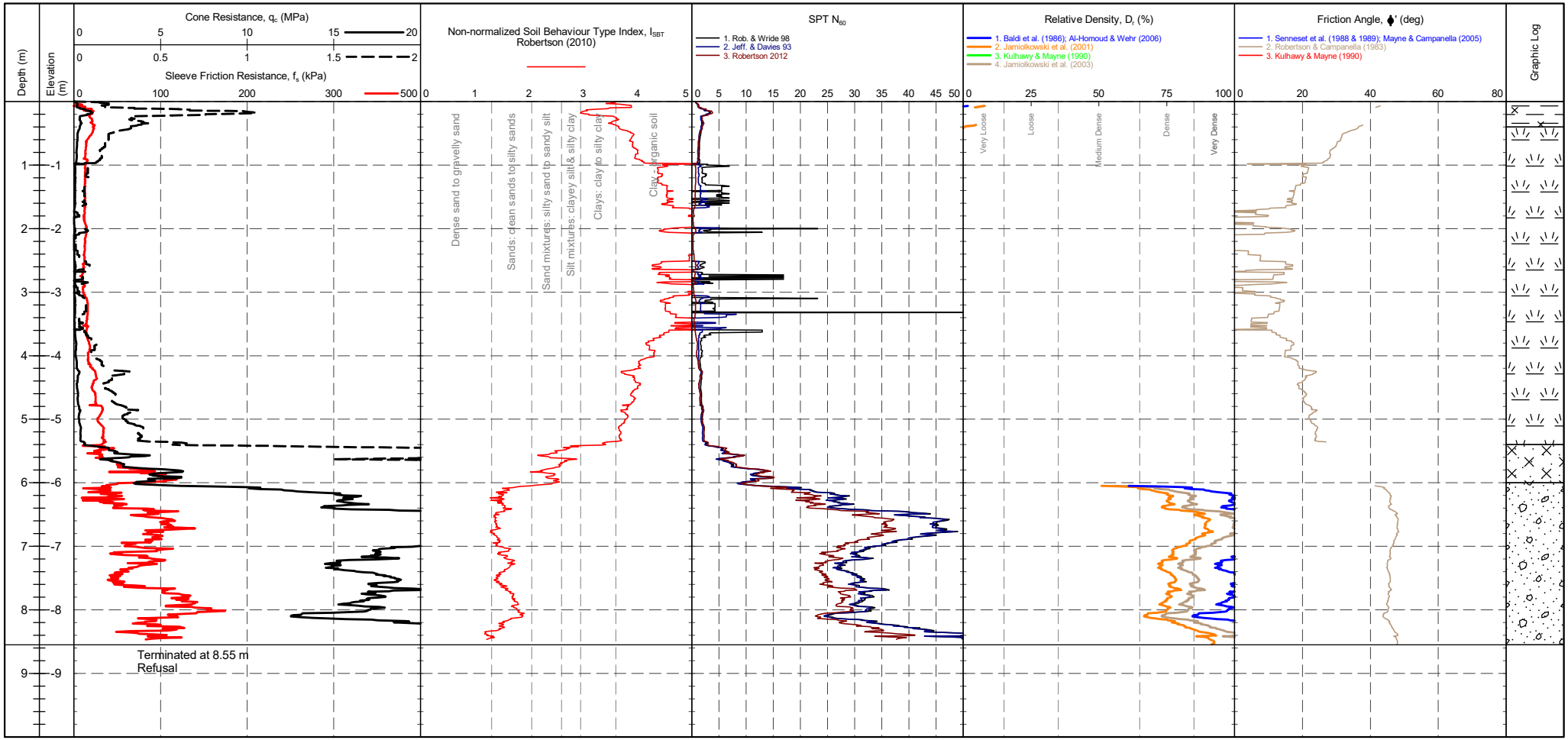
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT202**

CLIENT : Irish Drilling	EASTING : 649497.158 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738454.088 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2	CPTU ZERO VALUES	
CONE MODEL : Subtraction	APPLICATION CLASS : 2	Transducer / Pre / Post / Difference	
CONE AREA : 15cm²	RIG : CPT 017 - Griffen	Tip: 225 mV / 222 mV / -0.035 MPa	
CONE AREA RATIO : 0.79	OPERATOR : RS	Sleeve: 187 mV / 183 mV / -0.003 kPa	
FILTER POSITION : u2	FRICTION REDUCER : None	Pore Pressure 2: 288 mV / 359 mV / 0.019 kPa	
FILTER TYPE : HDPE	WEATHER : Sunny & Mild	X-Y Inclinometer: 2597 mV / 2569 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

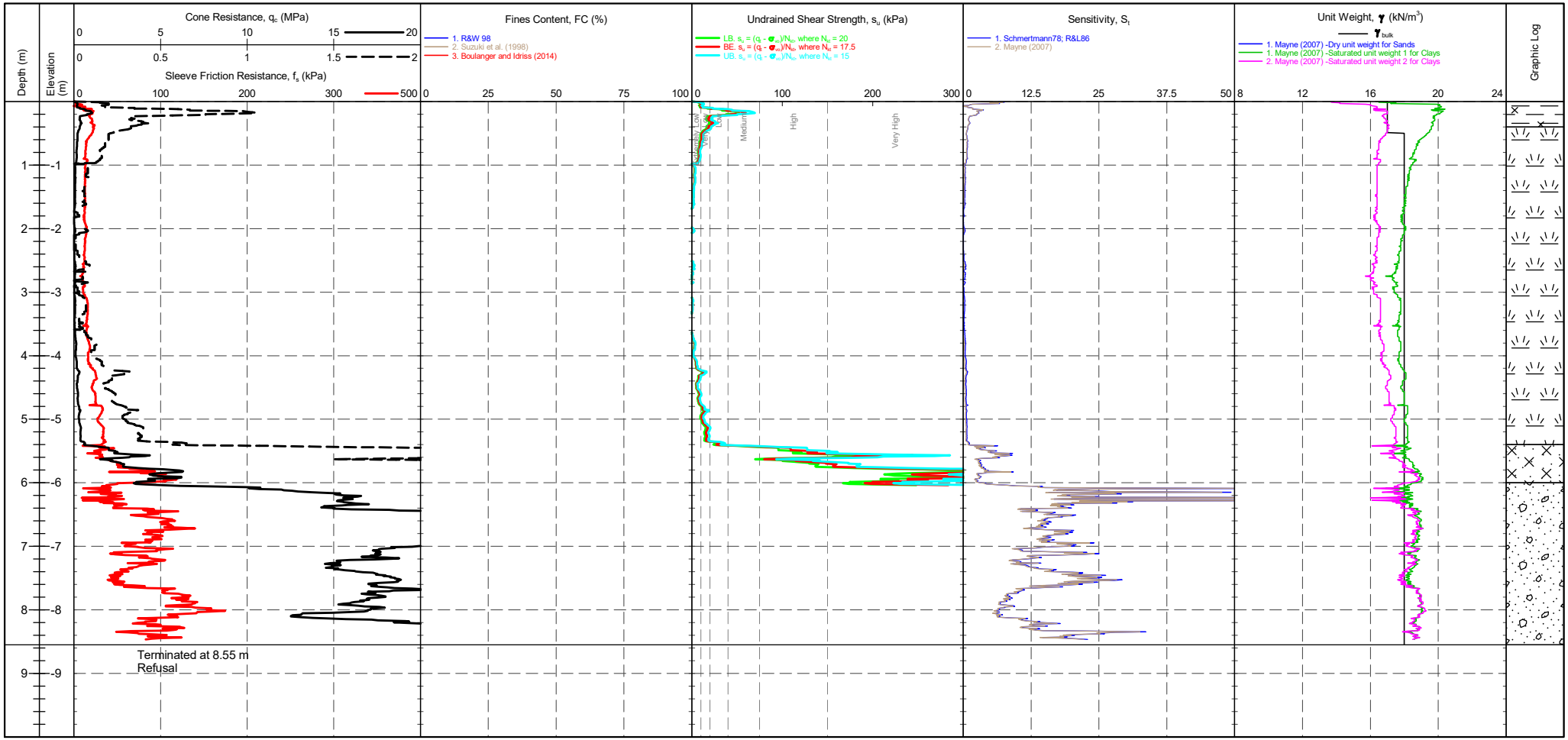
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 03

PointID: **CPT202**

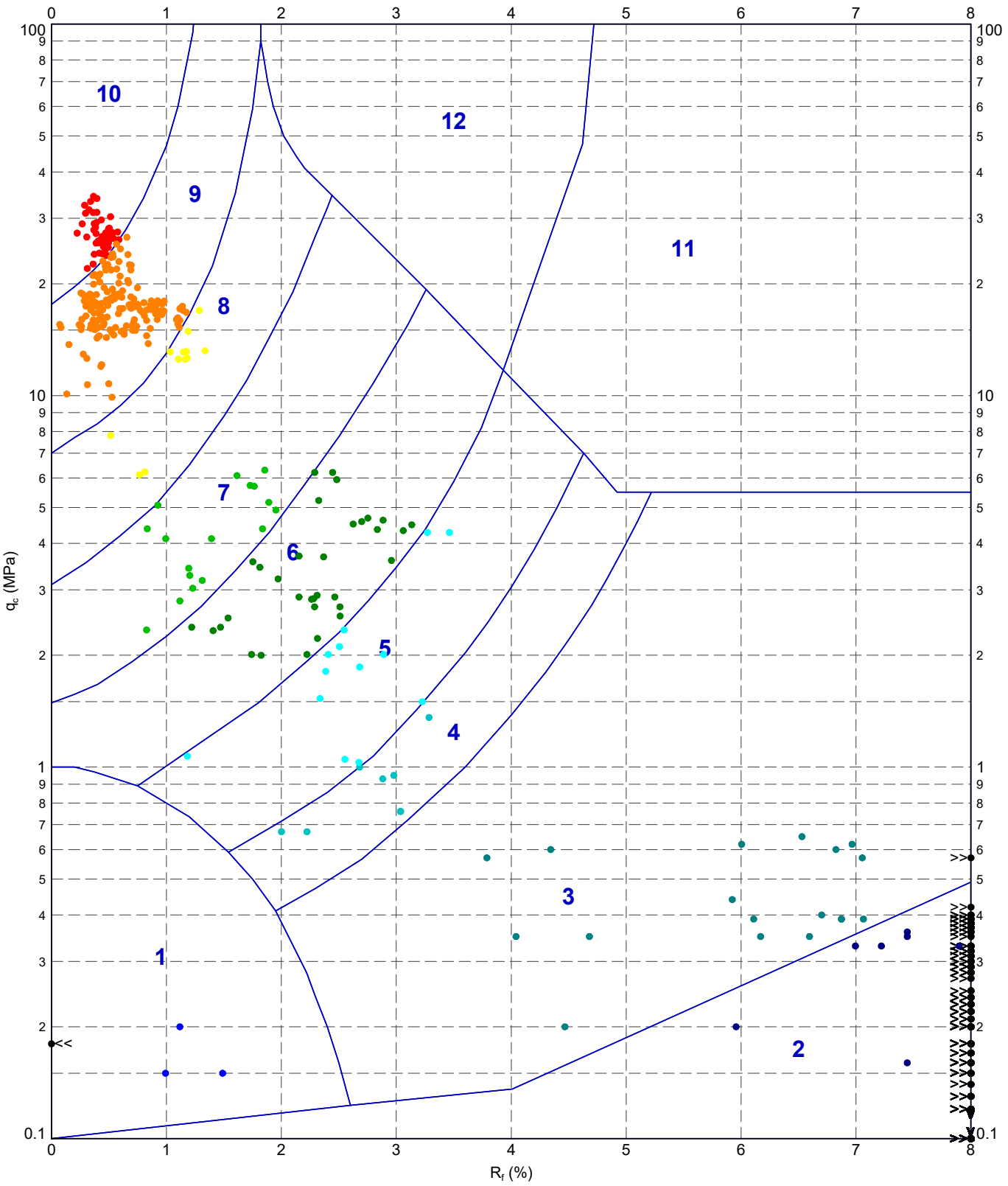
CLIENT : Irish Drilling	EASTING : 649497.158 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738454.088 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2	CPTU ZERO VALUES			COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11
CONE MODEL : Subtraction	APPLICATION CLASS : 2	Transducer / Pre / Post / Difference			Term based on measurement / su (kPa) / Term based on measurement / su (kPa)
CONE AREA : 15cm^2	RIG : CPT 017 - Griffen	Tip: 225 mV / 222 mV / -0.035 MPa			Extremely low strength <10 / Medium strength 40-75
CONE AREA RATIO : 0.79	OPERATOR : RS	Sleeve: 187 mV / 183 mV / -0.003 kPa			Very low strength 10-20 / High strength 75-150
FILTER POSITION : u2	FRICTION REDUCER : None	Pore Pressure 2: 288 mV / 359 mV / 0.019 kPa			Low strength 20-40 / Very high strength 150-300
FILTER TYPE : HDPE	WEATHER : Sunny & Mild	X-Y Inclinometer: 2597 mV / 2569 mV			Extremely high strength >300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT202	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 13:59 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

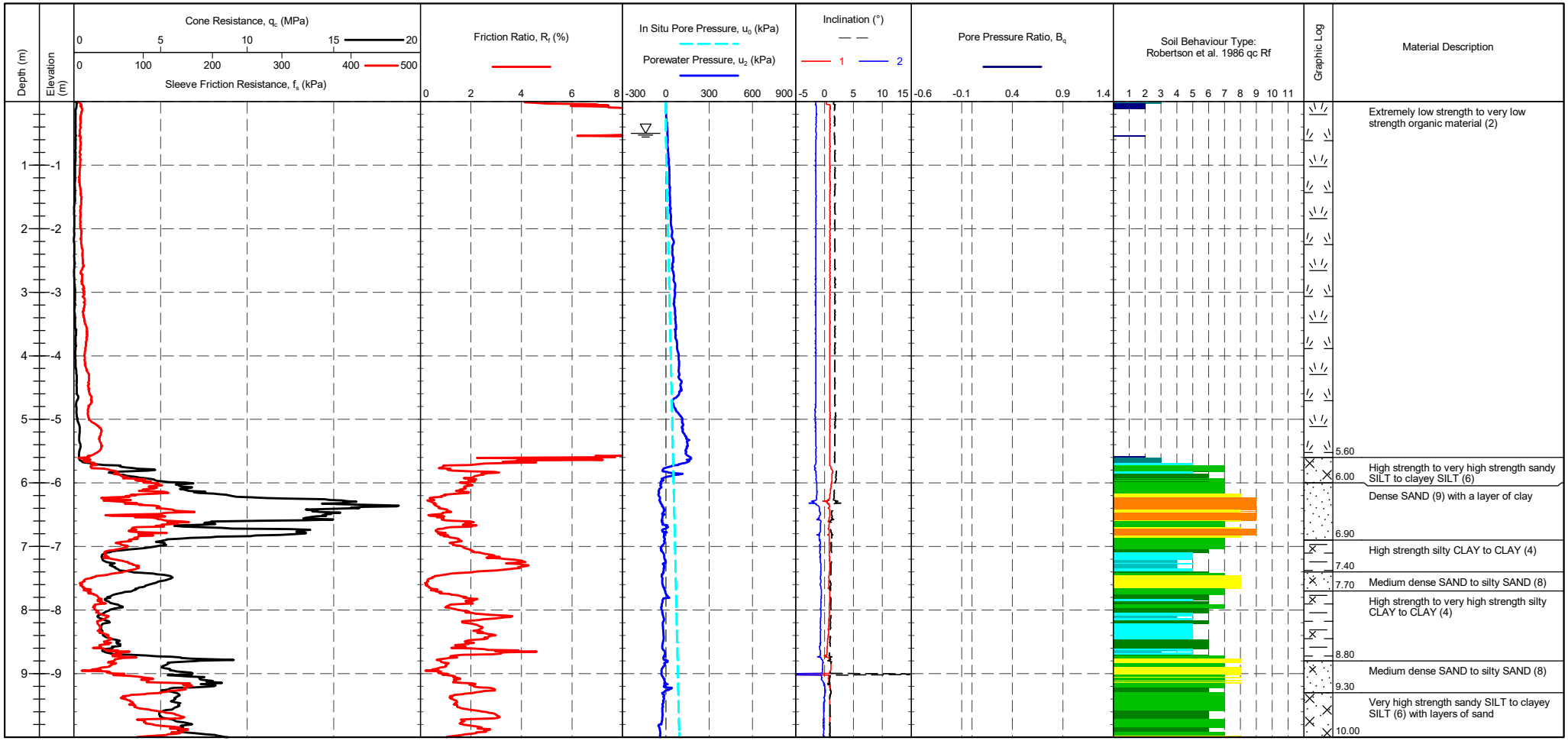
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT203**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649588.851 m NORTHING : 738470.968 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	225 mV	-0.035 MPa
Sleeve	192 mV	189 mV	-0.002 kPa
Pore Pressure 2	288 mV	317 mV	0.008 kPa
X-Y Inclinometer	2436 mV	2498 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

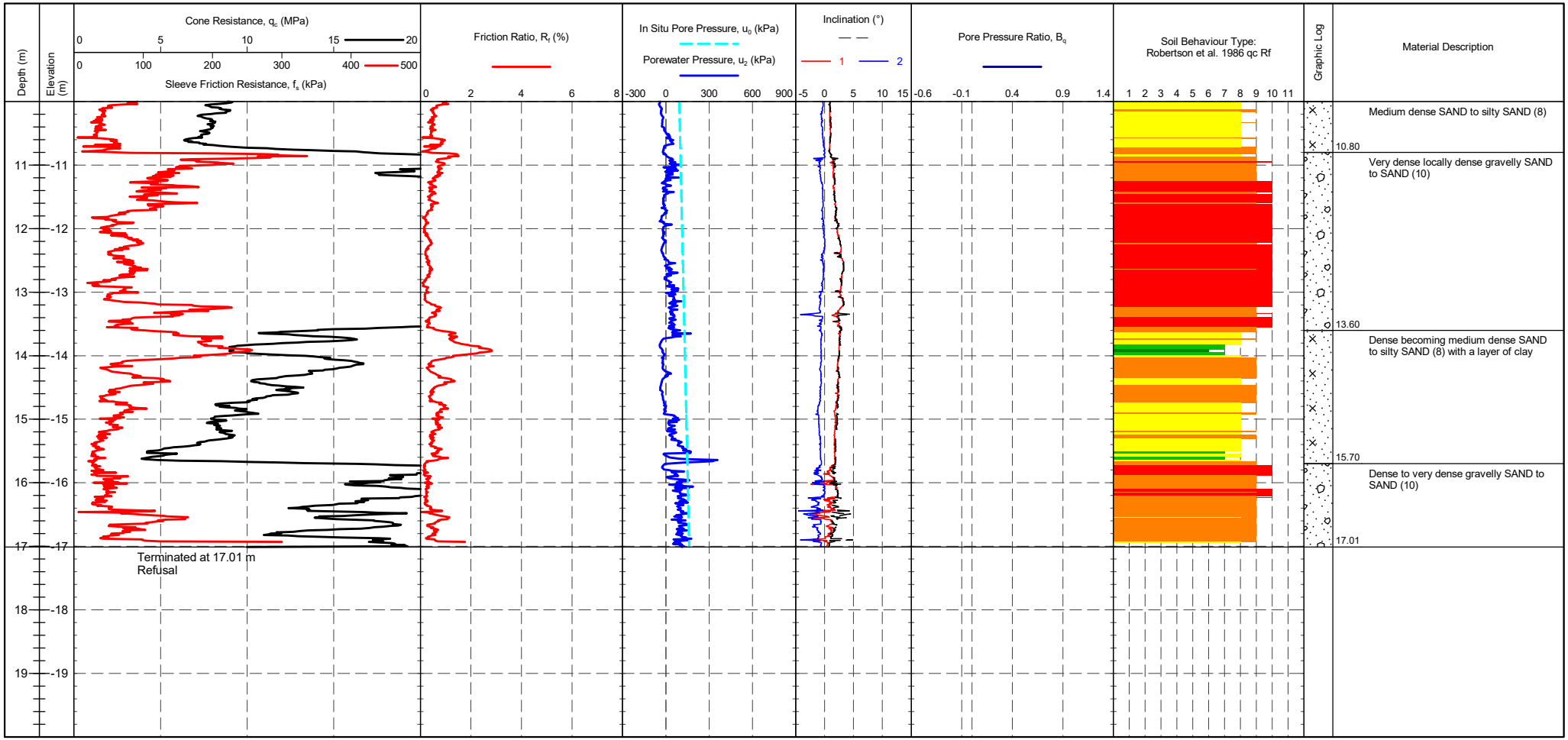
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT203**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649588.851 m NORTHING : 738470.968 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test stopped due to buckling rods.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CALIBRATION DATE : 05/12/2022 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES	METHOD: Robertson et al. 1986 qc Rf

Transducer	Pre	Post	Difference
Tip	228 mV	225 mV	-0.035 MPa
Sleeve	192 mV	189 mV	-0.002 kPa
Pore Pressure 2	288 mV	317 mV	0.008 kPa
X-Y Inclinometer	2436 mV	2498 mV	

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

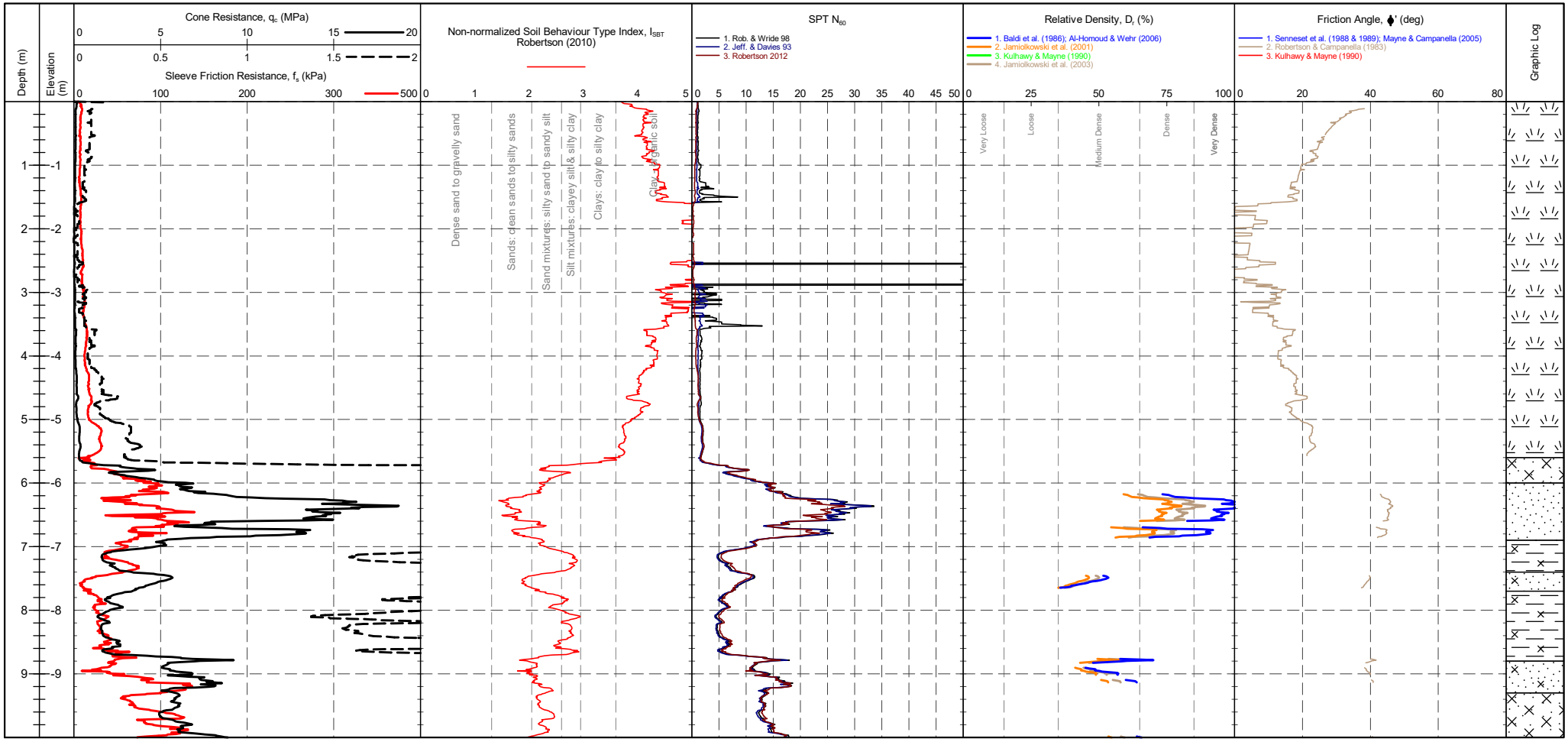
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT203**

CLIENT : Irish Drilling	EASTING : 649588.851 m	Remark:	SHEET : 1 OF 2
PROJECT : Derrygreenagh Power	NORTHING : 738470.968 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 21/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CONE MODEL : Subtraction	APPLICATION CLASS : 2		
CONE AREA : 15cm²	RIG : CPT 017 - Griffen		
CONE AREA RATIO : 0.79	OPERATOR : RS		
FILTER POSITION : u2	FRICTION REDUCER : None		
FILTER TYPE : HDPE	WEATHER : Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	225 mV	-0.035 MPa
Sleeve	192 mV	189 mV	-0.002 kPa
Pore Pressure 2	288 mV	317 mV	0.008 kPa
X-Y Inclinometer	2436 mV	2498 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

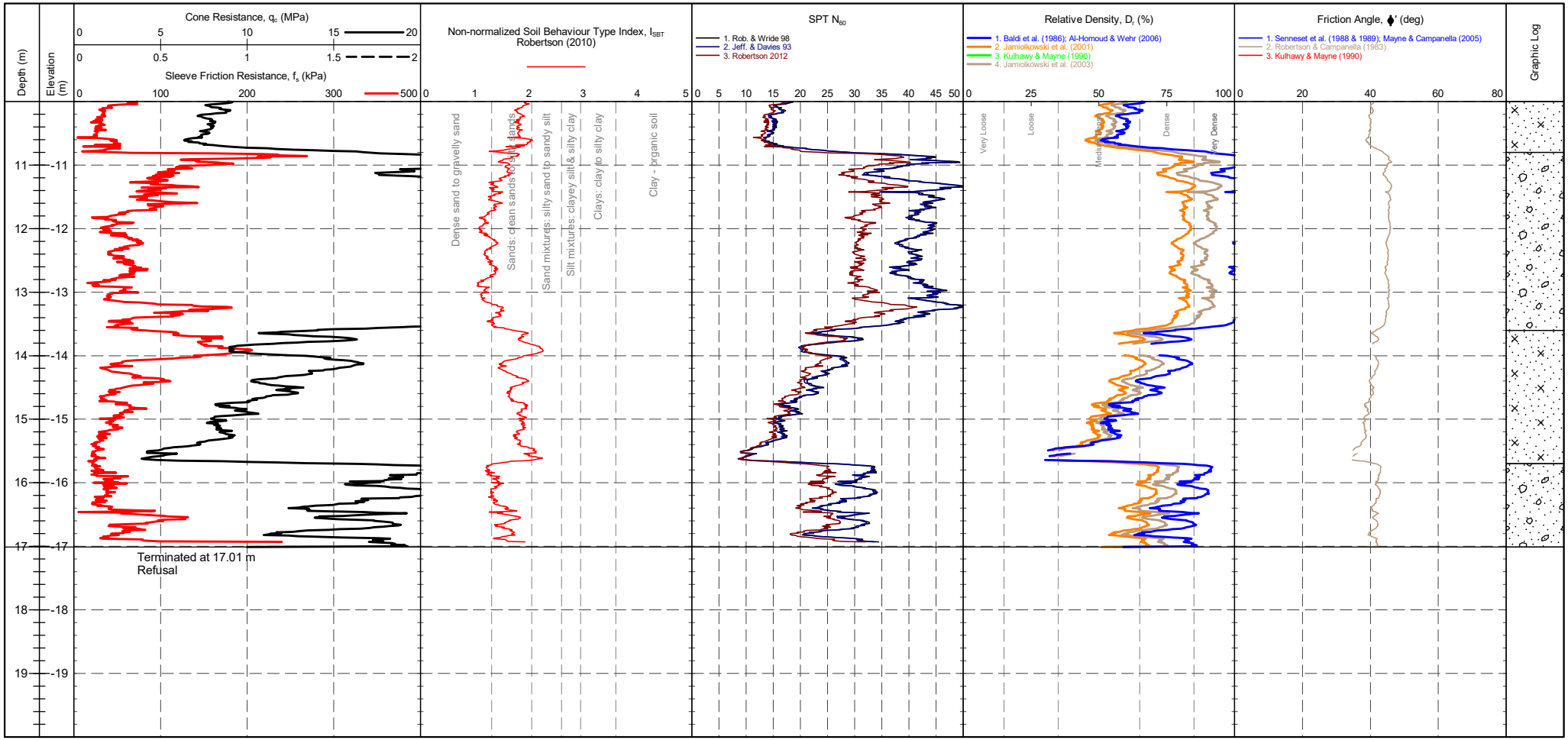
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT203**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649588.851 m NORTHING : 738470.968 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test stopped due to buckling rods.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES	

Transducer	Pre	Post	Difference
Tip	228 mV	225 mV	-0.035 MPa
Sleeve	192 mV	189 mV	-0.002 kPa
Pore Pressure 2	288 mV	317 mV	0.008 kPa
X-Y Inclinometer	2436 mV	2498 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

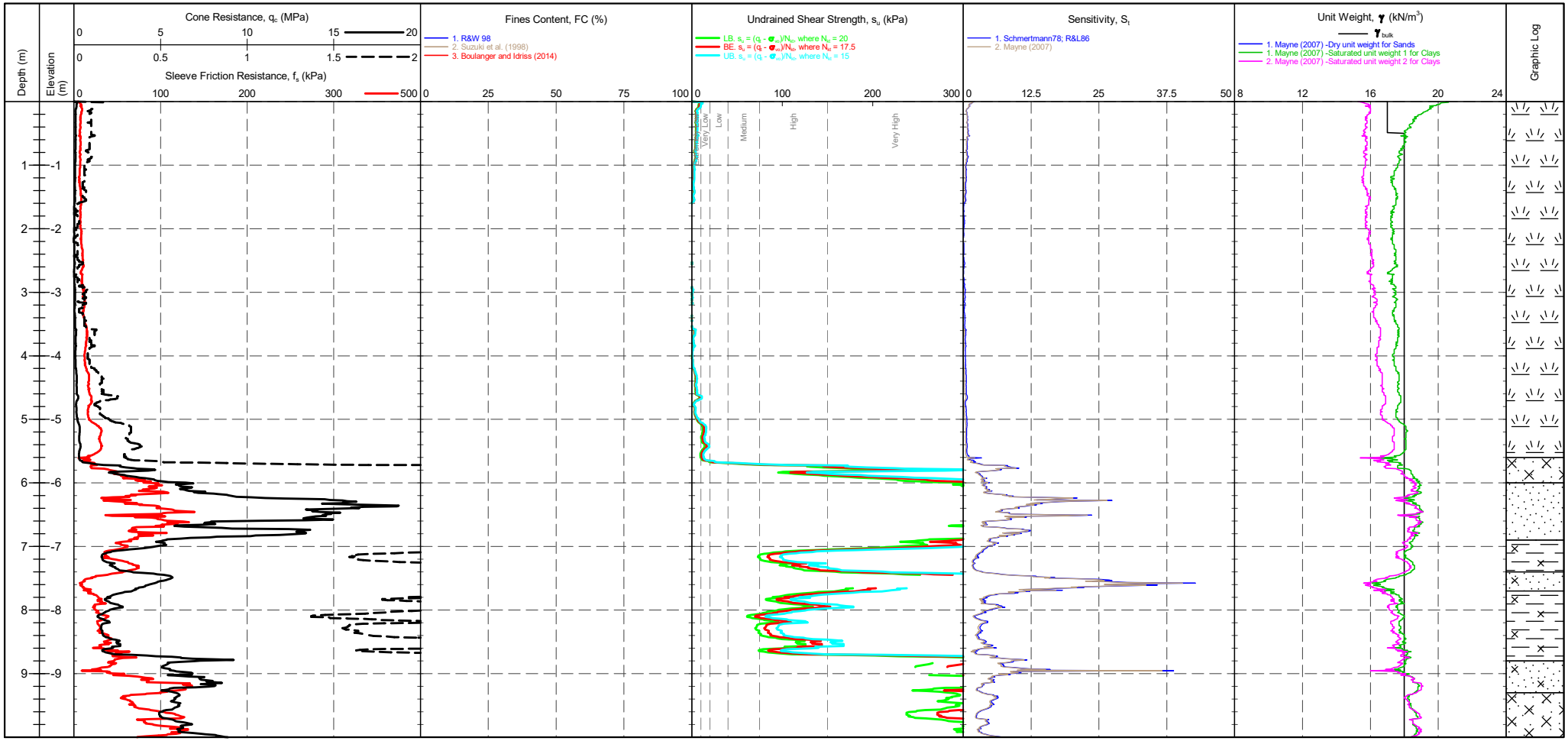
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 03

PointID: **CPT203**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649588.851 m NORTHING : 738470.968 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 228 mV / 225 mV / -0.035 MPa Sleeve / 192 mV / 189 mV / -0.002 kPa Pore Pressure 2 / 288 mV / 317 mV / 0.008 kPa X-Y Inclinometer / 2436 mV / 2498 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40 Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300

Groundwater Level

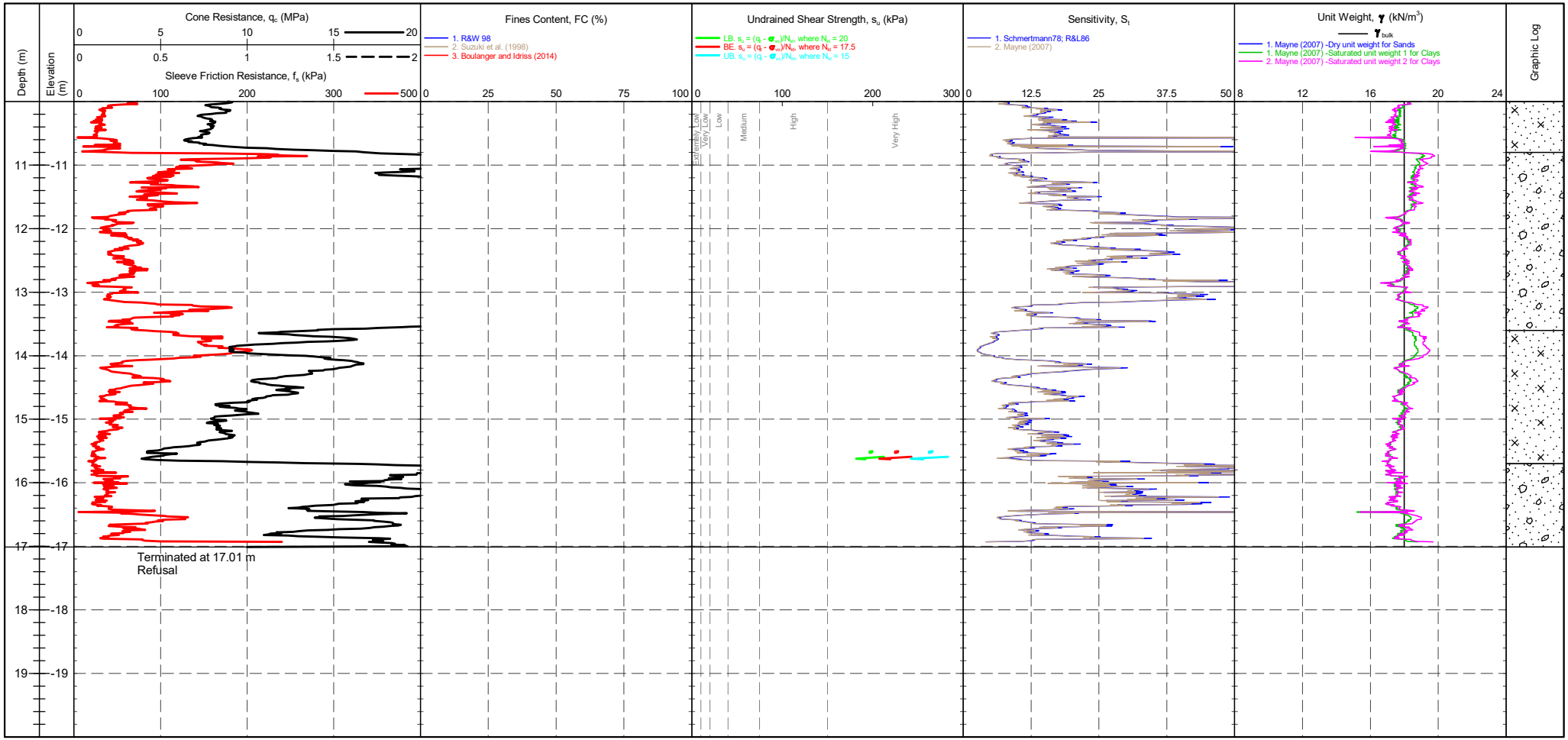
Dissipation Test

CPT LOG 03

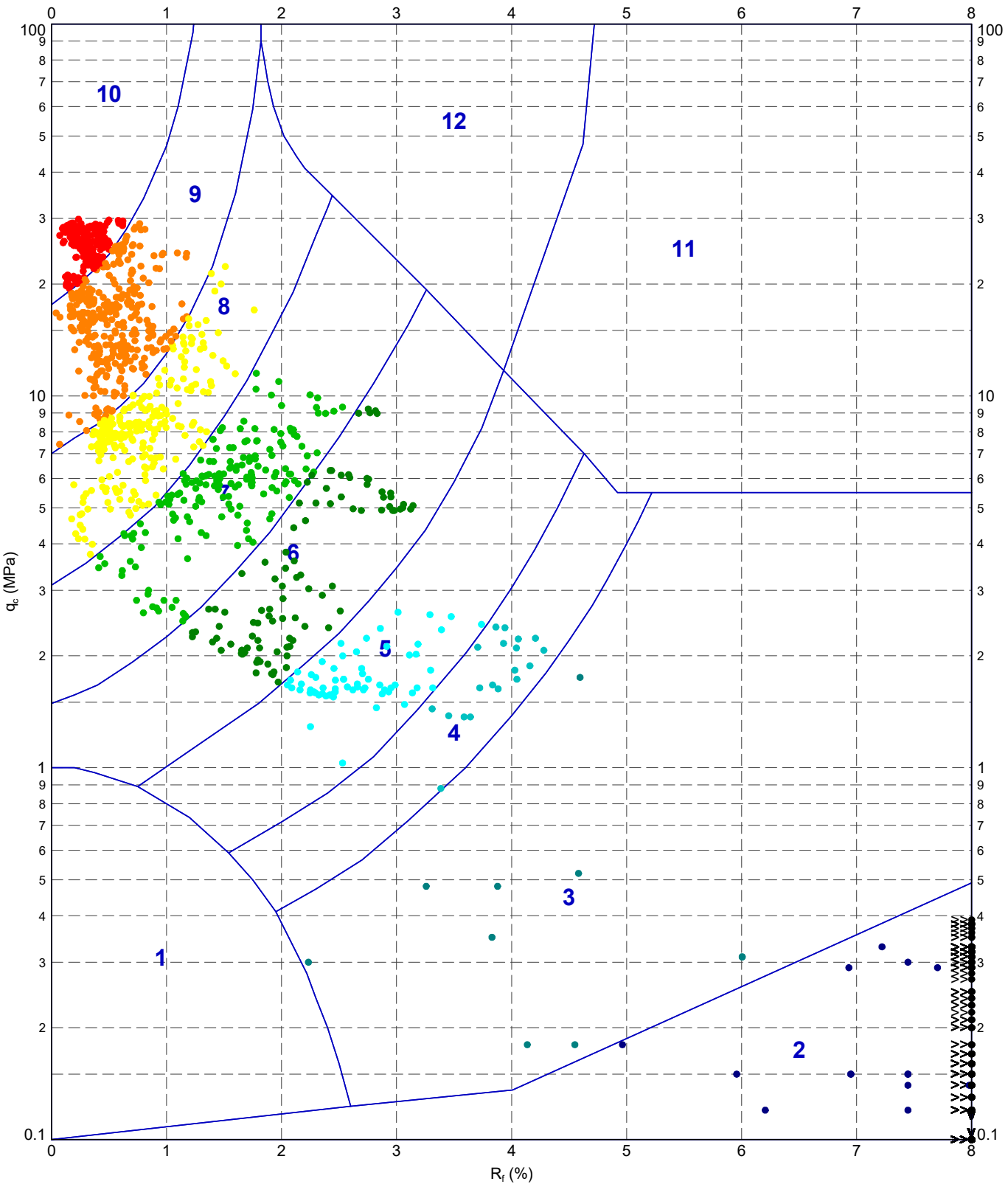
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT203

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649588.851 m NORTHING : 738470.968 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test stopped due to buckling rods.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 228 mV / 225 mV / -0.035 MPa Sleeve / 192 mV / 189 mV / -0.002 kPa Pore Pressure 2 / 288 mV / 317 mV / 0.008 kPa X-Y Inclinometer / 2436 mV / 2498 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT203	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:00 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

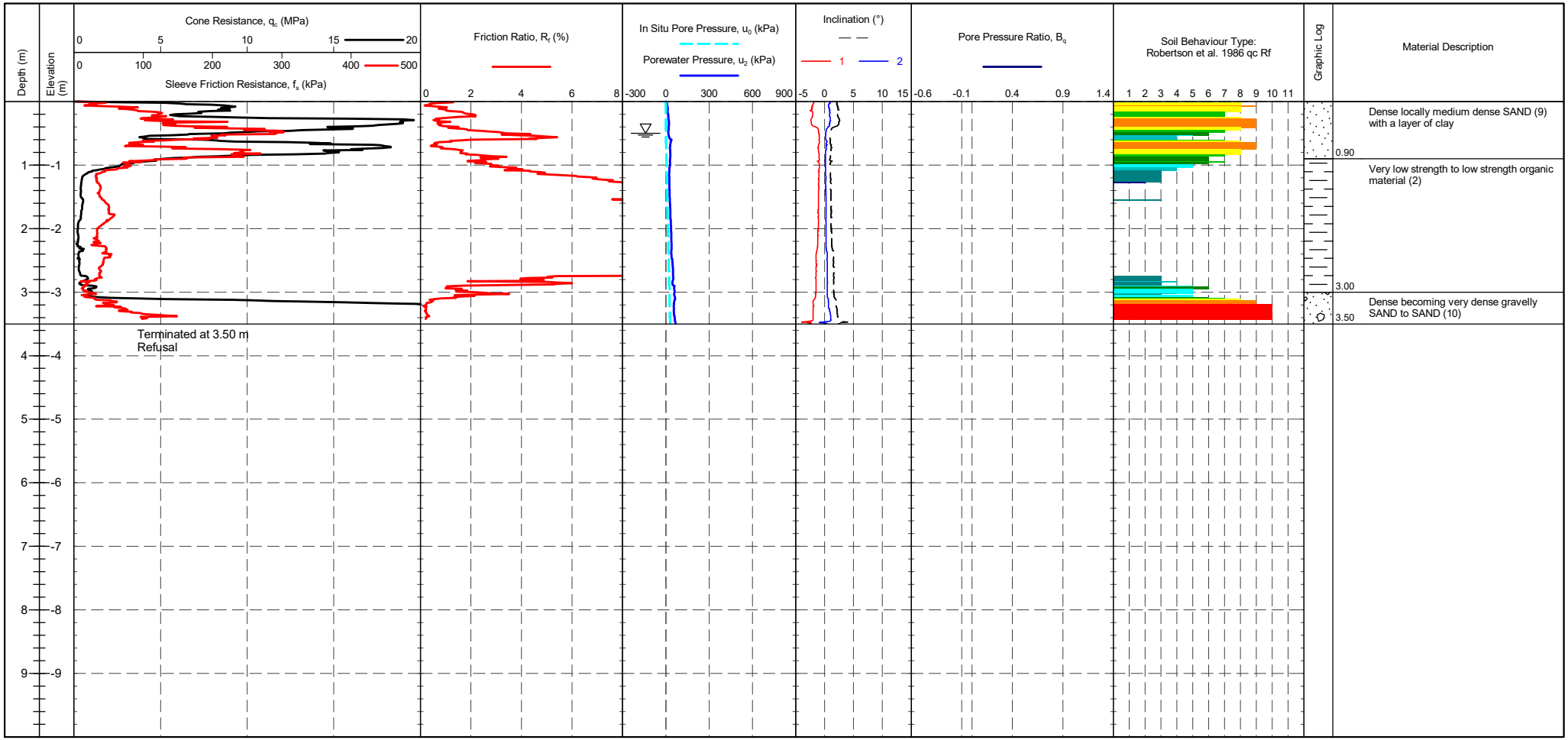
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT204**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649370.347 m NORTHING : 738330.955 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	224 mV	228 mV	0.046 MPa
Sleeve	195 mV	201 mV	0.004 kPa
Pore Pressure 2	234 mV	329 mV	0.025 kPa
X-Y Inclinometer	2208 mV	2199 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

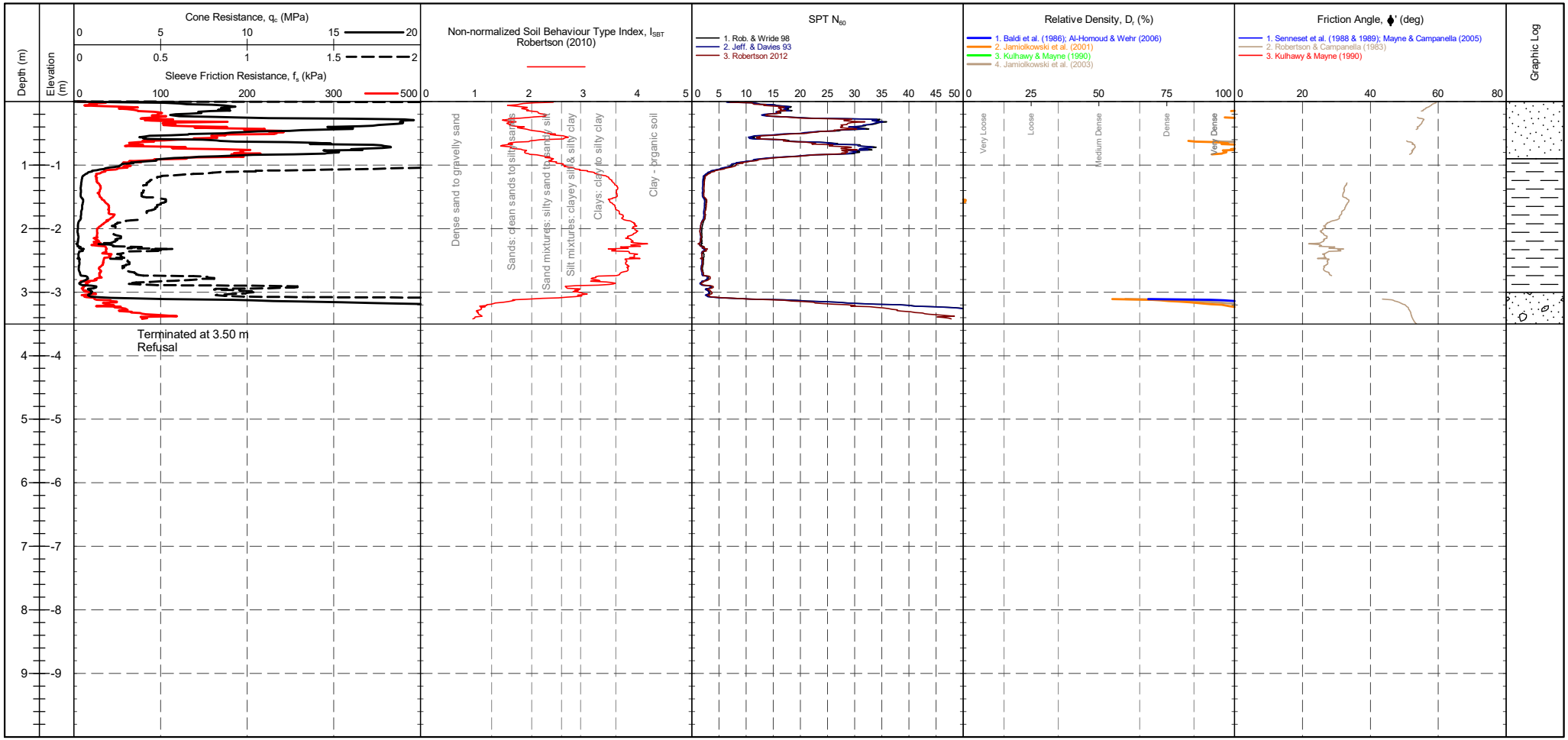
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT204**

CLIENT : Irish Drilling	EASTING : 649370.347 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738330.955 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	224 mV	228 mV	0.046 MPa
Sleeve	195 mV	201 mV	0.004 kPa
Pore Pressure 2	234 mV	329 mV	0.025 kPa
X-Y Inclinometer	2208 mV	2199 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

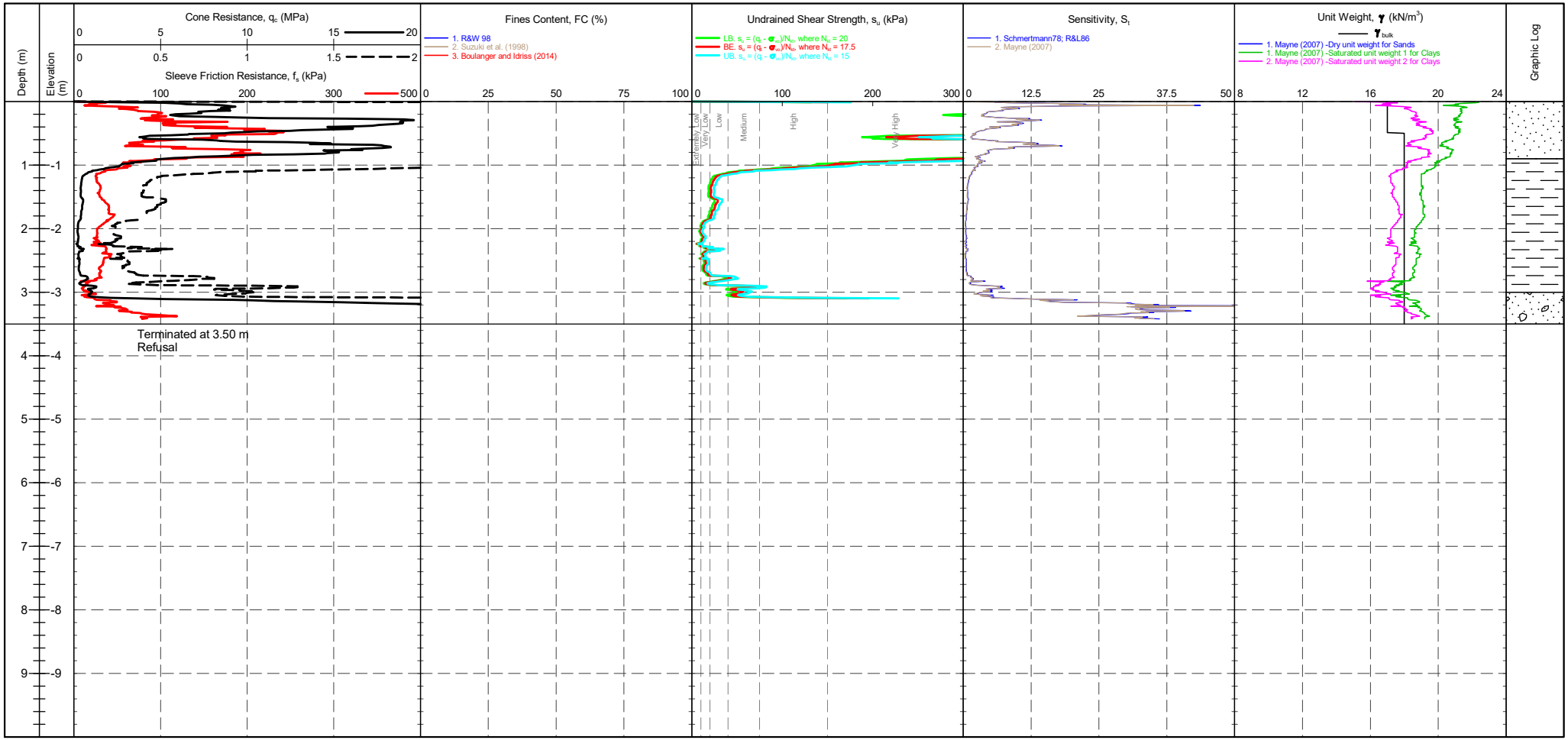
Dissipation Test

CPT LOG 03

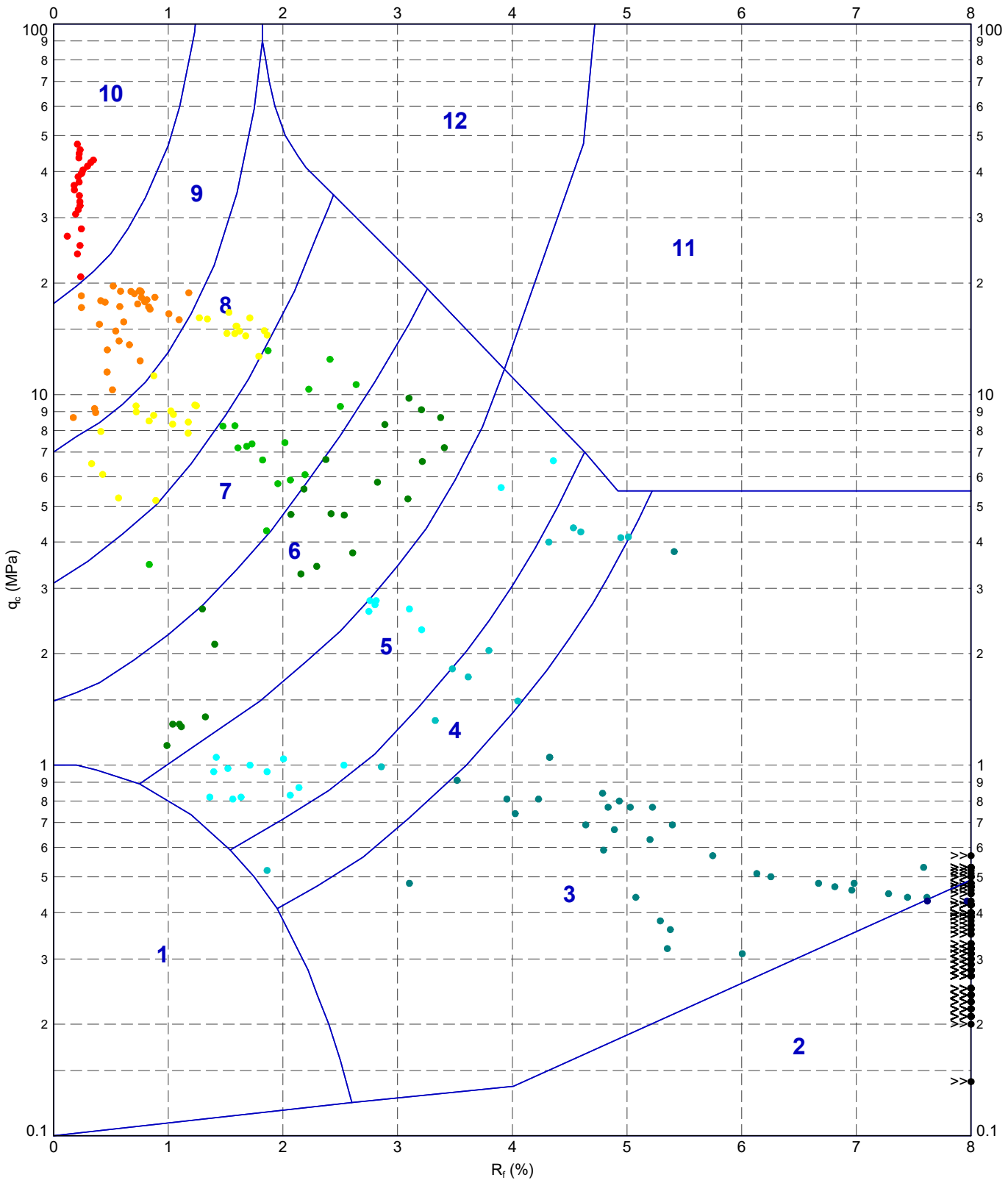
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT204

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649370.347 m NORTHING : 738330.955 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 224 mV / 228 mV / 0.046 MPa Sleeve / 195 mV / 201 mV / 0.004 kPa Pore Pressure 2 / 234 mV / 329 mV / 0.025 kPa X-Y Inclinometer / 2208 mV / 2199 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT204	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:01 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

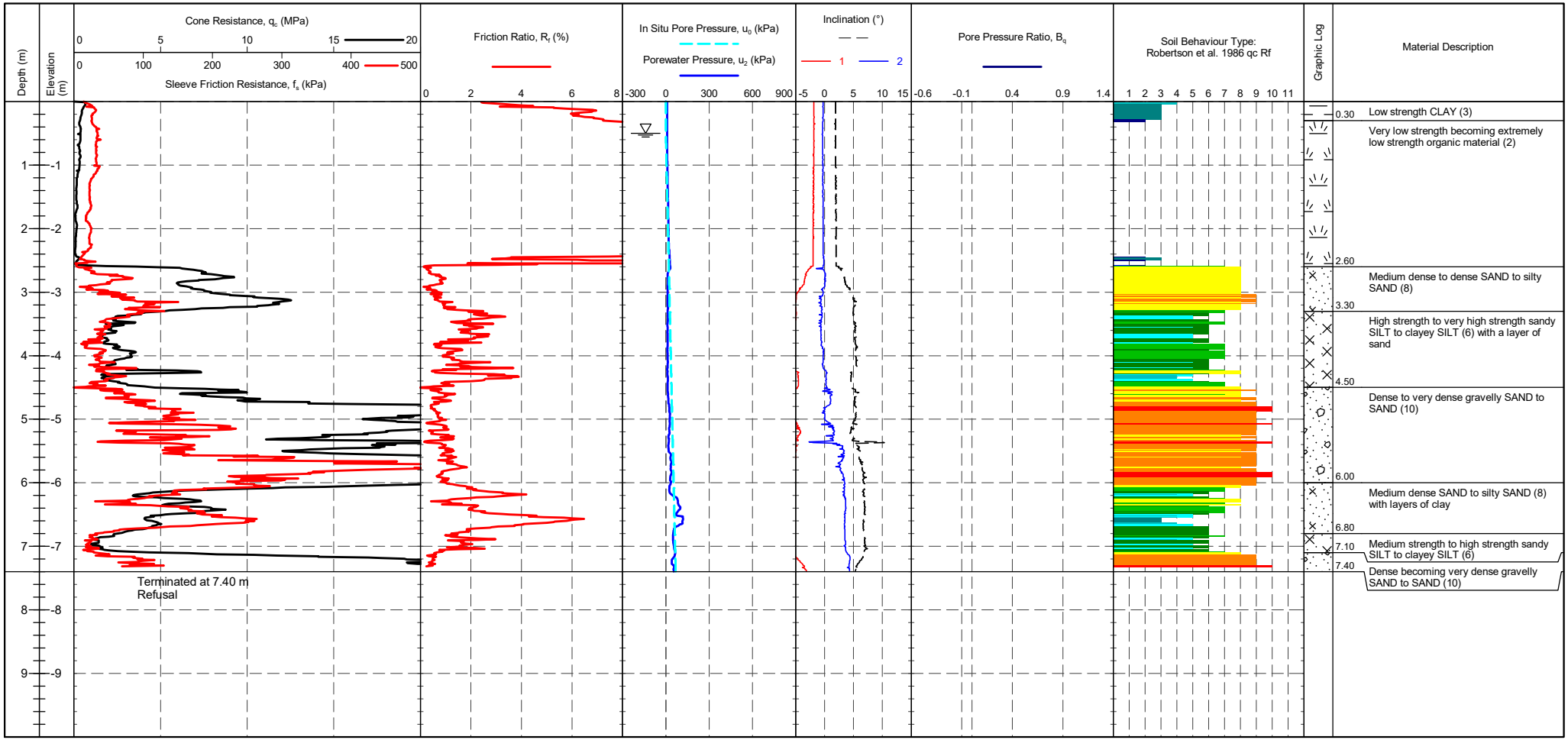
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT205**

CLIENT : Irish Drilling	EASTING : 649424.962 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738387.455 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	227 mV	224 mV	-0.035 MPa
Sleeve	200 mV	196 mV	-0.003 kPa
Pore Pressure 2	305 mV	314 mV	0.002 kPa
X-Y Inclinometer	2221 mV	2187 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

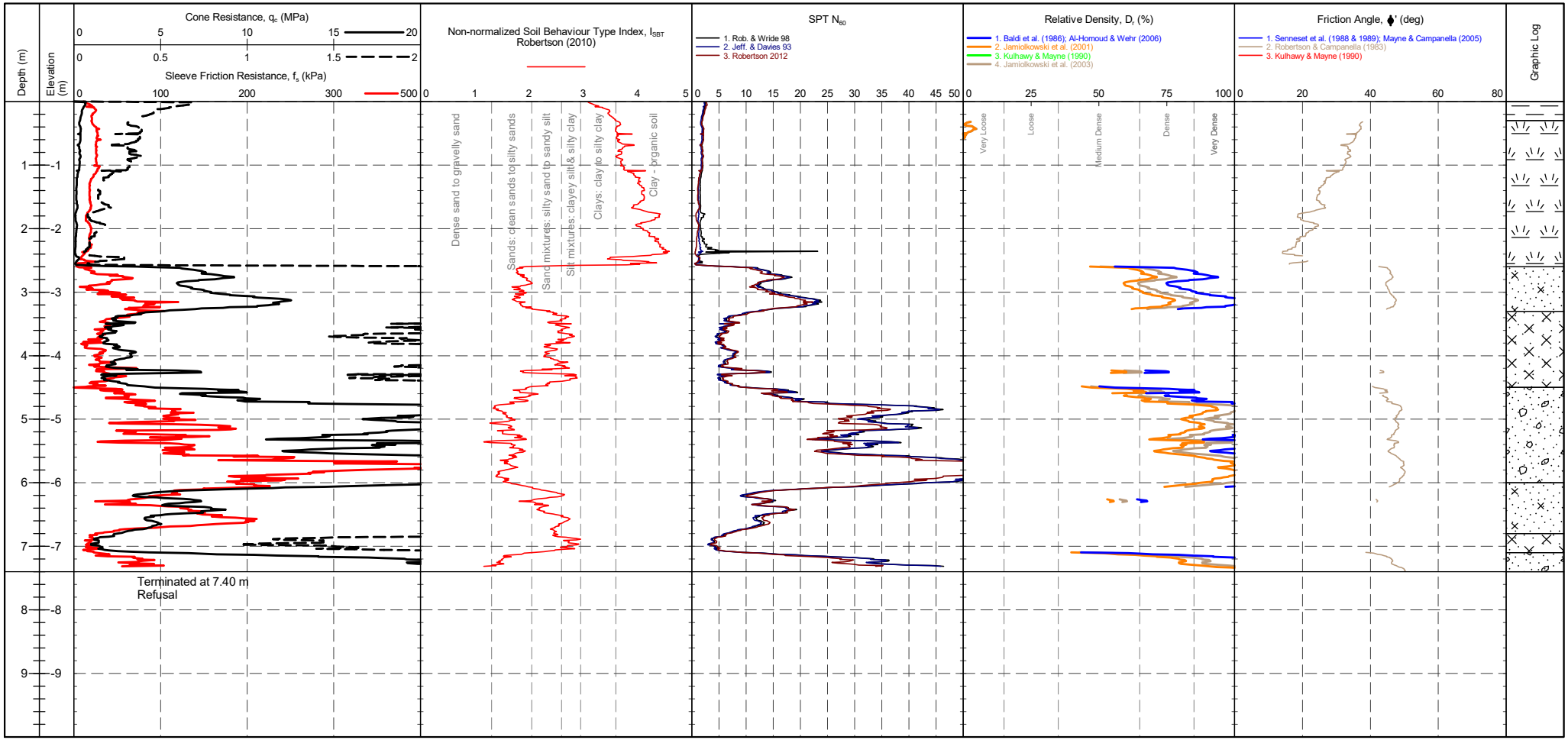
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT205**

CLIENT : Irish Drilling	EASTING : 649424.962 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738387.455 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	227 mV	224 mV	-0.035 MPa
Sleeve	200 mV	196 mV	-0.003 kPa
Pore Pressure 2	305 mV	314 mV	0.002 kPa
X-Y Inclinometer	2221 mV	2187 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

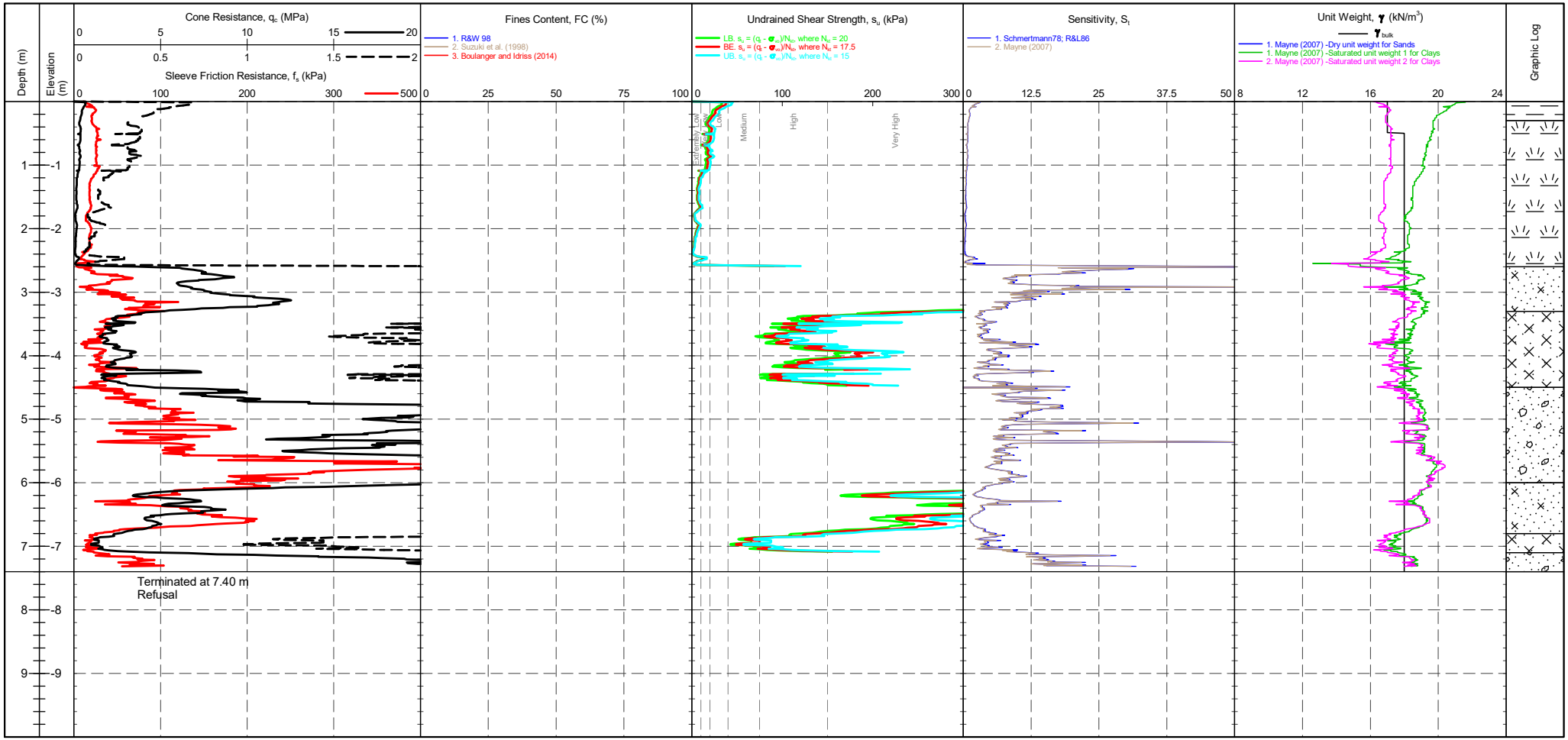
Dissipation Test

CPT LOG 03

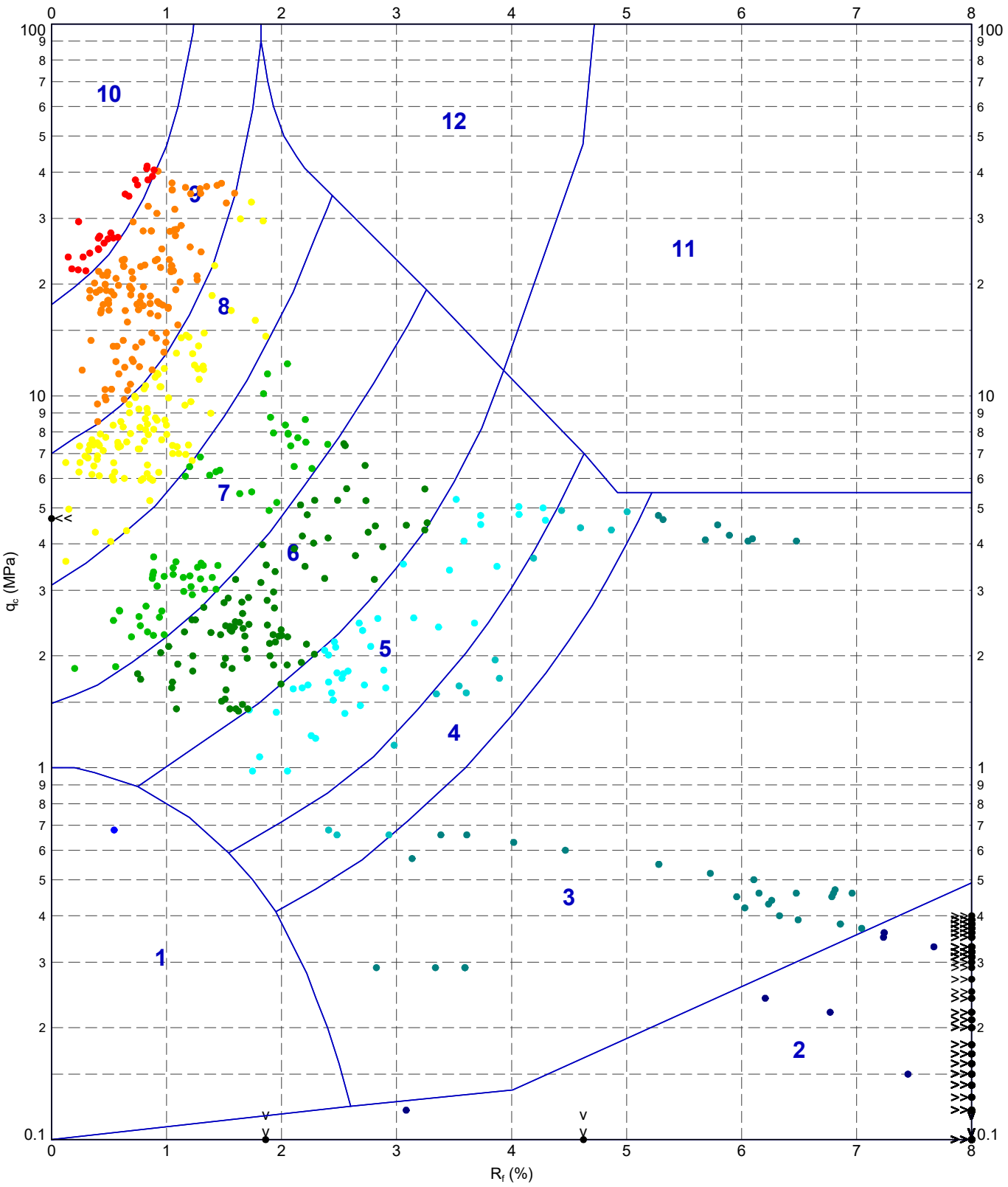
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT205

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649424.962 m NORTHING : 738387.455 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 227 mV / 224 mV / -0.035 MPa Sleeve / 200 mV / 196 mV / -0.003 kPa Pore Pressure 2 / 305 mV / 314 mV / 0.002 kPa X-Y Inclinometer / 2221 mV / 2187 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT205	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

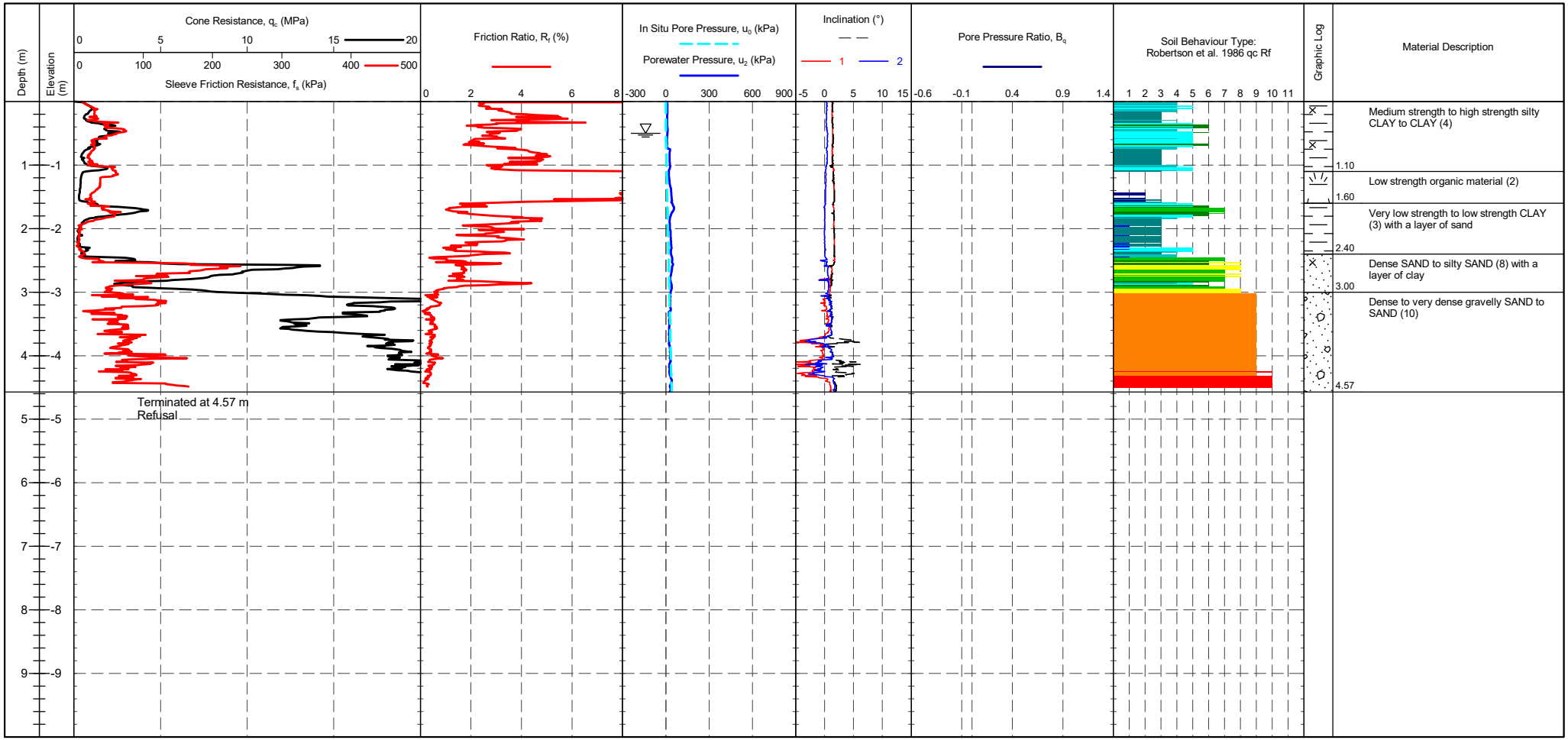
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:02 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID: **CPT206**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649305.315 m NORTHING : 738253.408 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2	CPTU ZERO VALUES	METHOD: Robertson et al. 1986 qc Rf
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

Transducer	Pre	Post	Difference
Tip	227 mV	226 mV	-0.012 MPa
Sleeve	210 mV	210 mV	0 kPa
Pore Pressure 2	281 mV	333 mV	0.014 kPa
X-Y Inclinometer	2533 mV	2523 mV	

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

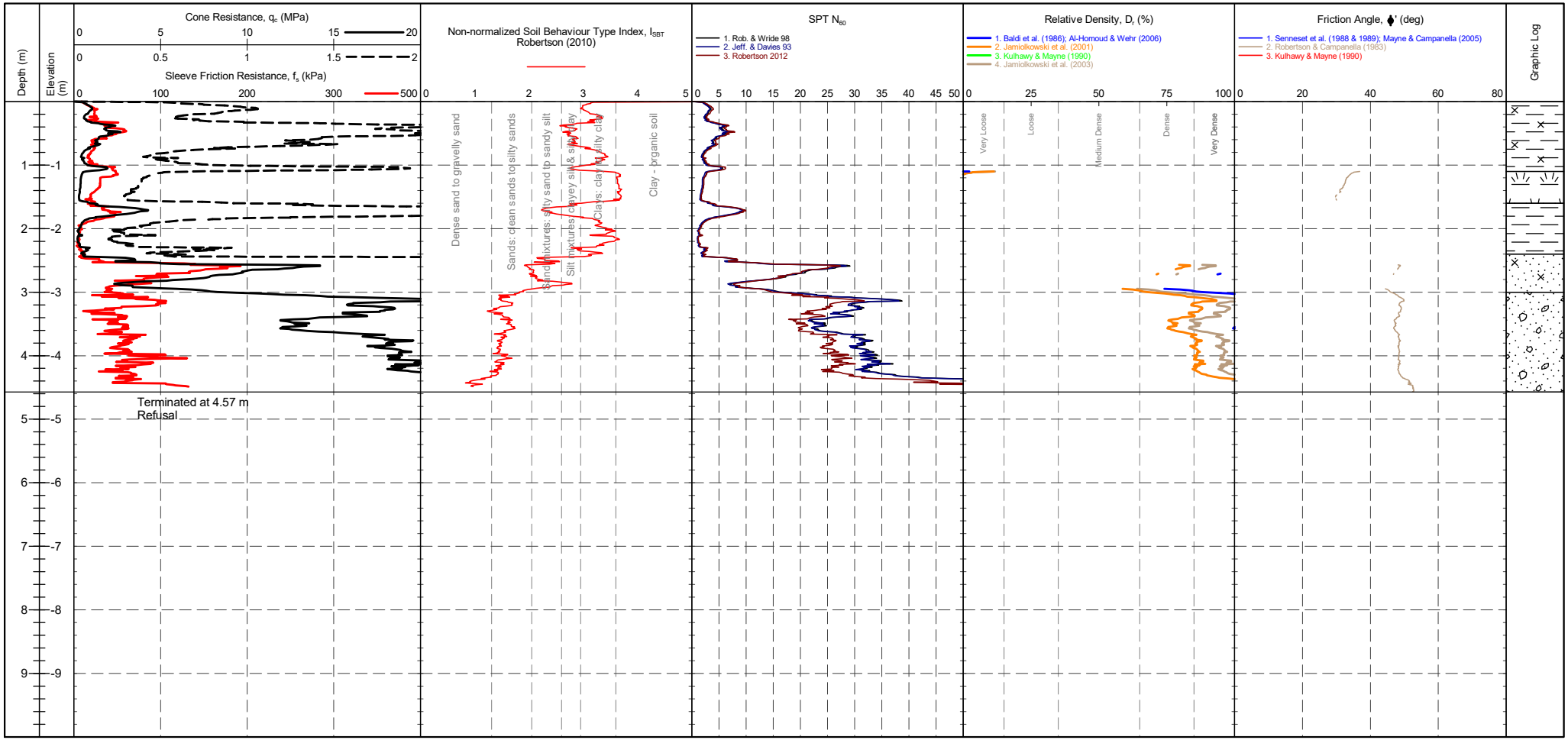
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT206**

CLIENT : Irish Drilling	EASTING : 649305.315 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738253.408 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	227 mV	226 mV	-0.012 MPa
Sleeve	210 mV	210 mV	0 kPa
Pore Pressure 2	281 mV	333 mV	0.014 kPa
X-Y Inclinometer	2533 mV	2523 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

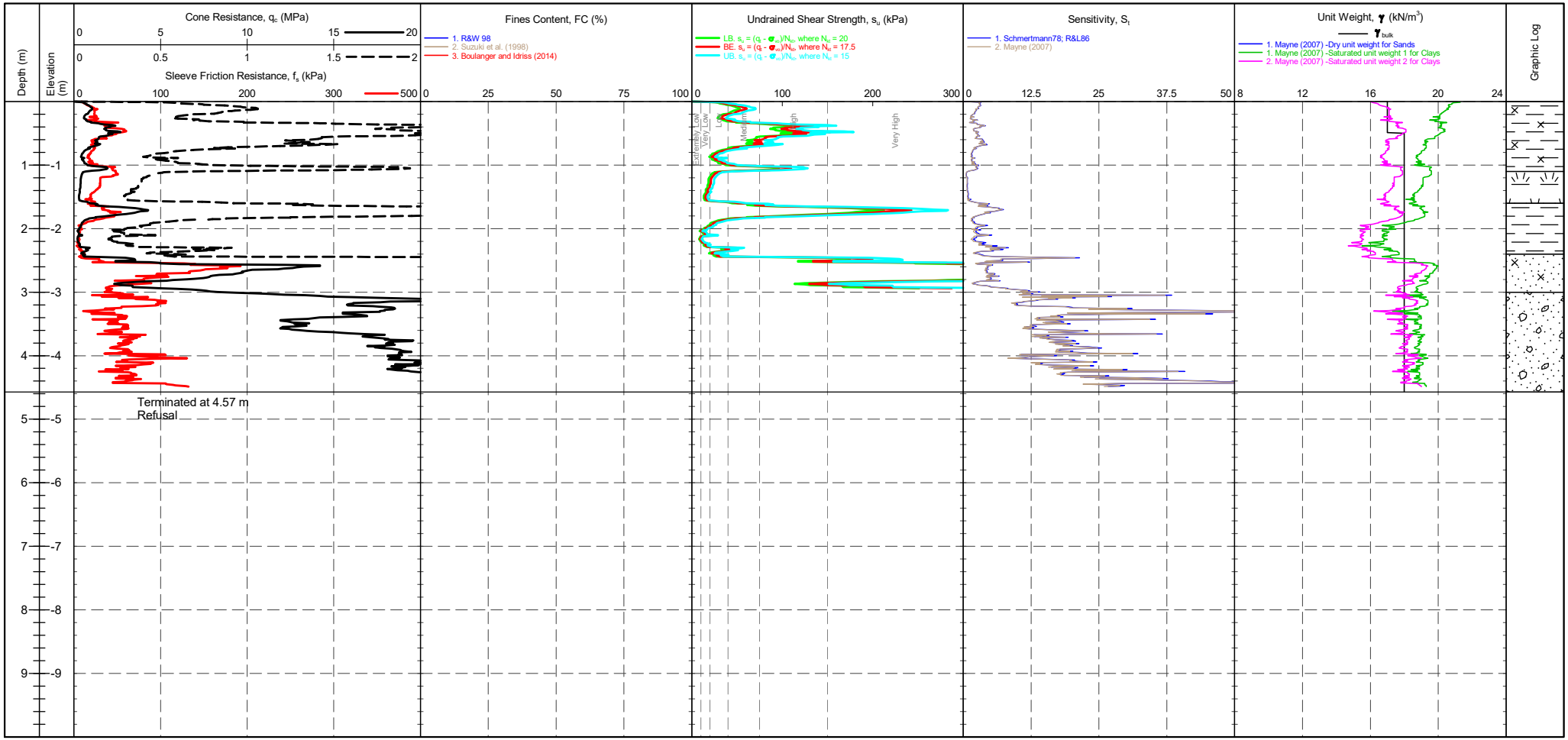
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

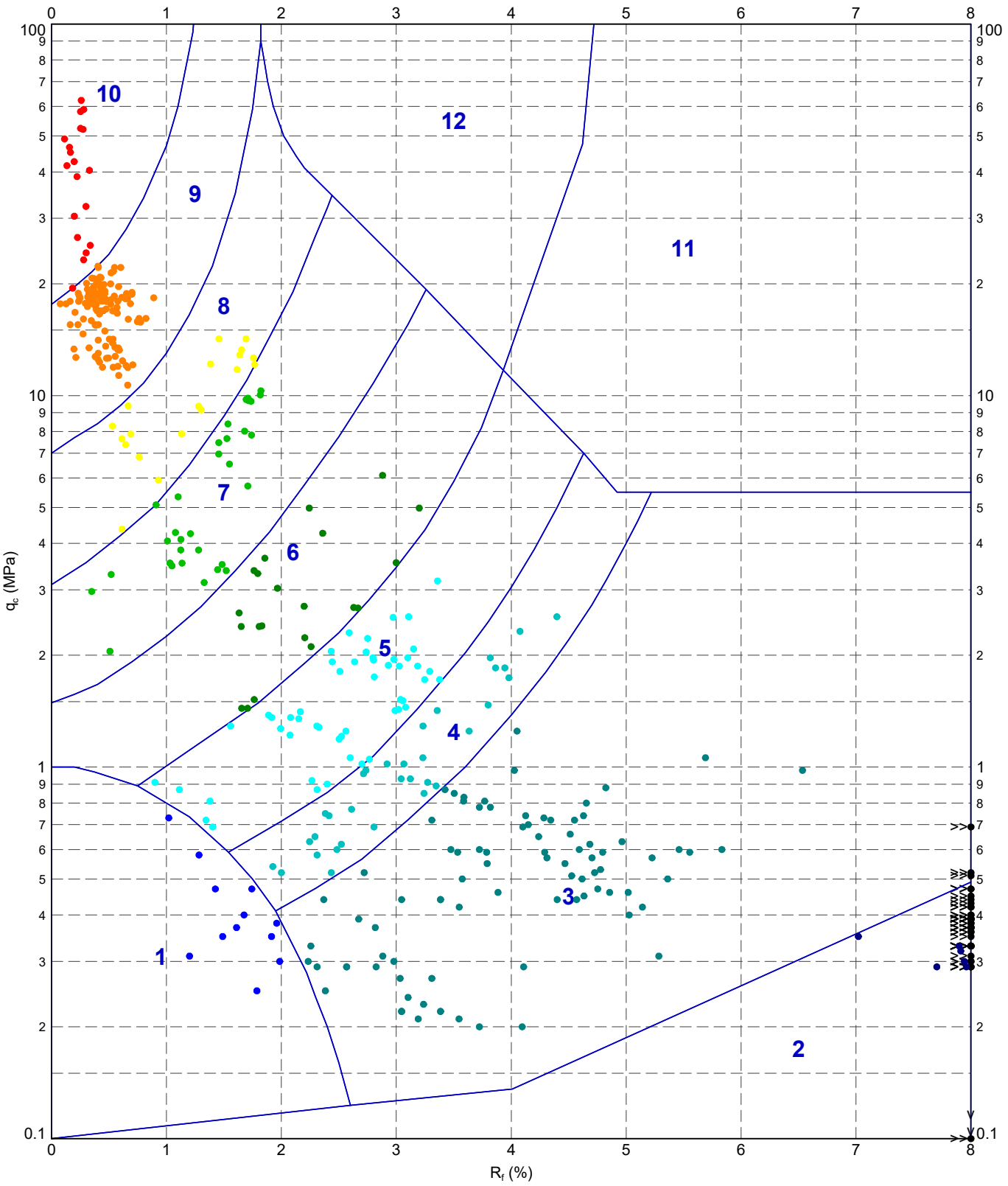
CPT LOG 03

PointID: **CPT206**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649305.315 m NORTHING : 738253.408 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip: 227 mV / 226 mV / -0.012 MPa Sleeve: 210 mV / 210 mV / 0 kPa Pore Pressure 2: 281 mV / 333 mV / 0.014 kPa X-Y Inclinometer: 2533 mV / 2523 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength: <10 Very low strength: 10-20 Low strength: 20-40	Term based on measurement / su (kPa) Medium strength: 40-75 High strength: 75-150 Very high strength: 150-300 Extremely high strength: >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT206	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:03 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

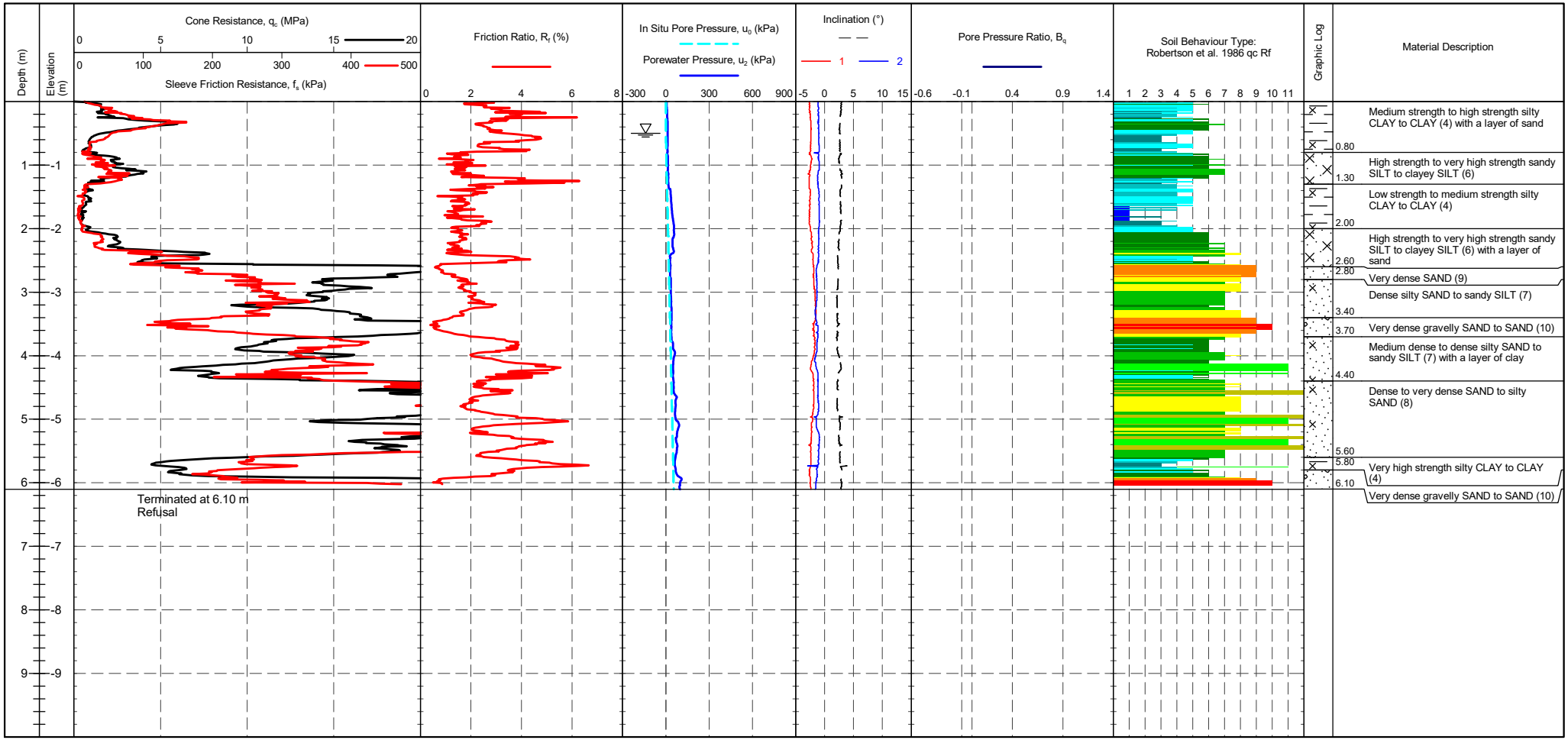
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT207**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649641.764 m NORTHING : 738293.376 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	226 mV	226 mV	0 MPa
Sleeve	196 mV	196 mV	0 kPa
Pore Pressure 2	276 mV	349 mV	0.019 kPa
X-Y Inclinometer	2130 mV	2143 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

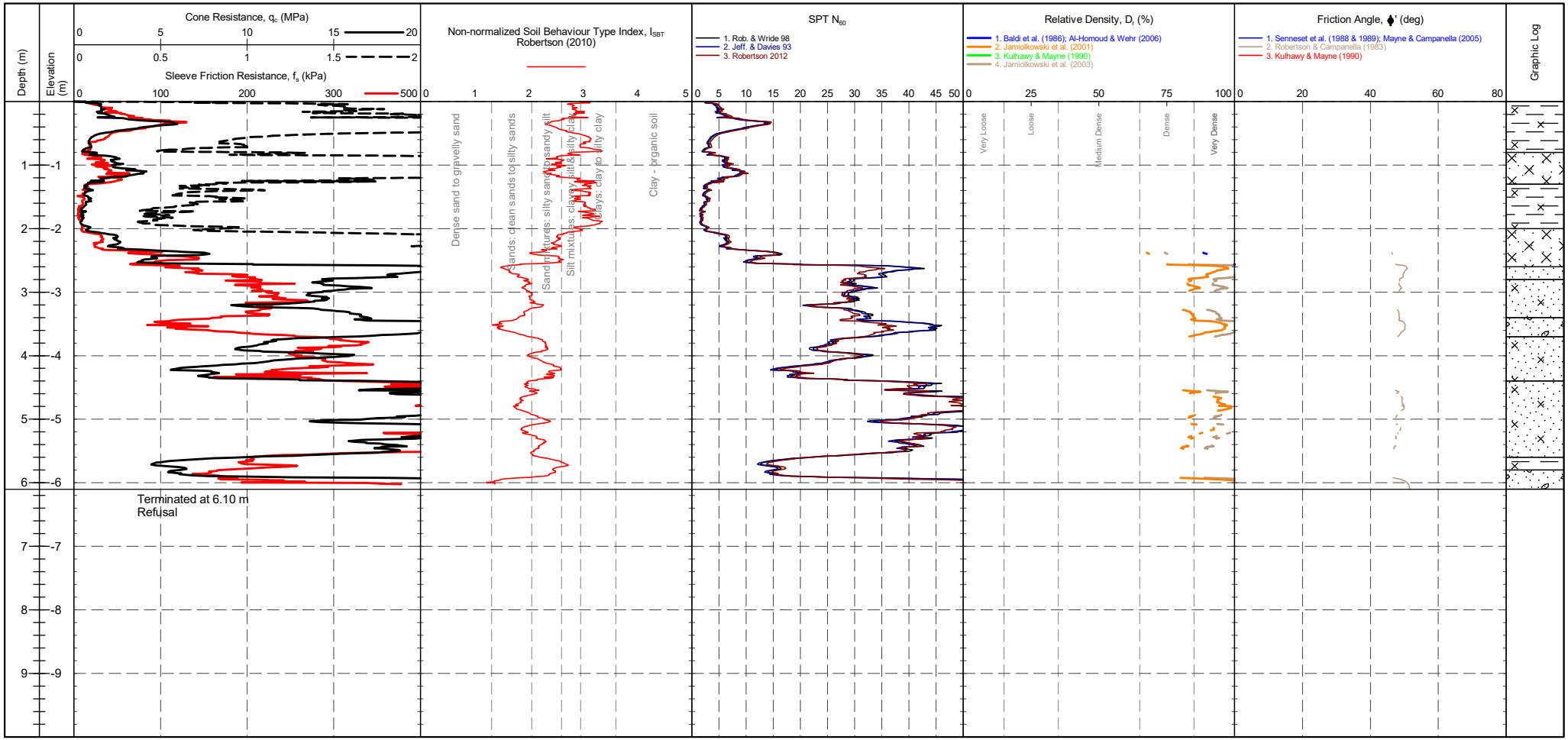
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT207**

CLIENT : Irish Drilling	EASTING : 649641.764 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738293.376 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	226 mV	226 mV	0 MPa
Sleeve	196 mV	196 mV	0 kPa
Pore Pressure 2	276 mV	349 mV	0.019 kPa
X-Y Inclinometer	2130 mV	2143 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

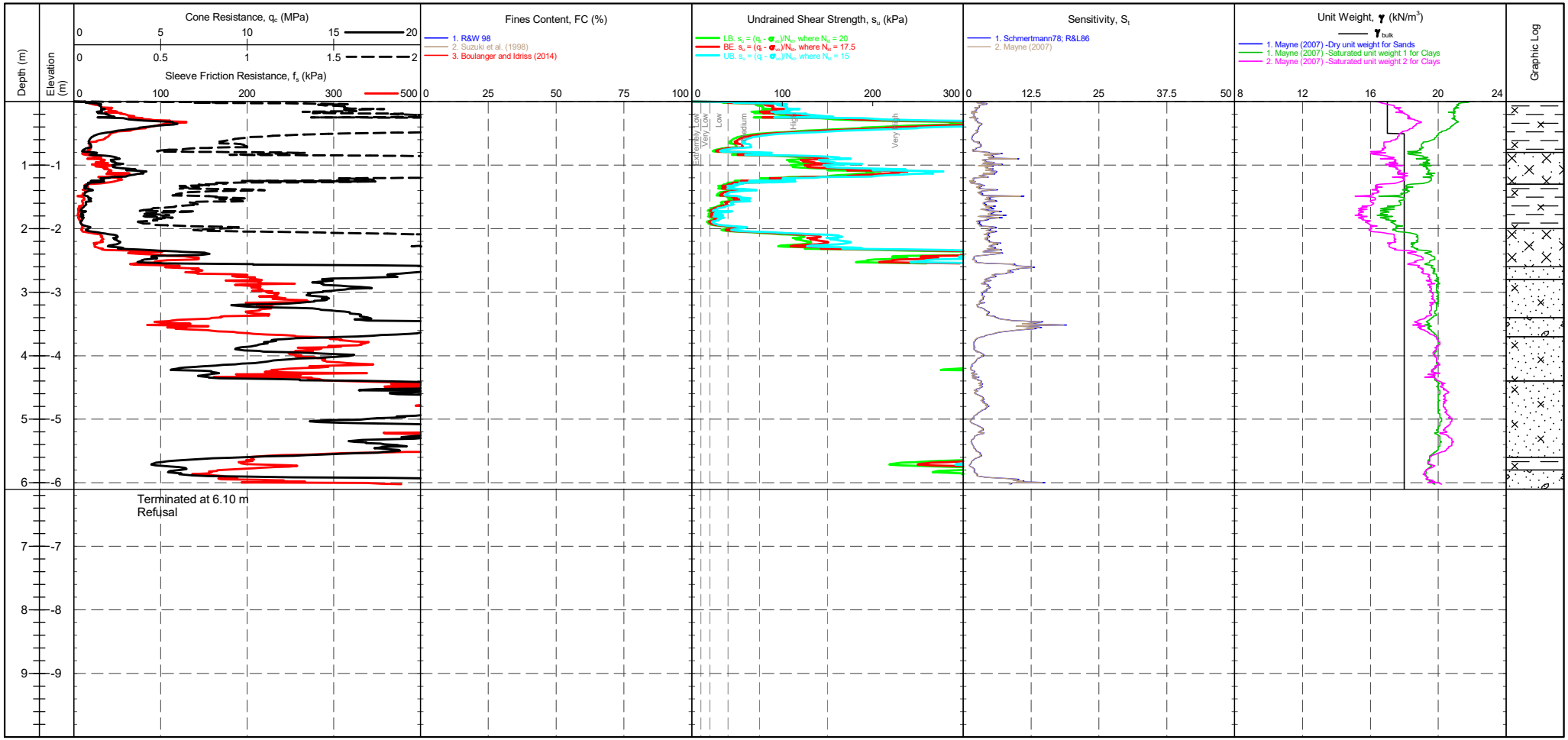
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 03

PointID: **CPT207**

CLIENT : Irish Drilling	EASTING : 649641.764 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738293.376 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



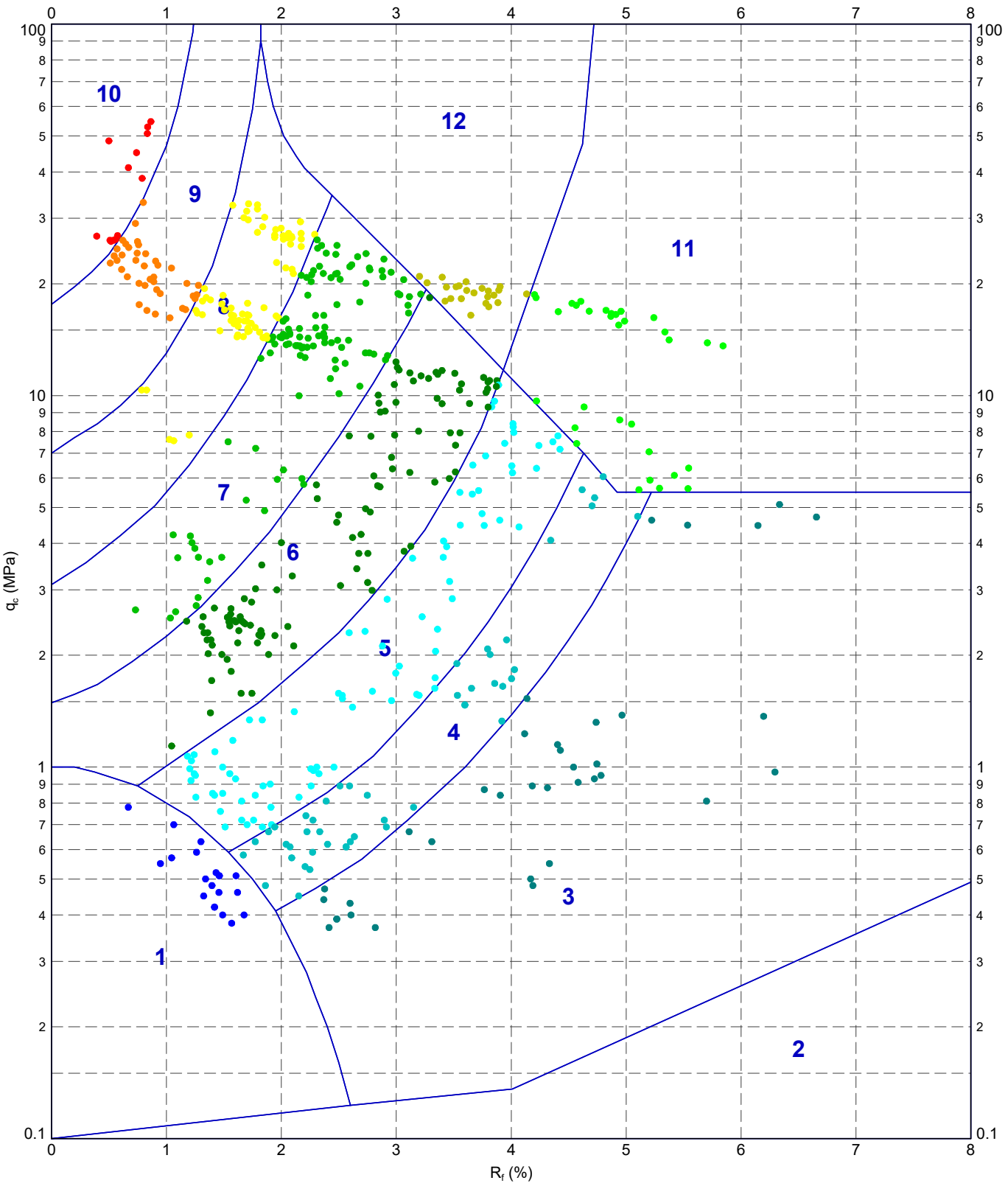
CONE ID : S15-CFIP.2175	TEST TYPE : TE2	CPTU ZERO VALUES			
CONE MODEL : Subtraction	APPLICATION CLASS : 2	Transducer	Pre	Post	Difference
CONE AREA : 15cm^2	RIG : CPT 017 - Griffen	Tip	226 mV	226 mV	0 MPa
CONE AREA RATIO : 0.79	OPERATOR : RS	Sleeve	196 mV	196 mV	0 kPa
FILTER POSITION : u2	FRICTION REDUCER : None	Pore Pressure 2	276 mV	349 mV	0.019 kPa
FILTER TYPE : HDPE	WEATHER : Sunny & Mild	X-Y Inclinometer	2130 mV	2143 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT207	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:03 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

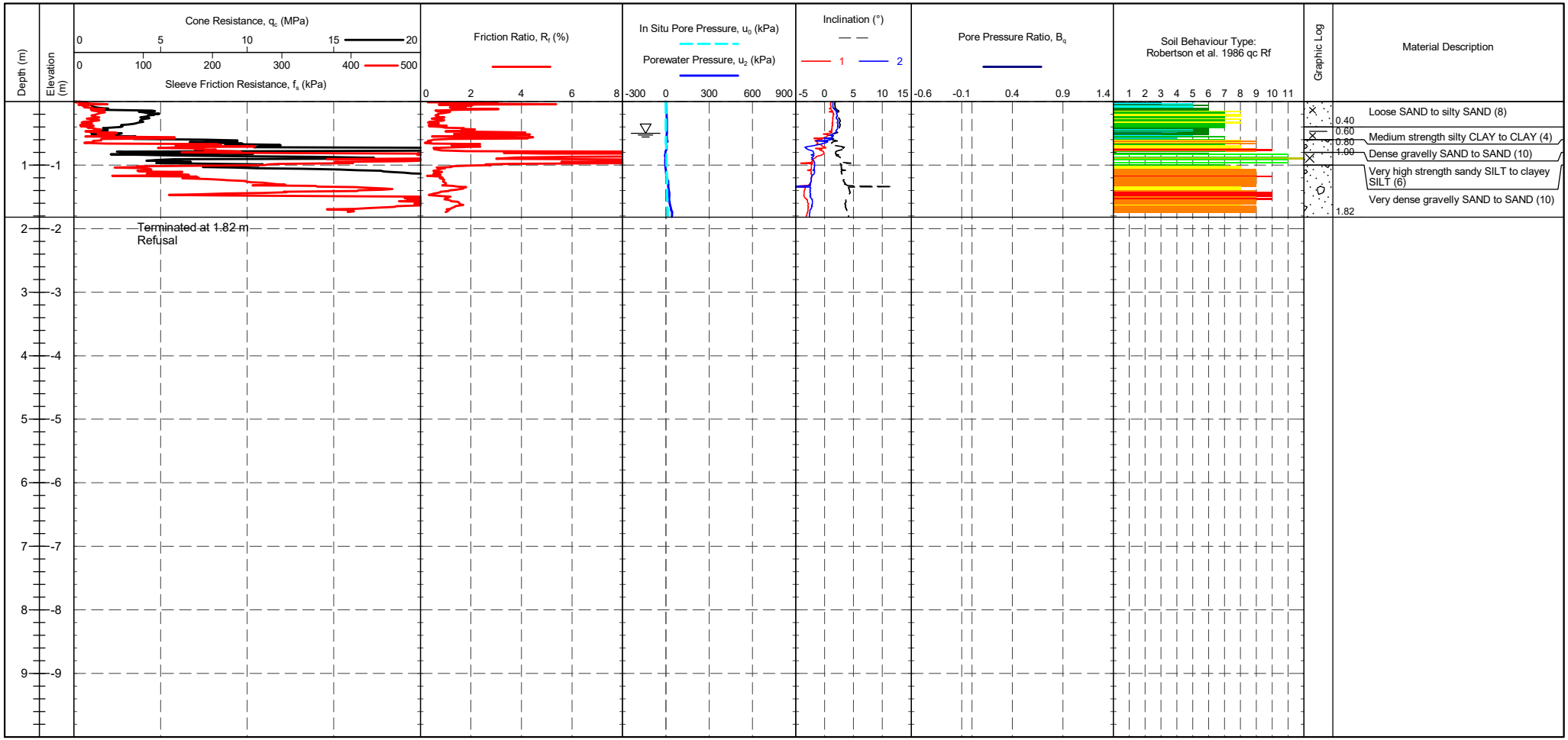
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT209**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649665.736 m NORTHING : 738226.952 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	227 mV	227 mV	0 MPa
Sleeve	197 mV	194 mV	-0.002 kPa
Pore Pressure 2	343 mV	299 mV	-0.012 kPa
X-Y Inclinometer	2504 mV	2512 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

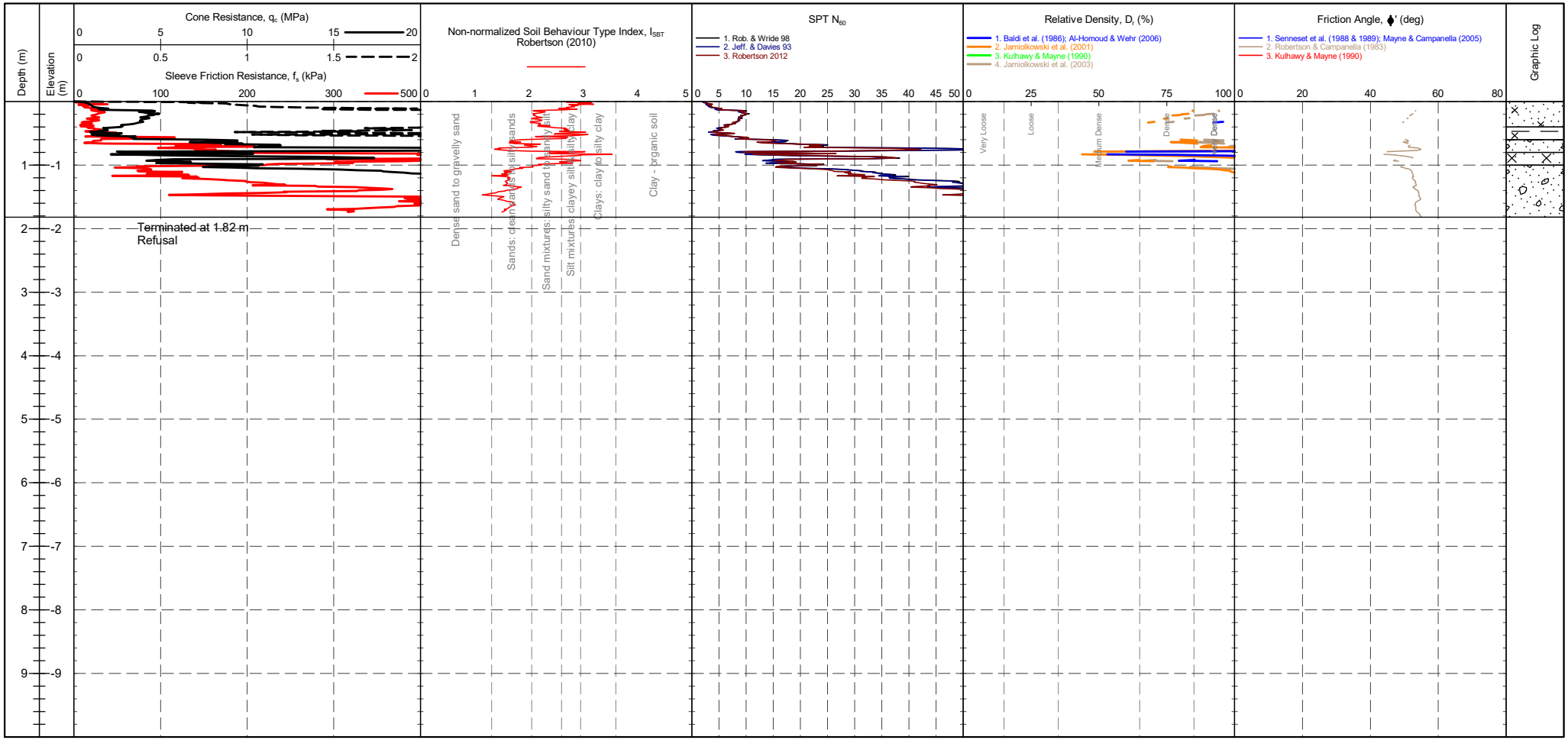
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT209**

CLIENT : Irish Drilling	EASTING : 649665.736 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738226.952 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	227 mV	227 mV	0 MPa
Sleeve	197 mV	194 mV	-0.002 kPa
Pore Pressure 2	343 mV	299 mV	-0.012 kPa
X-Y Inclinometer	2504 mV	2512 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

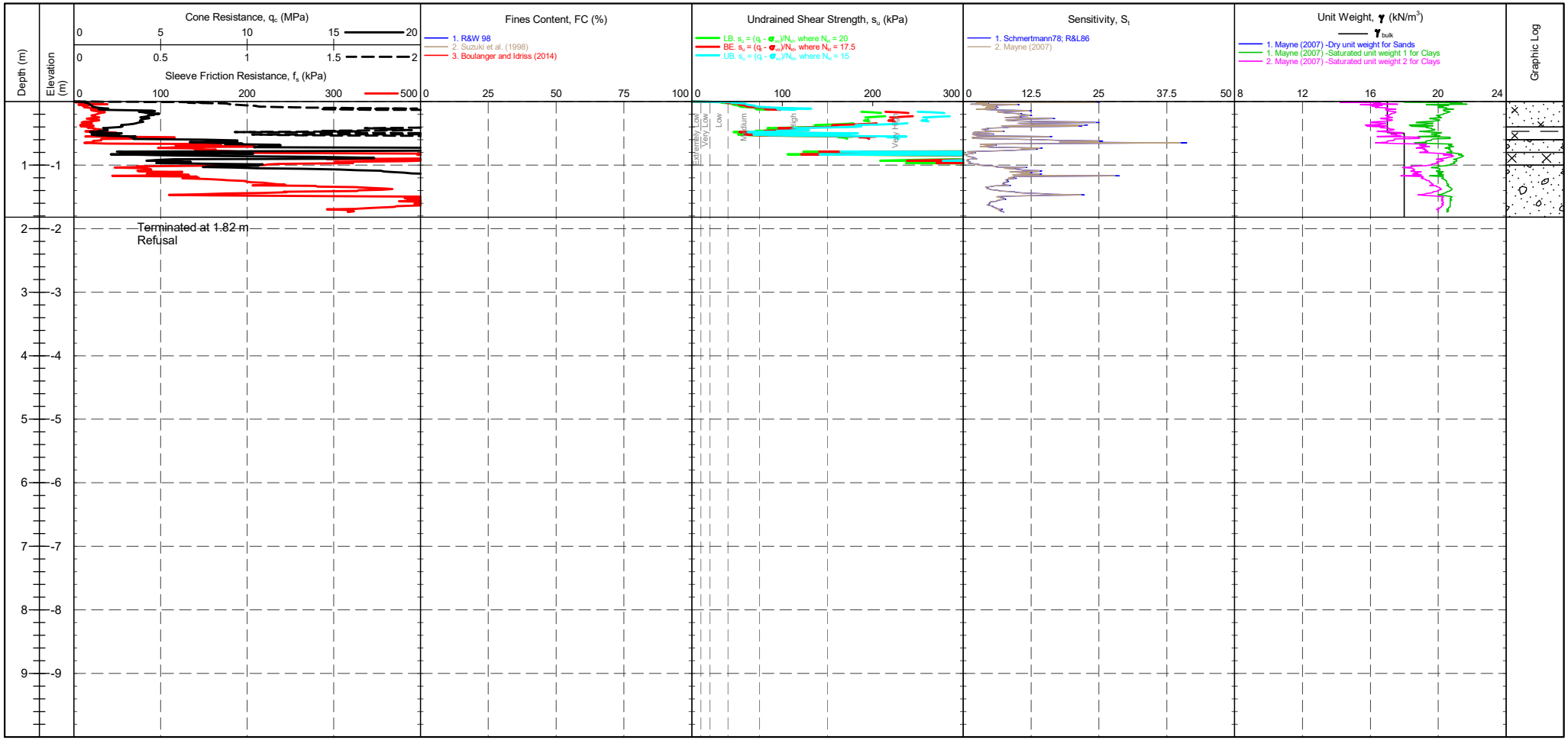
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 03

PointID: **CPT209**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649665.736 m NORTHING : 738226.952 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



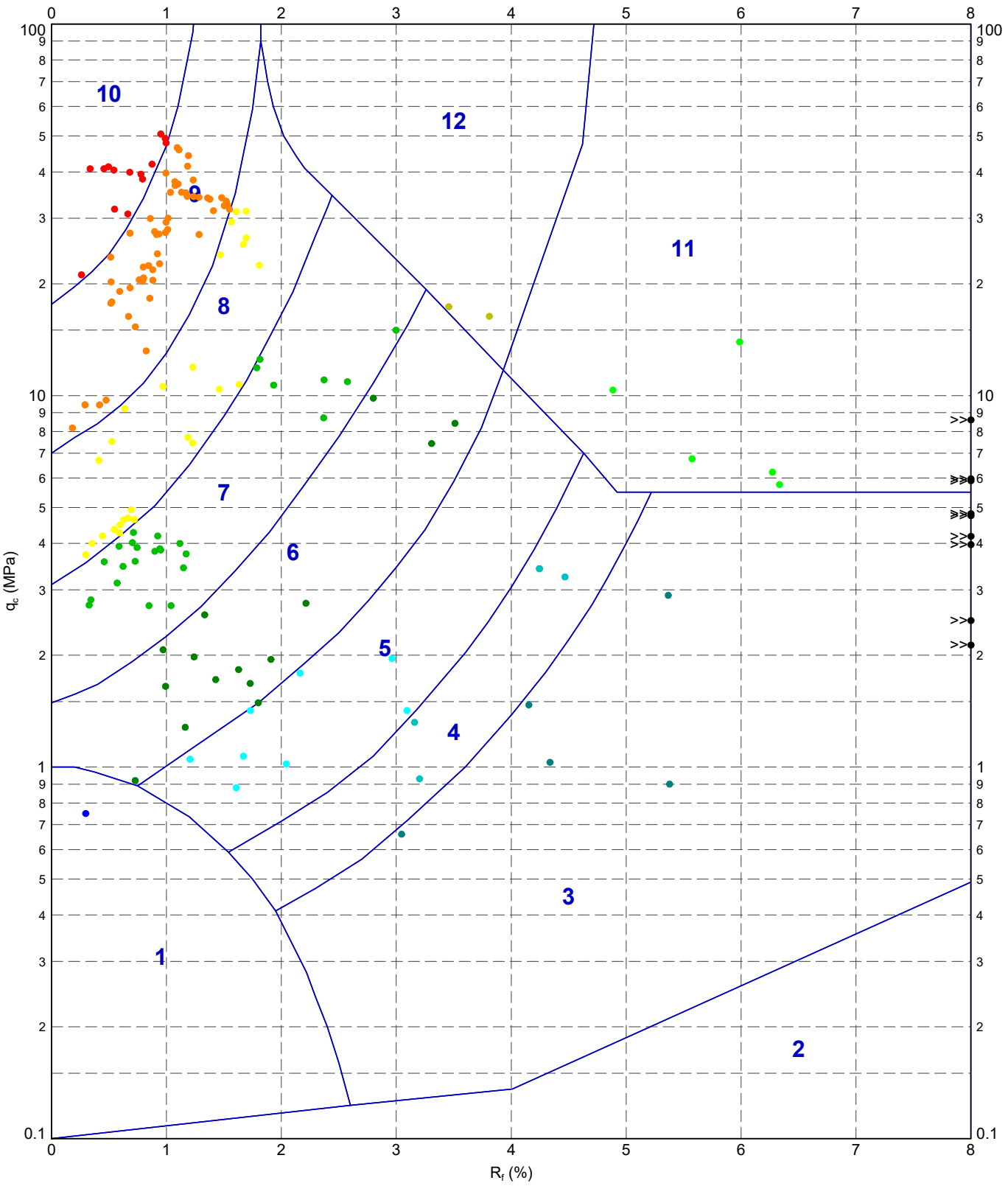
CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Transducer	Pre	Post	Difference
Tip	227 mV	227 mV	0 MPa
Sleeve	197 mV	194 mV	-0.002 kPa
Pore Pressure 2	343 mV	299 mV	-0.012 kPa
X-Y Inclinometer	2504 mV	2512 mV	

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT209	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

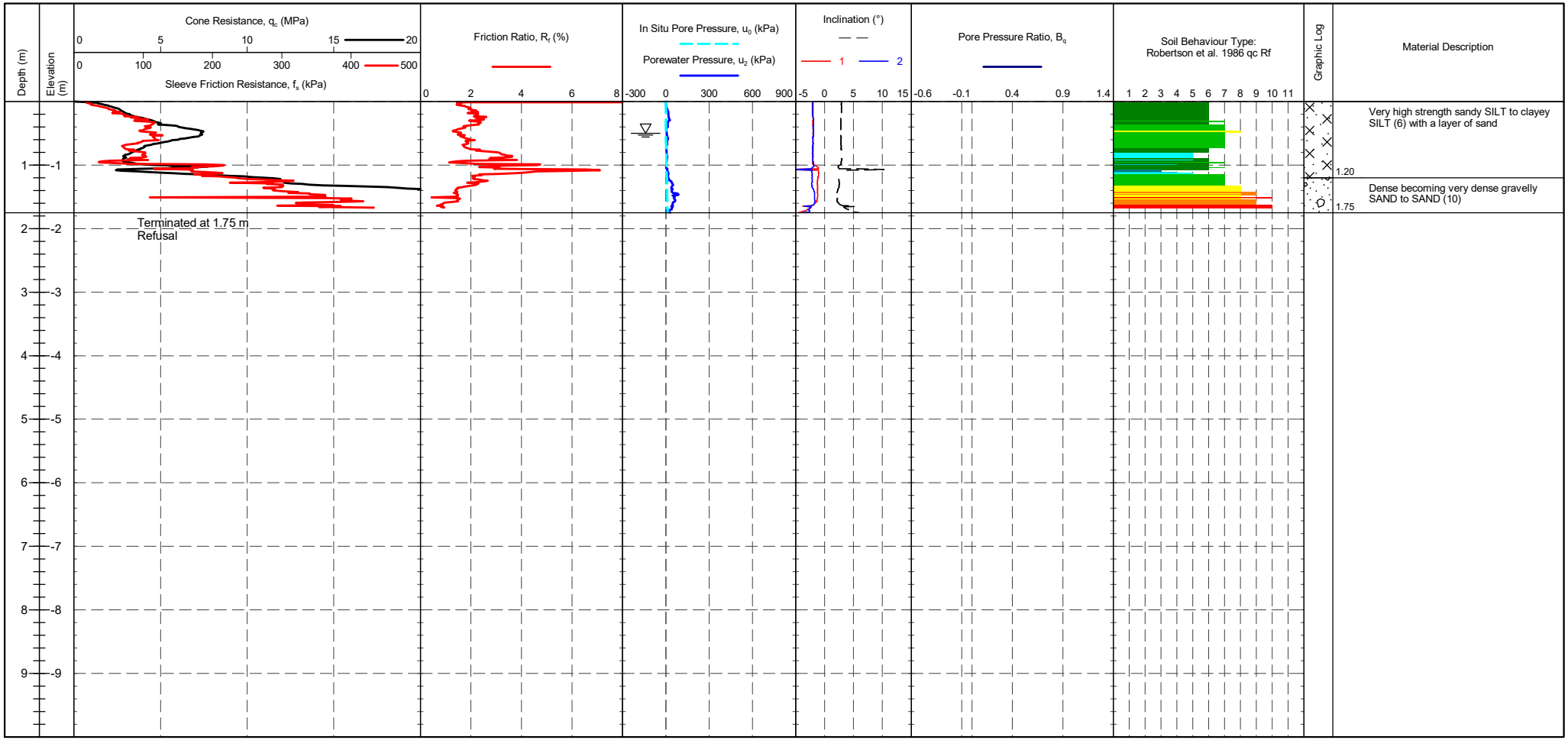
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:04 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID: **CPT211**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649419.630 m NORTHING : 738168.537 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on inclination.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	223 mV	-0.023 MPa
Sleeve	187 mV	199 mV	0.009 kPa
Pore Pressure 2	258 mV	253 mV	-0.001 kPa
X-Y Inclinometer	2183 mV	2191 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

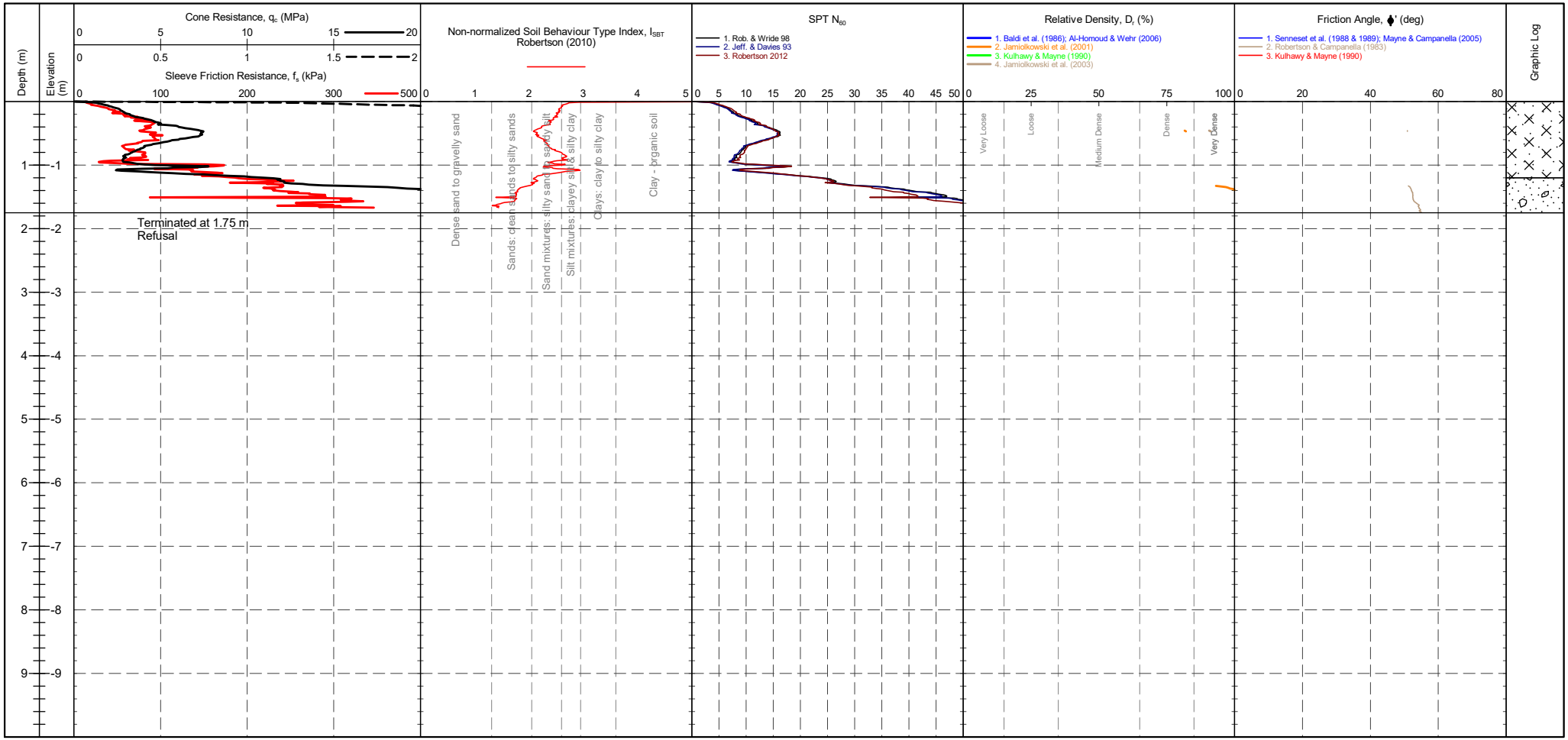
Dissipation Test

CPT LOG 02

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT211

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649419.630 m NORTHING : 738168.537 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on inclination.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	223 mV	-0.023 MPa
Sleeve	187 mV	199 mV	0.009 kPa
Pore Pressure 2	258 mV	253 mV	-0.001 kPa
X-Y Inclinometer	2183 mV	2191 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

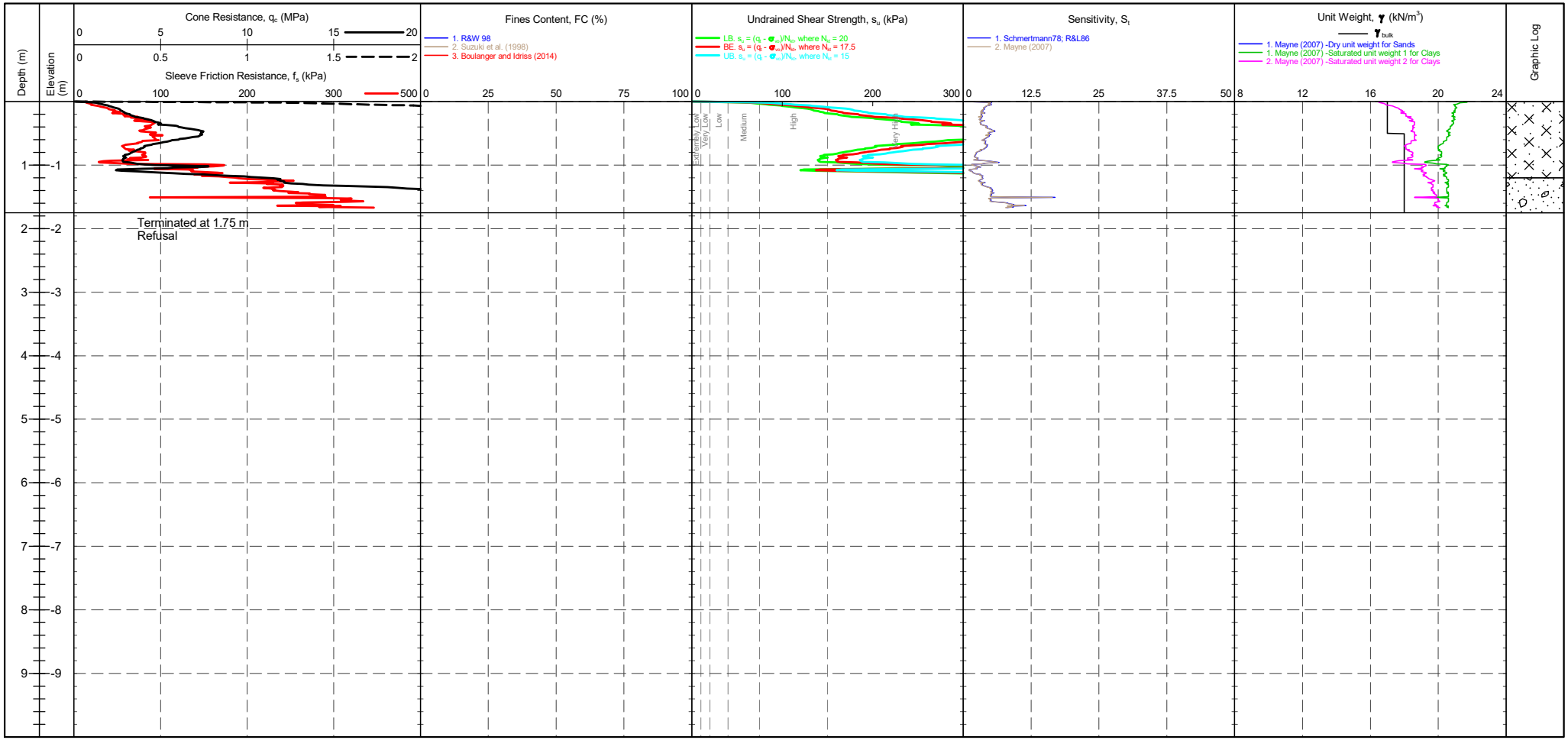
Dissipation Test

CPT LOG 03

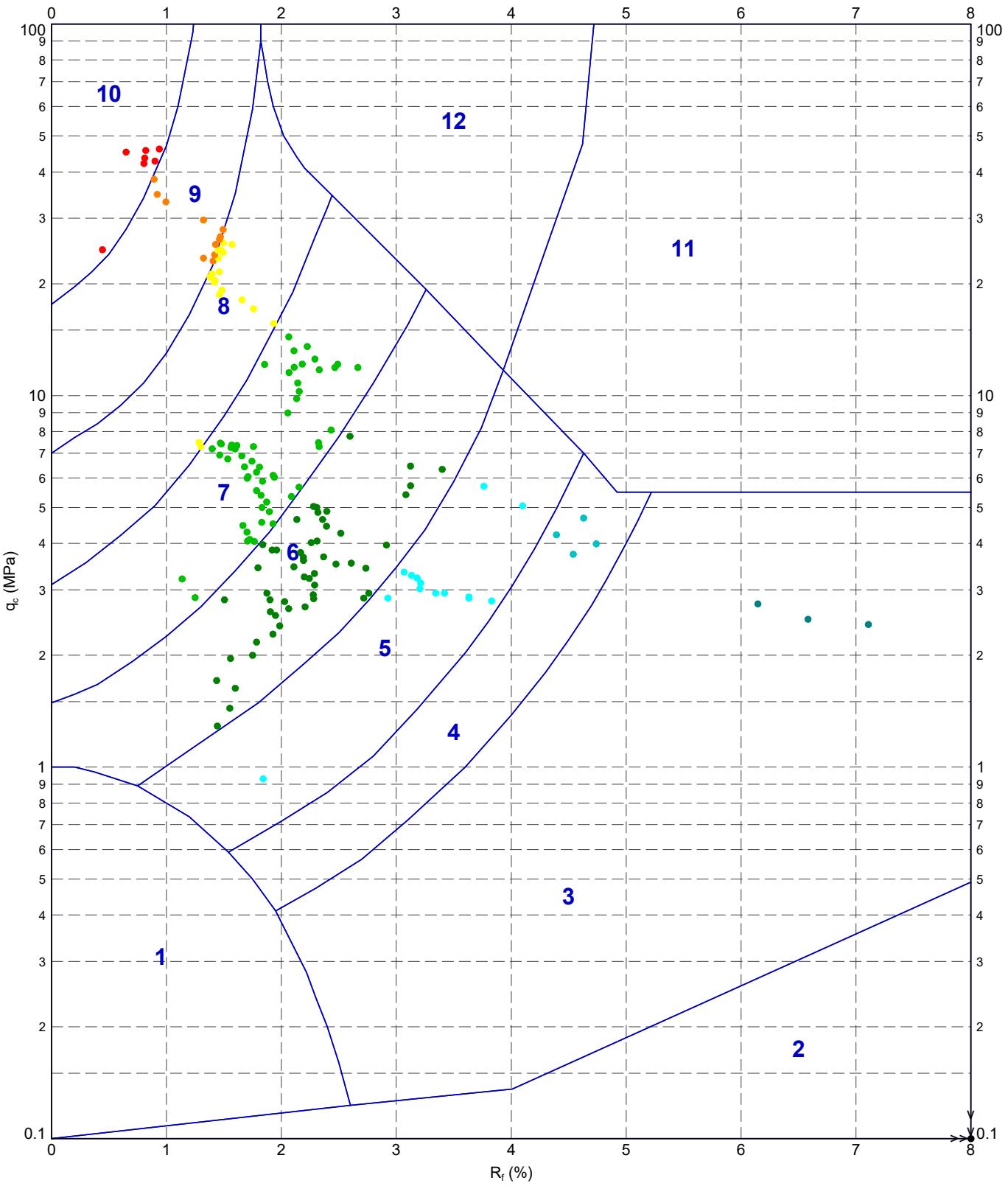
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT211

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649419.630 m NORTHING : 738168.537 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on inclination.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 225 mV / 223 mV / -0.023 MPa Sleeve / 187 mV / 199 mV / 0.009 kPa Pore Pressure 2 / 258 mV / 253 mV / -0.001 kPa X-Y Inclinometer / 2183 mV / 2191 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT211	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:05 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

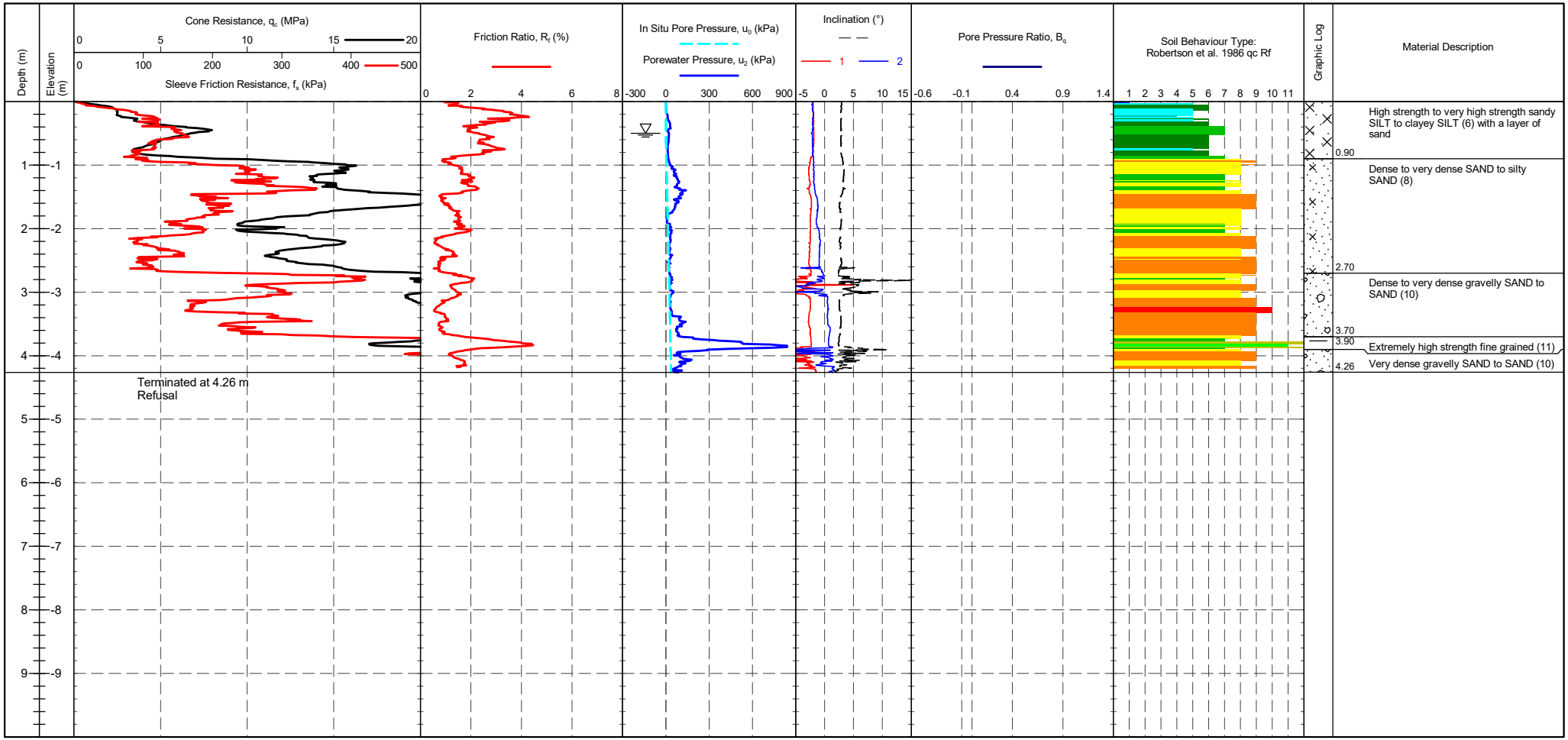
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT211A**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649419.630 m NORTHING : 738168.537 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	224 mV	0.023 MPa
Sleeve	199 mV	201 mV	0.001 kPa
Pore Pressure 2	256 mV	251 mV	-0.001 kPa
X-Y Inclinometer	2197 mV	2211 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

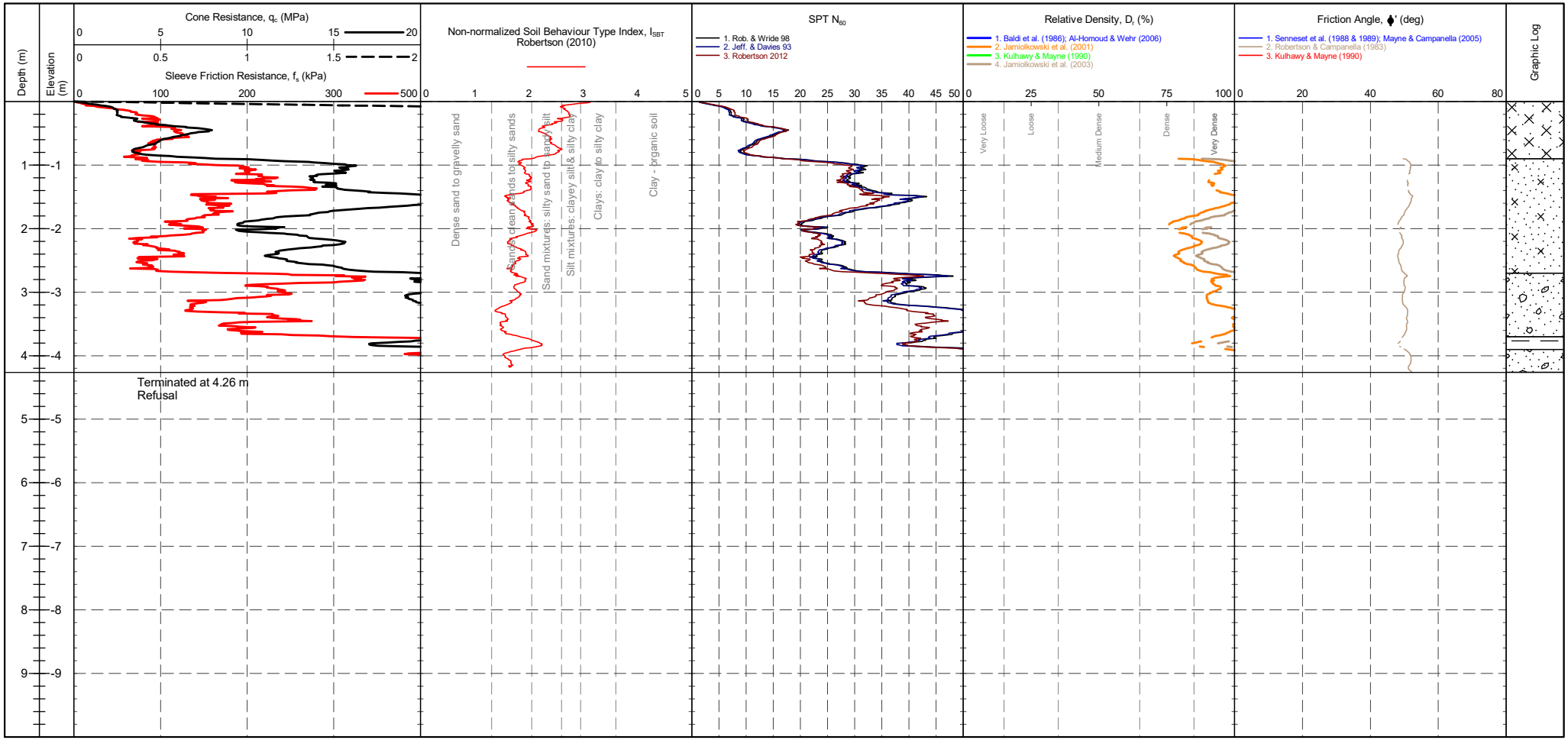
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT211A**

CLIENT : Irish Drilling	EASTING : 649419.630 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738168.537 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 21/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	224 mV	0.023 MPa
Sleeve	199 mV	201 mV	0.001 kPa
Pore Pressure 2	256 mV	251 mV	-0.001 kPa
X-Y Inclinometer	2197 mV	2211 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

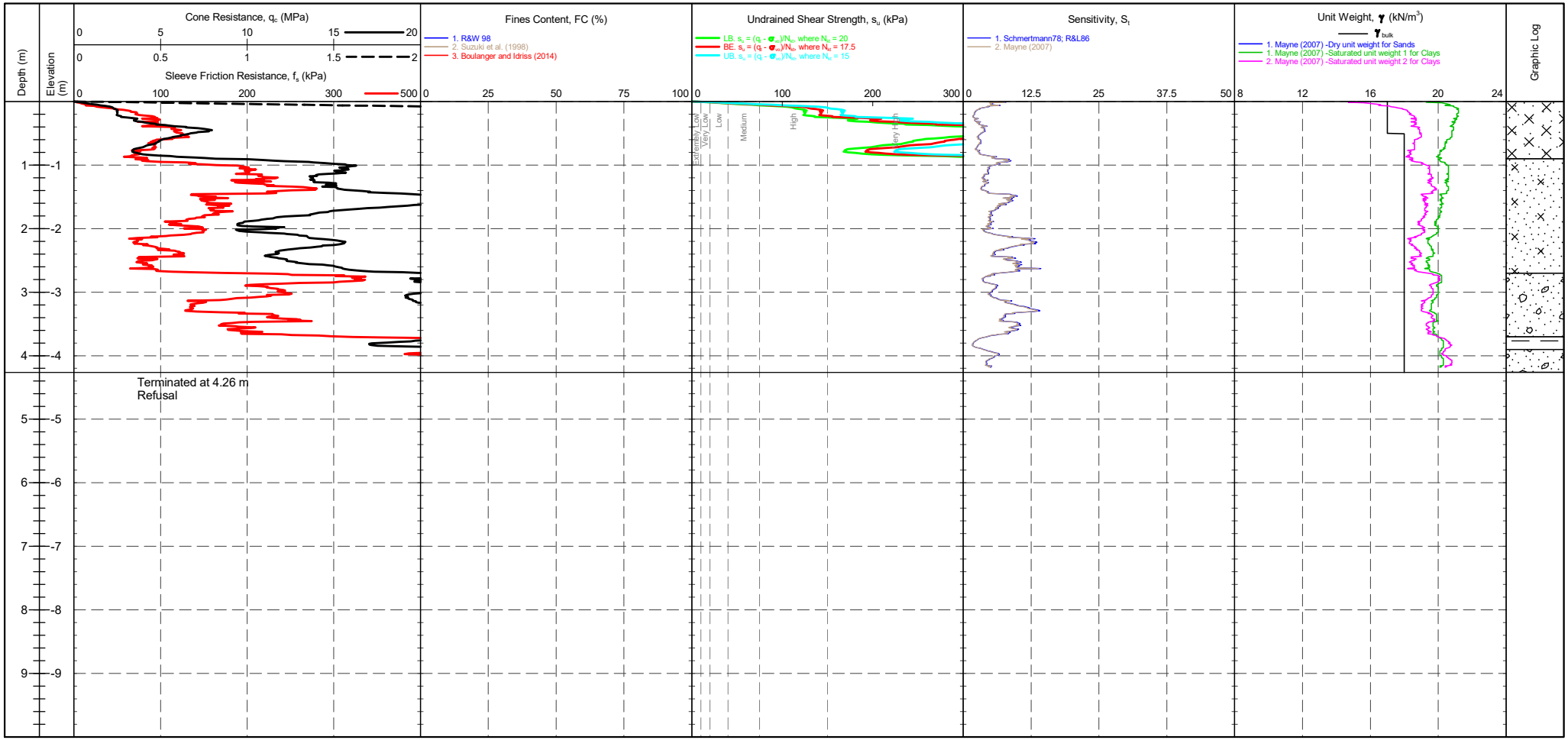
Dissipation Test

CPT LOG 03

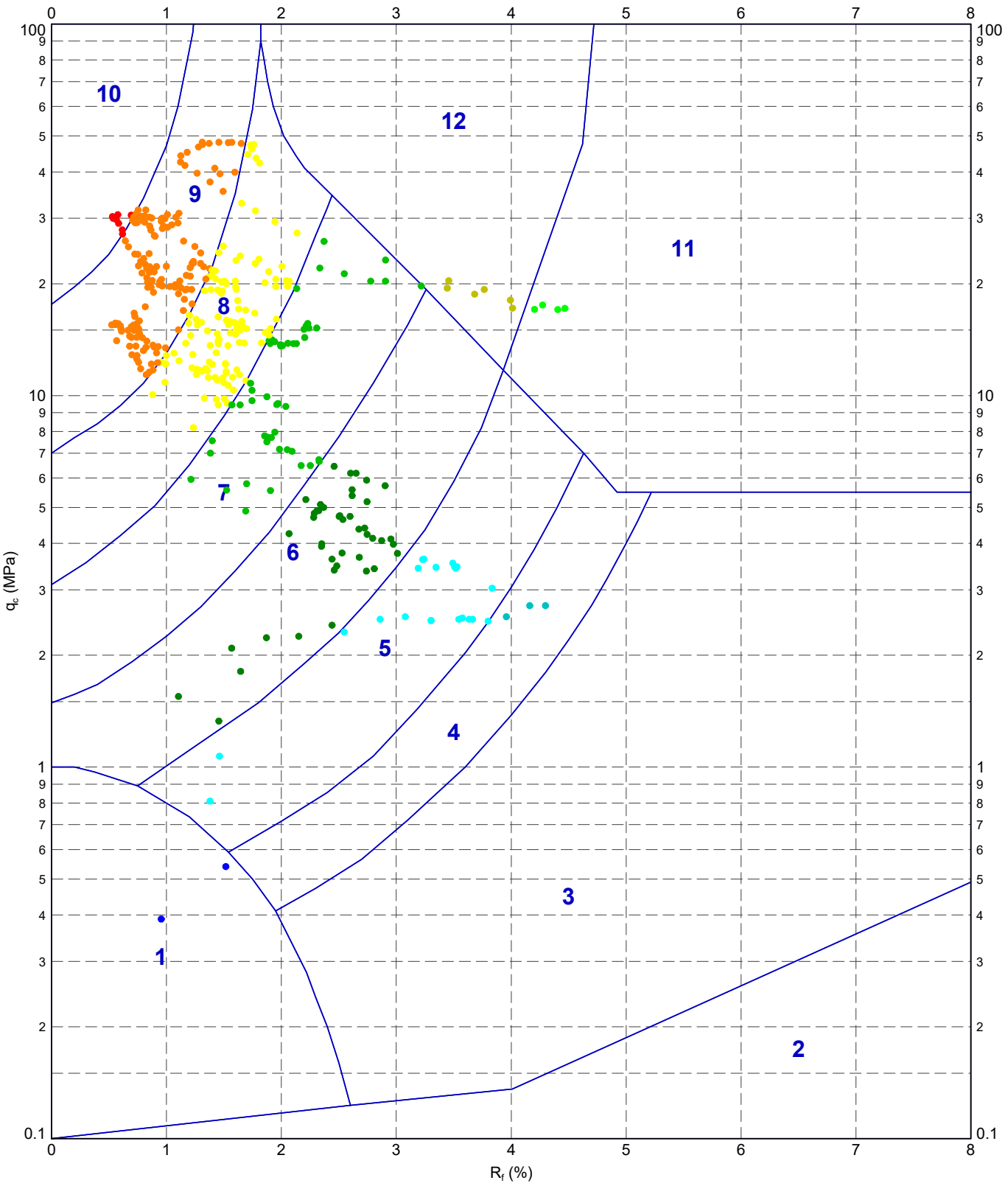
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT211A

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649419.630 m NORTHING : 738168.537 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 222 mV / 224 mV / 0.023 MPa Sleeve / 199 mV / 201 mV / 0.001 kPa Pore Pressure 2 / 256 mV / 251 mV / -0.001 kPa X-Y Inclinometer / 2197 mV / 2211 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT211A	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:06 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

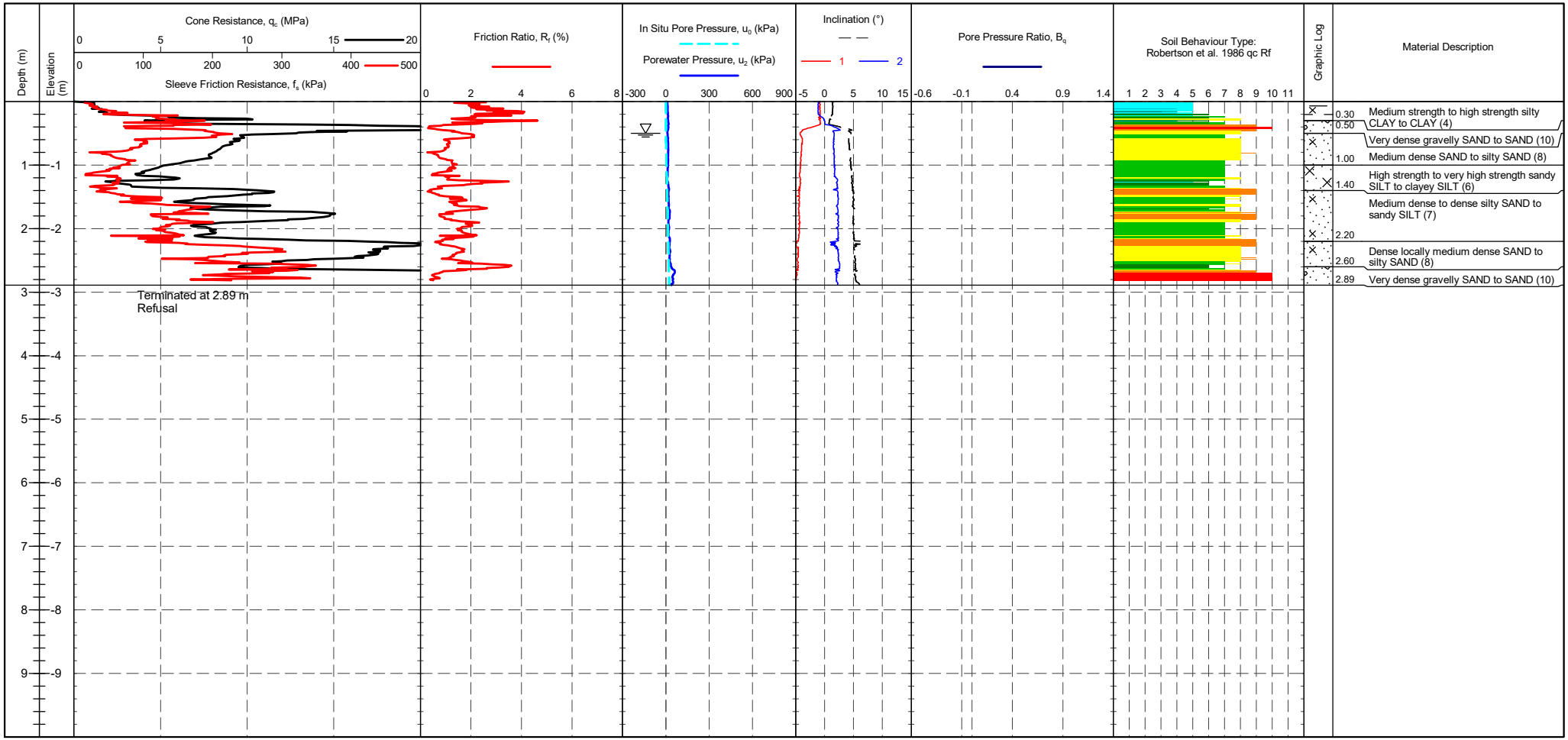
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT212**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649349.208 m NORTHING : 738191.273 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	229 mV	0.012 MPa
Sleeve	210 mV	210 mV	0 kPa
Pore Pressure 2	289 mV	277 mV	-0.003 kPa
X-Y Inclinometer	2310 mV	2345 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

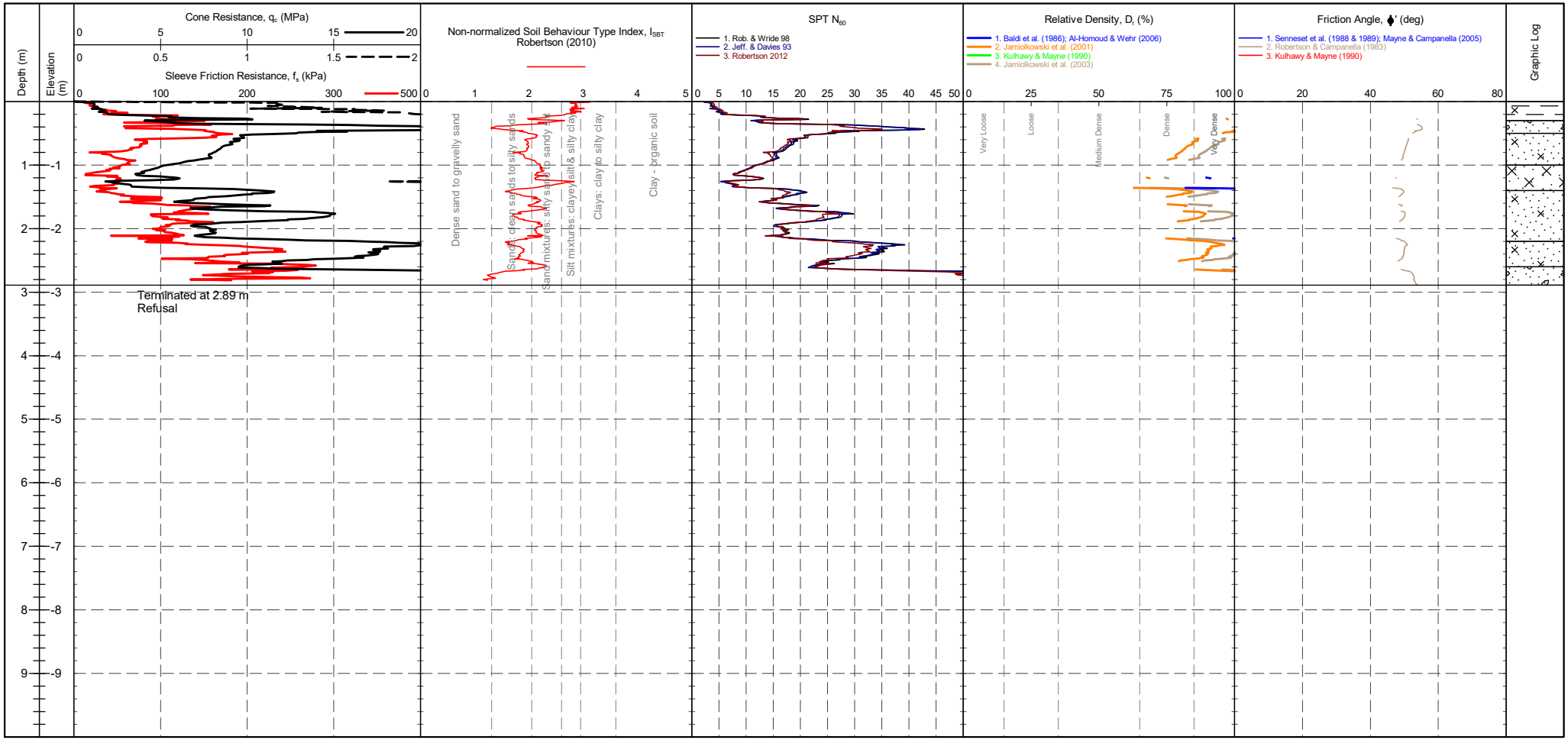
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT212**

CLIENT : Irish Drilling	EASTING : 649349.208 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738191.273 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	229 mV	0.012 MPa
Sleeve	210 mV	210 mV	0 kPa
Pore Pressure 2	289 mV	277 mV	-0.003 kPa
X-Y Inclinometer	2310 mV	2345 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

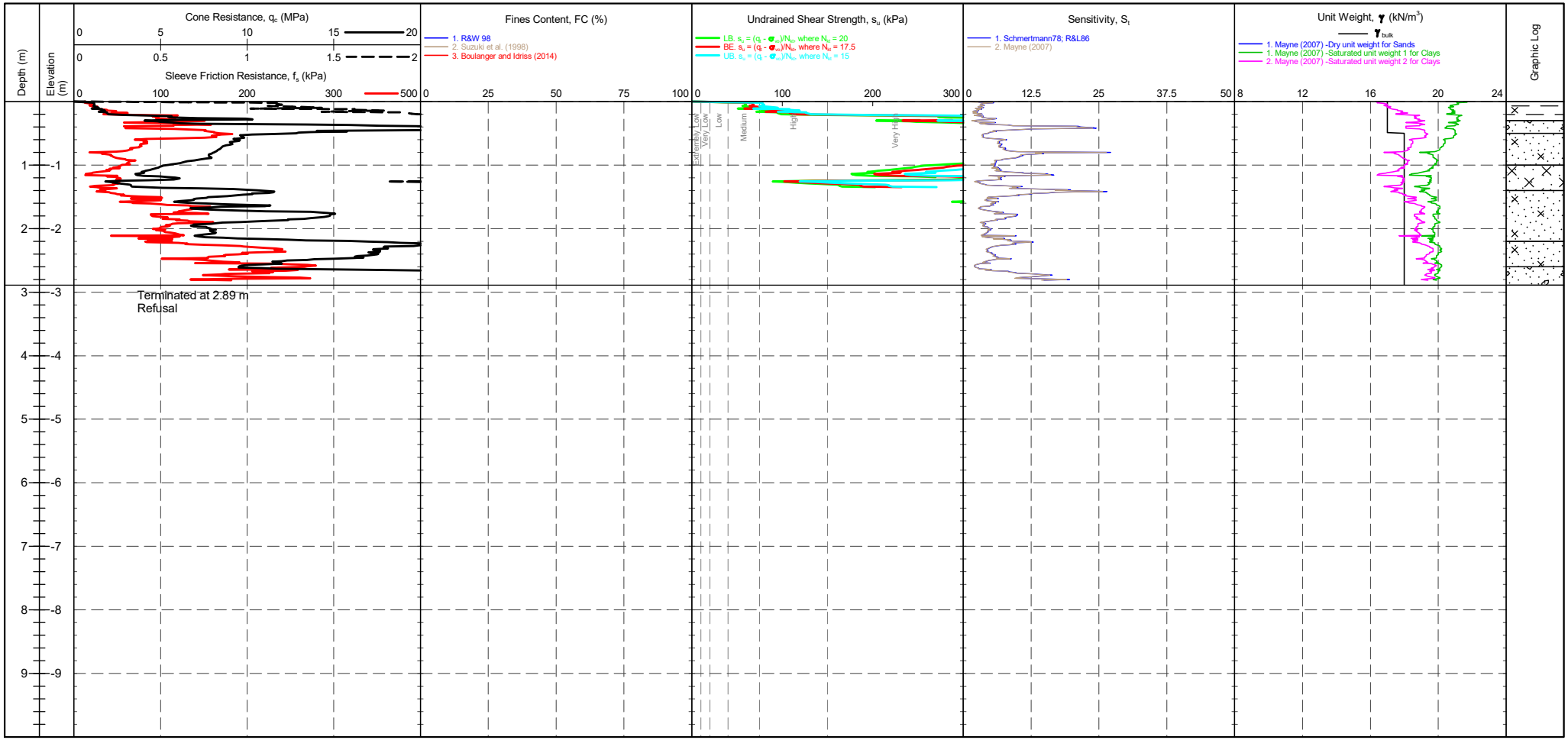
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

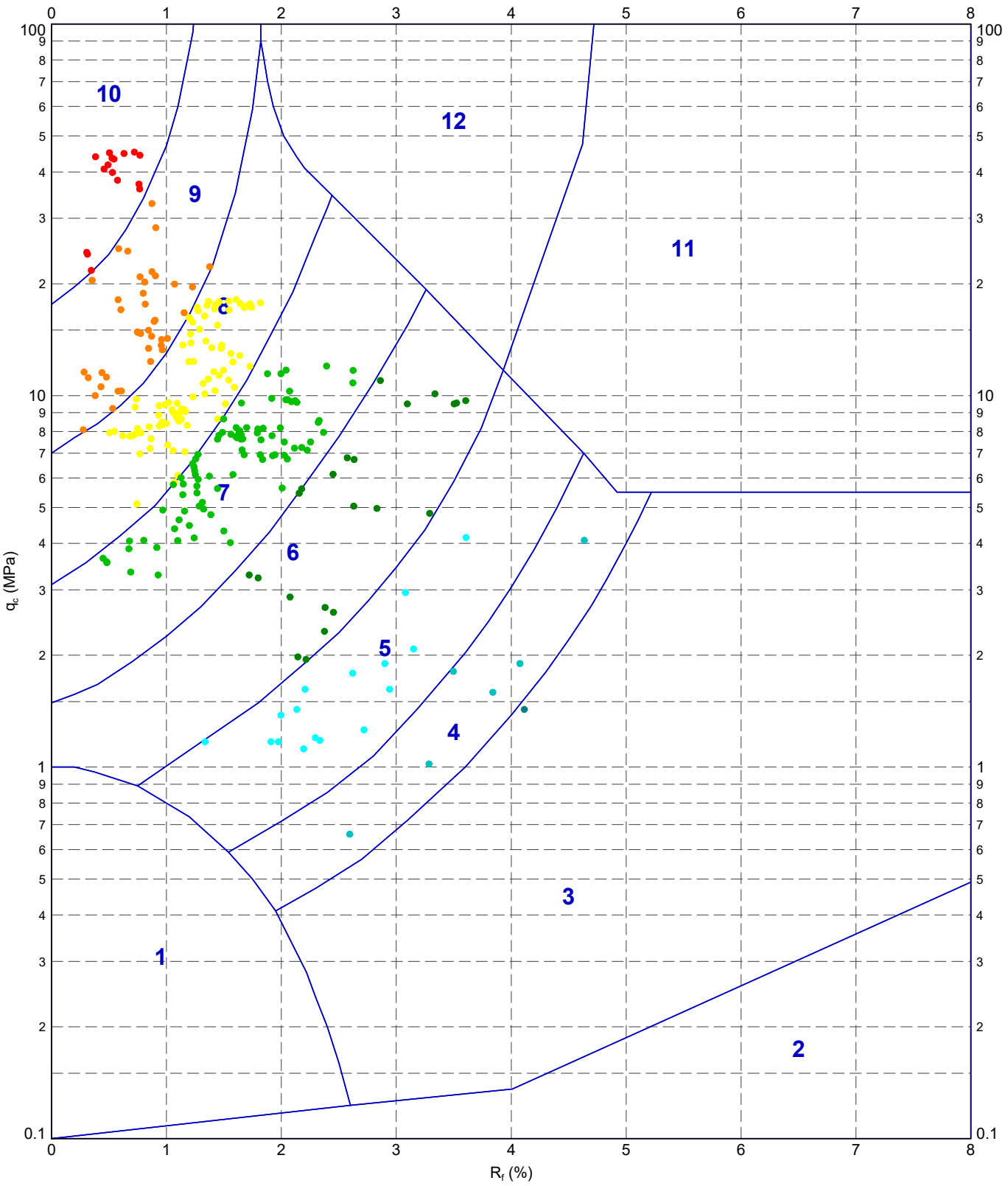
CPT LOG 03

PointID: **CPT212**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649349.208 m NORTHING : 738191.273 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 228 mV / 229 mV / 0.012 MPa Sleeve / 210 mV / 210 mV / 0 kPa Pore Pressure 2 / 289 mV / 277 mV / -0.003 kPa X-Y Inclinometer / 2310 mV / 2345 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT212	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

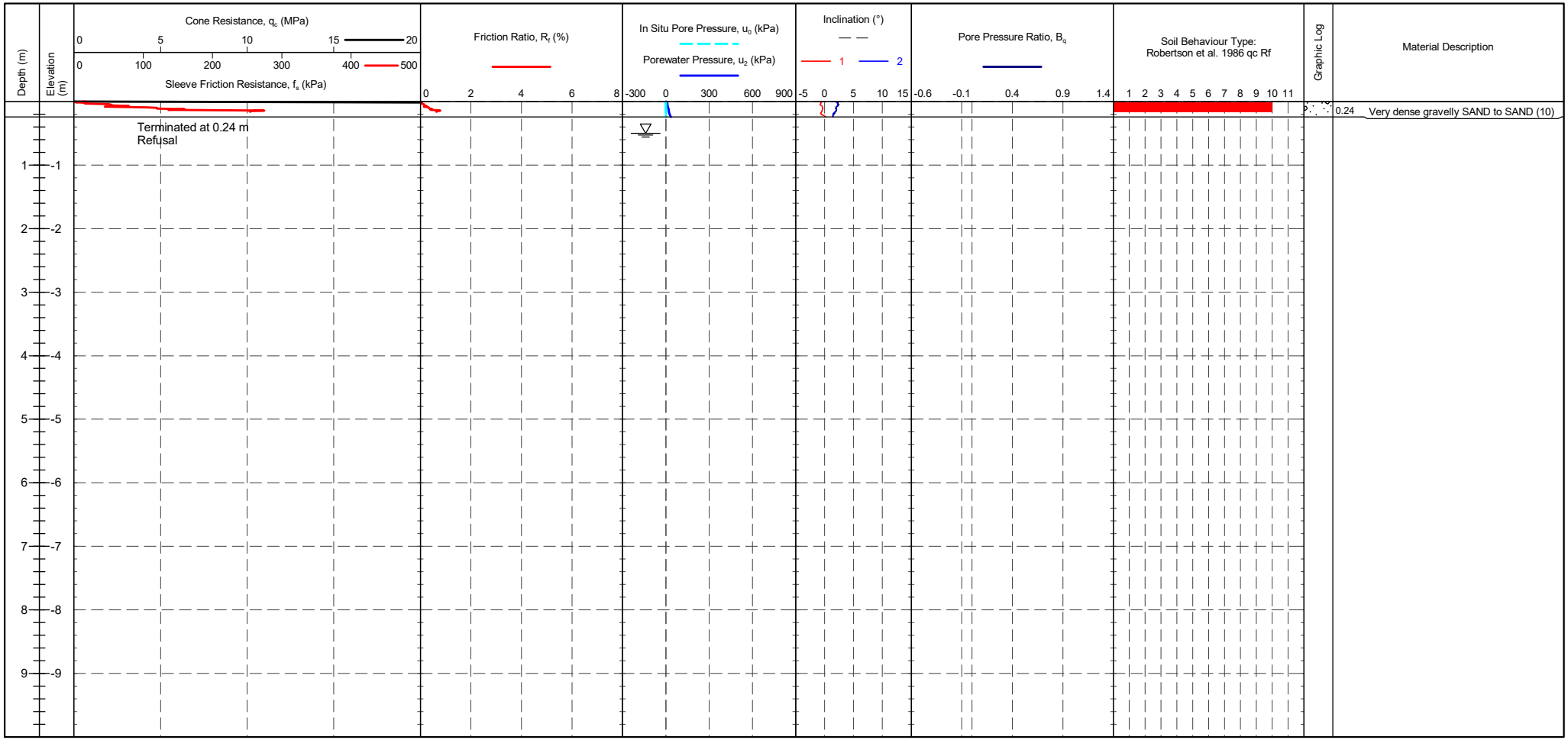
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:06 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID **CPT213**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649295.361 m NORTHING : 738124.931 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm^2	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	231 mV	0.035 MPa
Sleeve	208 mV	210 mV	0.001 kPa
Pore Pressure 2	273 mV	274 mV	0 kPa
X-Y Inclinometer	2366 mV	2341 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

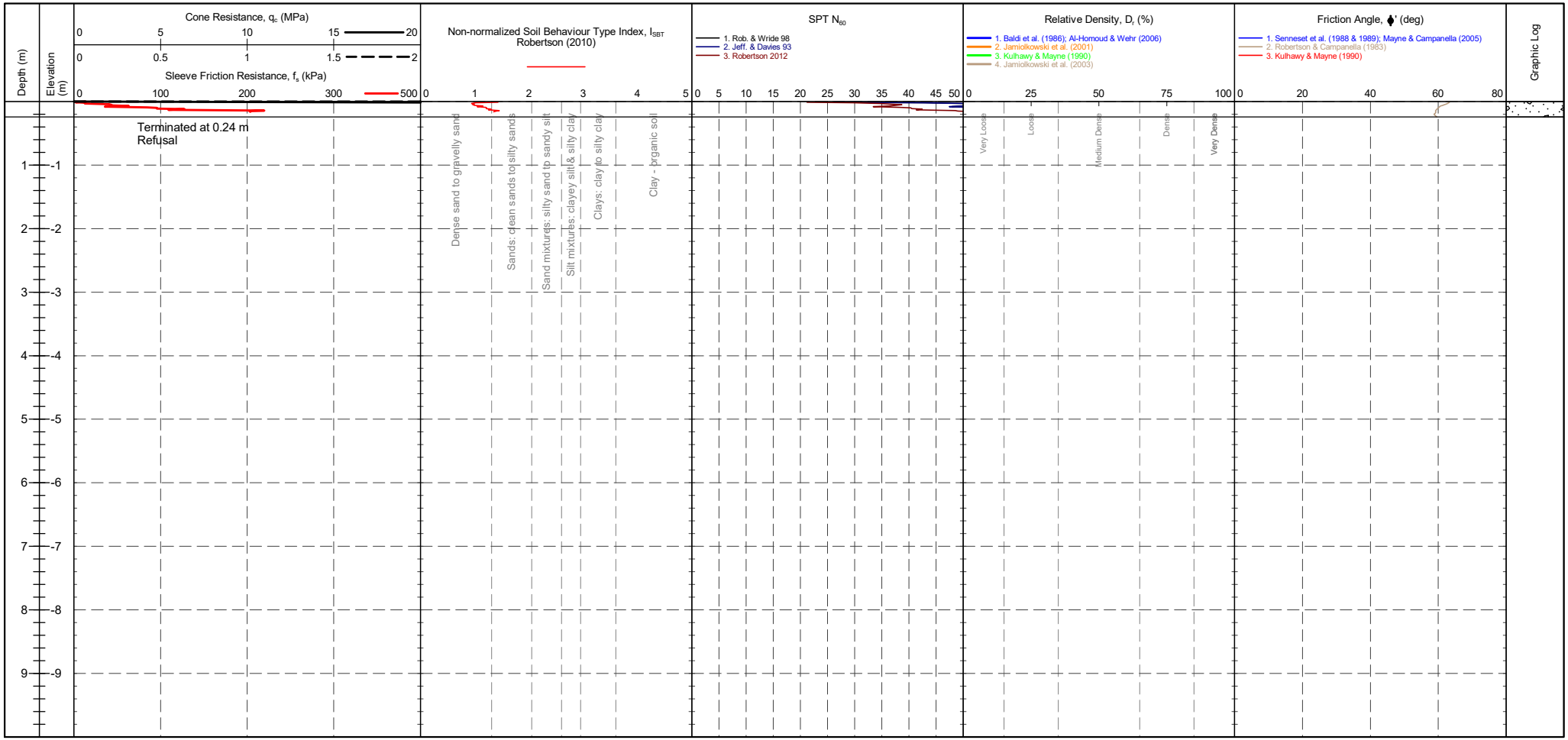
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT213**

CLIENT : Irish Drilling	EASTING : 649295.361 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738124.931 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	231 mV	0.035 MPa
Sleeve	208 mV	210 mV	0.001 kPa
Pore Pressure 2	273 mV	274 mV	0 kPa
X-Y Inclinometer	2366 mV	2341 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

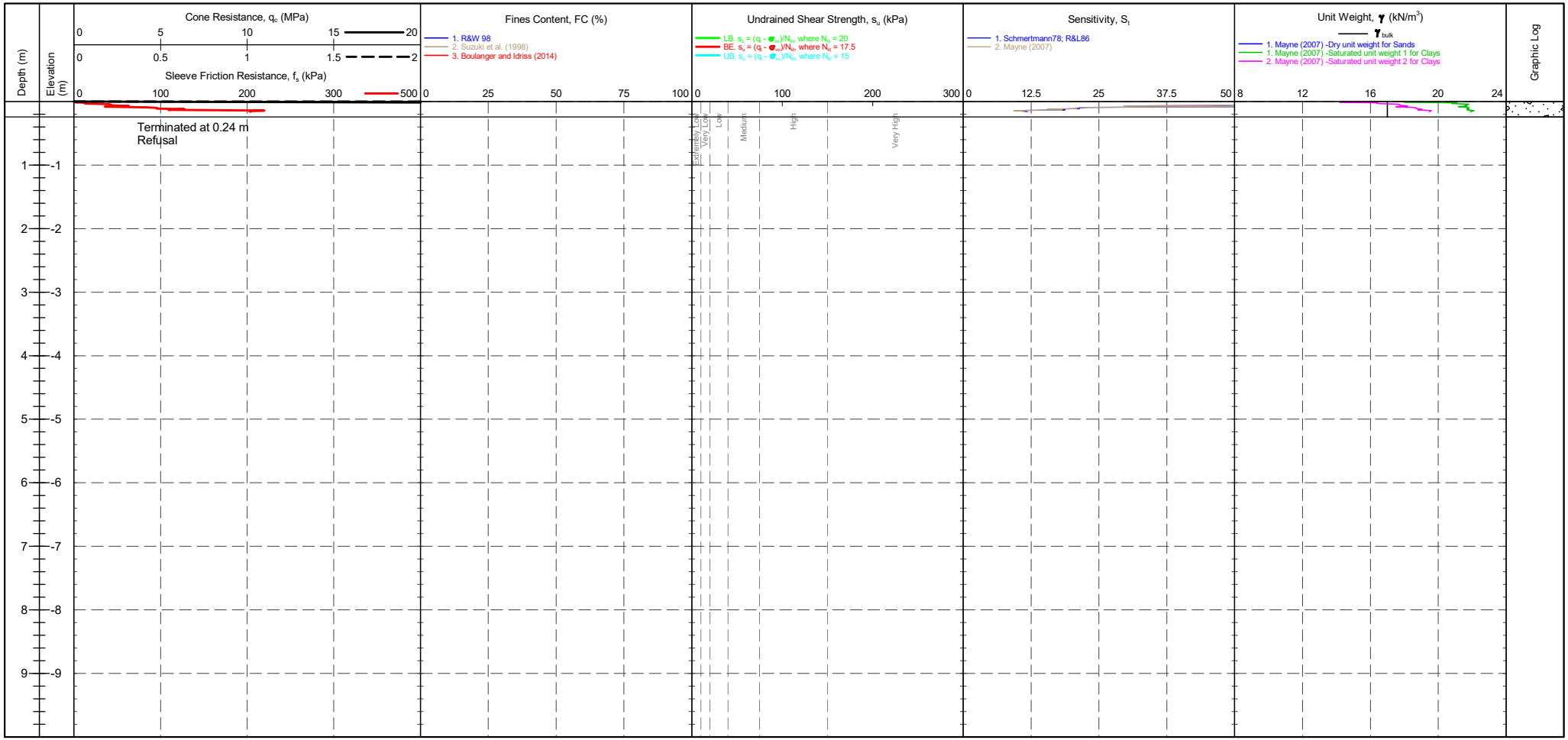
Dissipation Test

CPT LOG 03

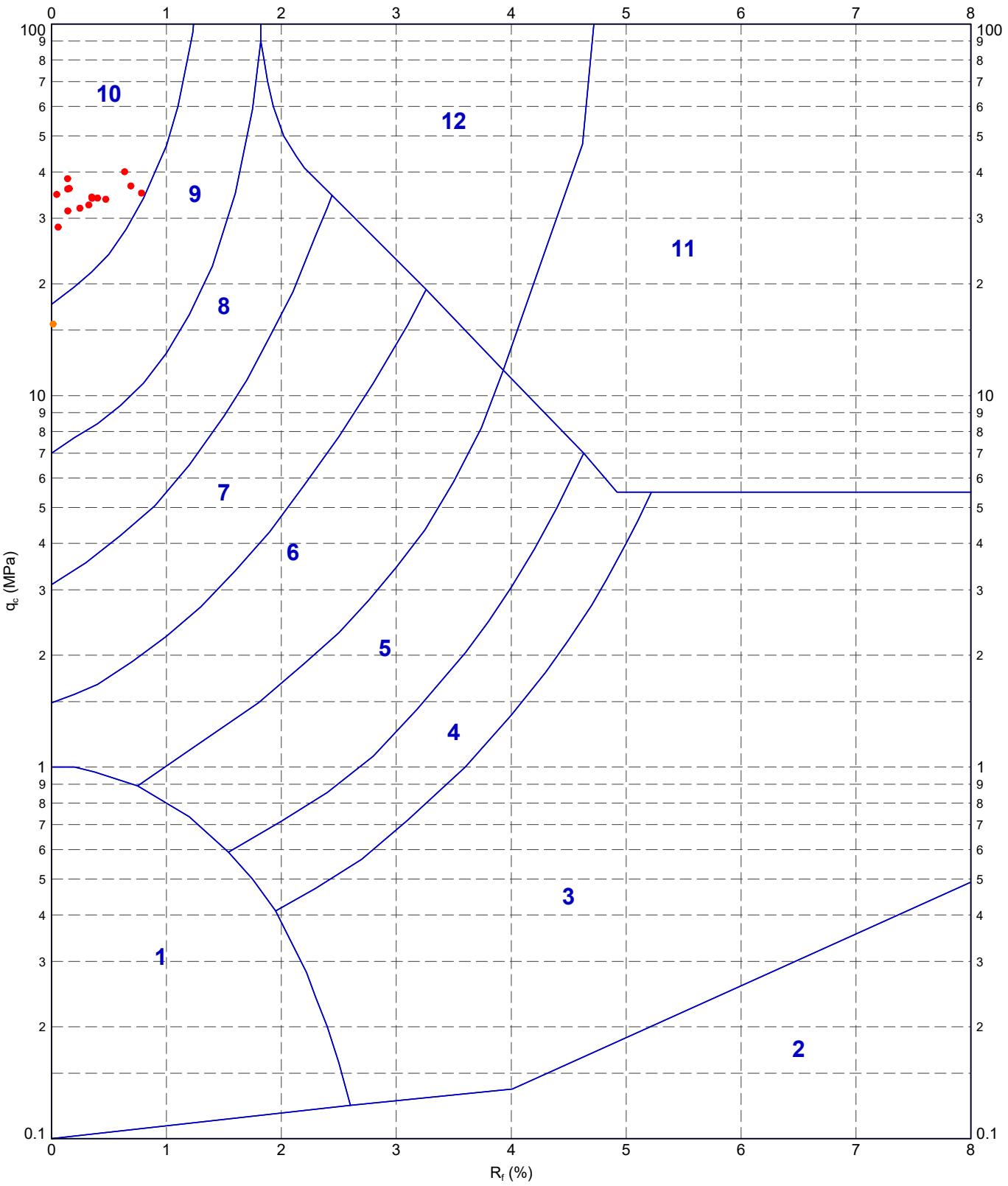
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID: **CPT213**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649295.361 m NORTHING : 738124.931 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip: 228 mV / 231 mV / 0.035 MPa Sleeve: 208 mV / 210 mV / 0.001 kPa Pore Pressure 2: 273 mV / 274 mV / 0 kPa X-Y Inclinometer: 2366 mV / 2341 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength: <10 Very low strength: 10-20 Low strength: 20-40	Term based on measurement / su (kPa) Medium strength: 40-75 High strength: 75-150 Very high strength: 150-300 Extremely high strength: >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT213	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:07 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

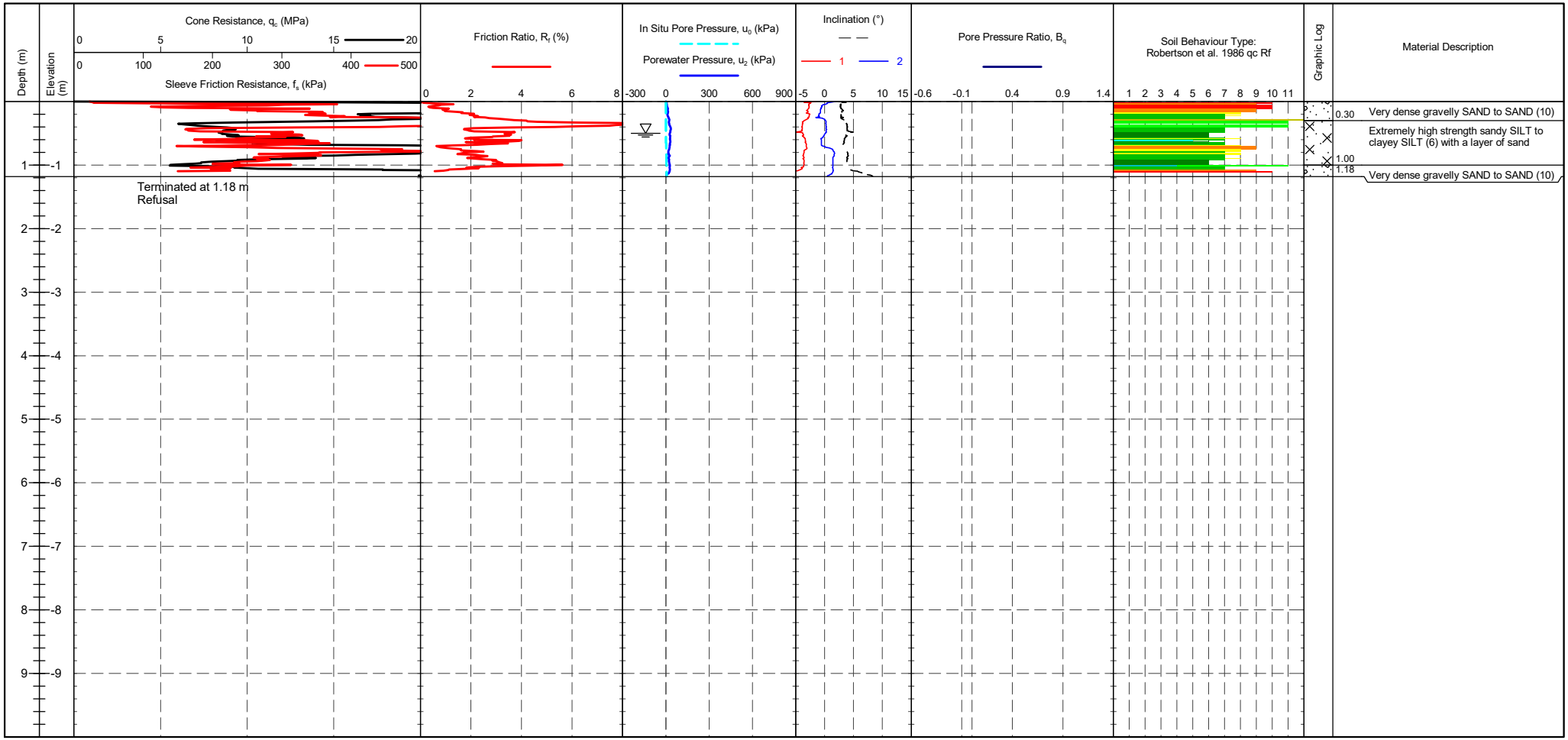
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT213A**

CLIENT : Irish Drilling	EASTING : 649295.361 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738124.931 m	Test refused on inclination.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2
CALIBRATION DATE	: 05/12/2022	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: RS
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Sunny & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	244 mV	229 mV	-0.173 MPa
Sleeve	222 mV	204 mV	-0.013 kPa
Pore Pressure 2	274 mV	255 mV	-0.005 kPa
X-Y Inclinometer	2346 mV	2238 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

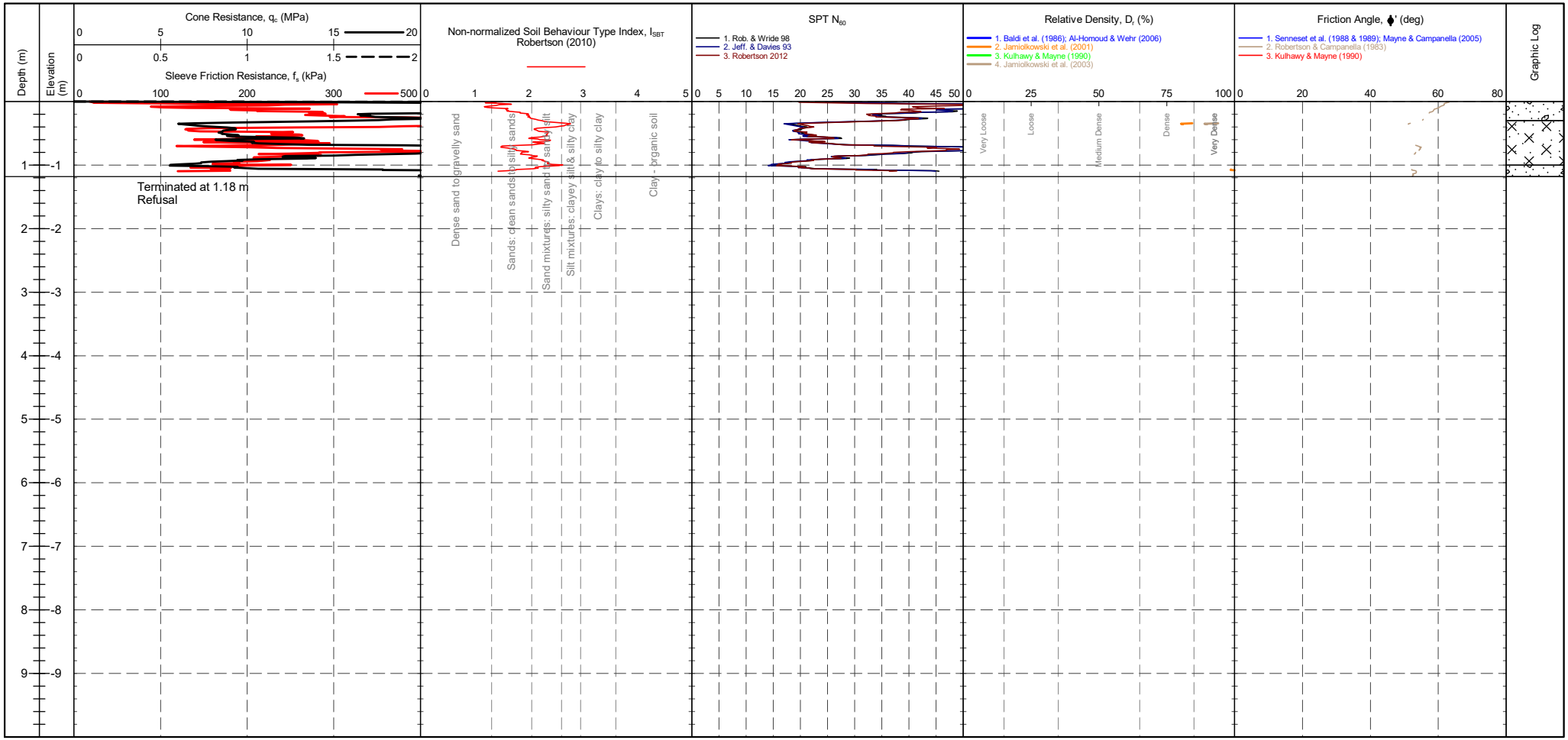
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT213A**

CLIENT : Irish Drilling	EASTING : 649295.361 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738124.931 m	Test refused on inclination.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	244 mV	229 mV	-0.173 MPa
Sleeve	222 mV	204 mV	-0.013 kPa
Pore Pressure 2	274 mV	255 mV	-0.005 kPa
X-Y Inclinometer	2346 mV	2238 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

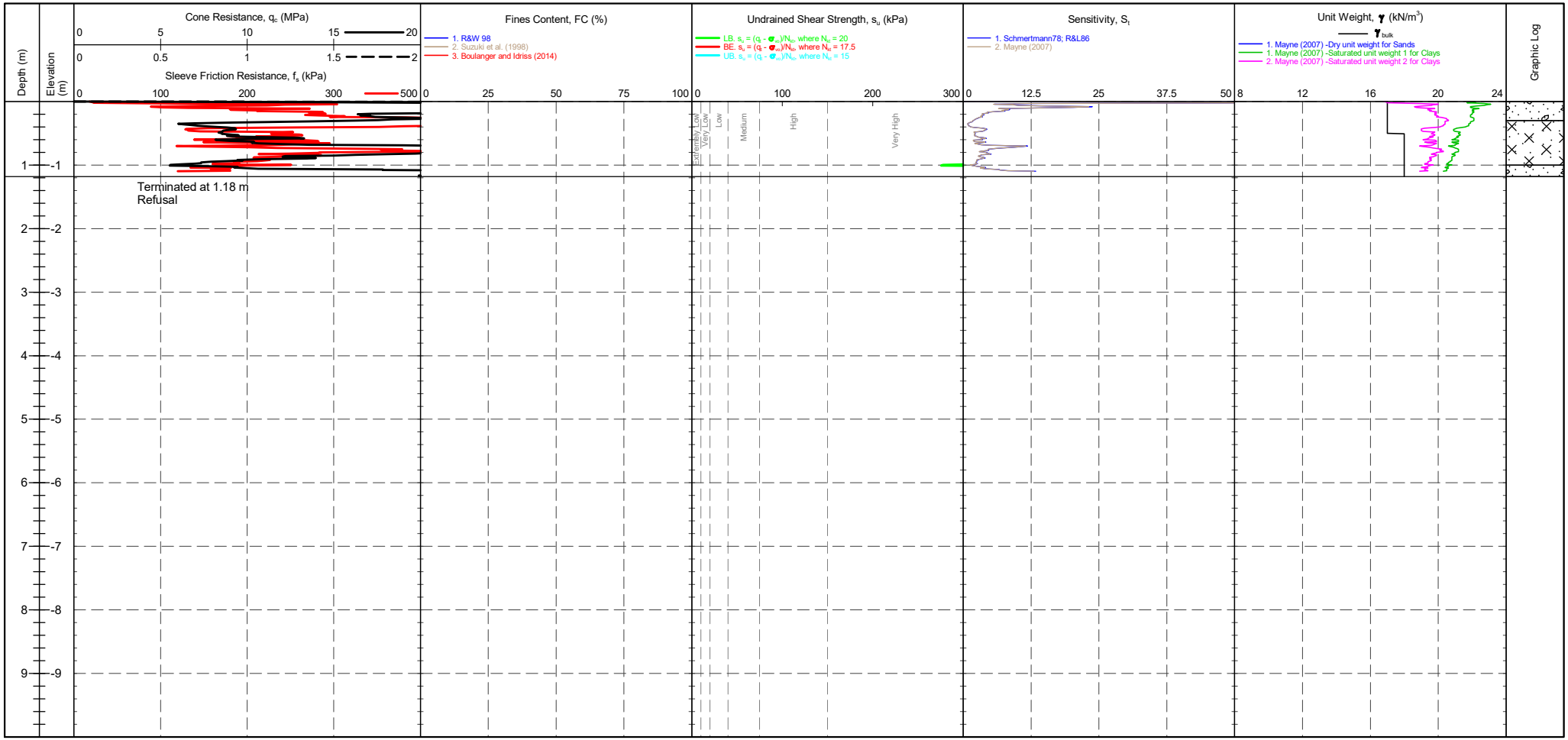
Dissipation Test

CPT LOG 03

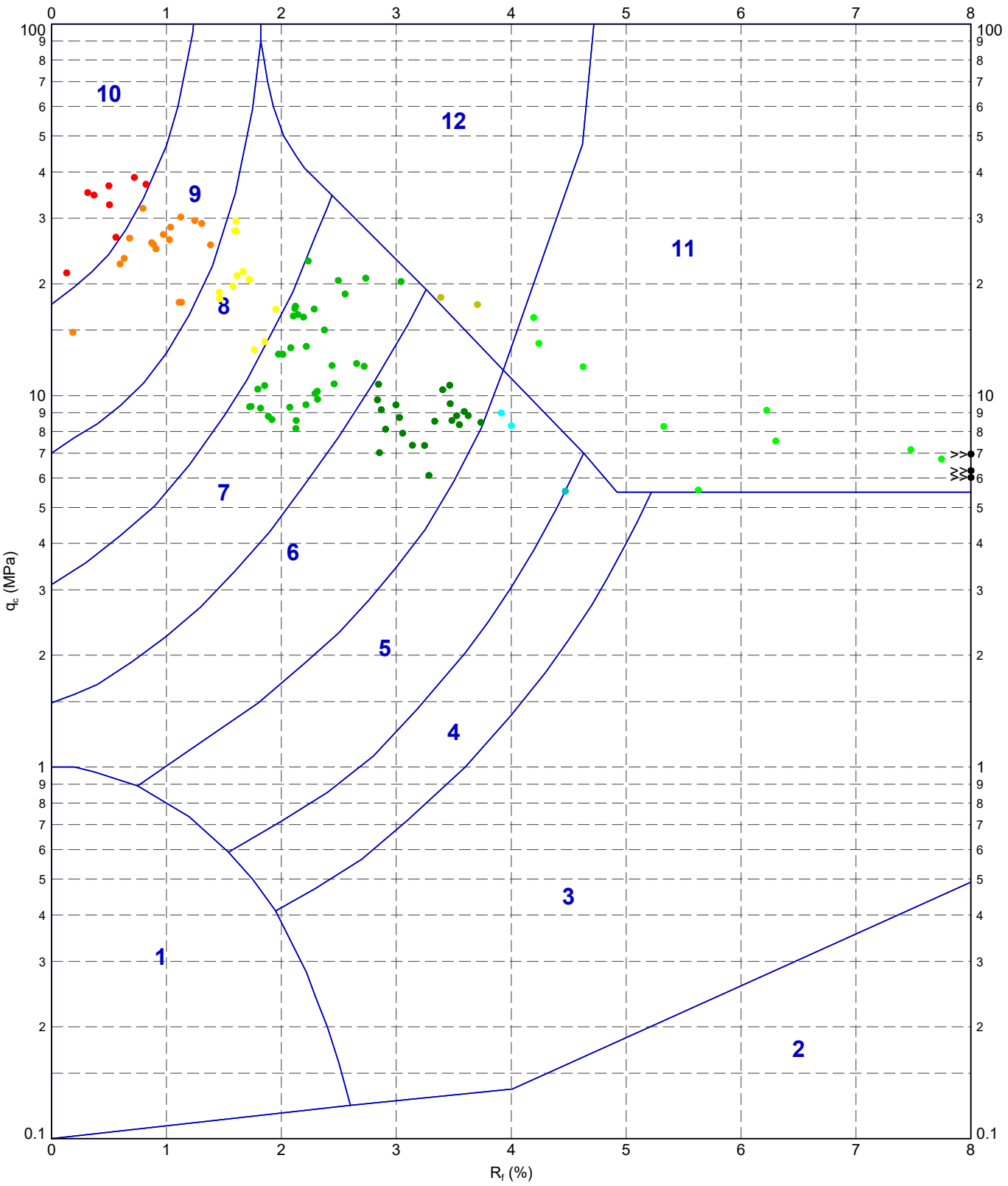
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT213A

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649295.361 m NORTHING : 738124.931 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on inclination.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 244 mV / 229 mV / -0.173 MPa Sleeve / 222 mV / 204 mV / -0.013 kPa Pore Pressure 2 / 274 mV / 255 mV / -0.005 kPa X-Y Inclinometer / 2346 mV / 2238 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT213A	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

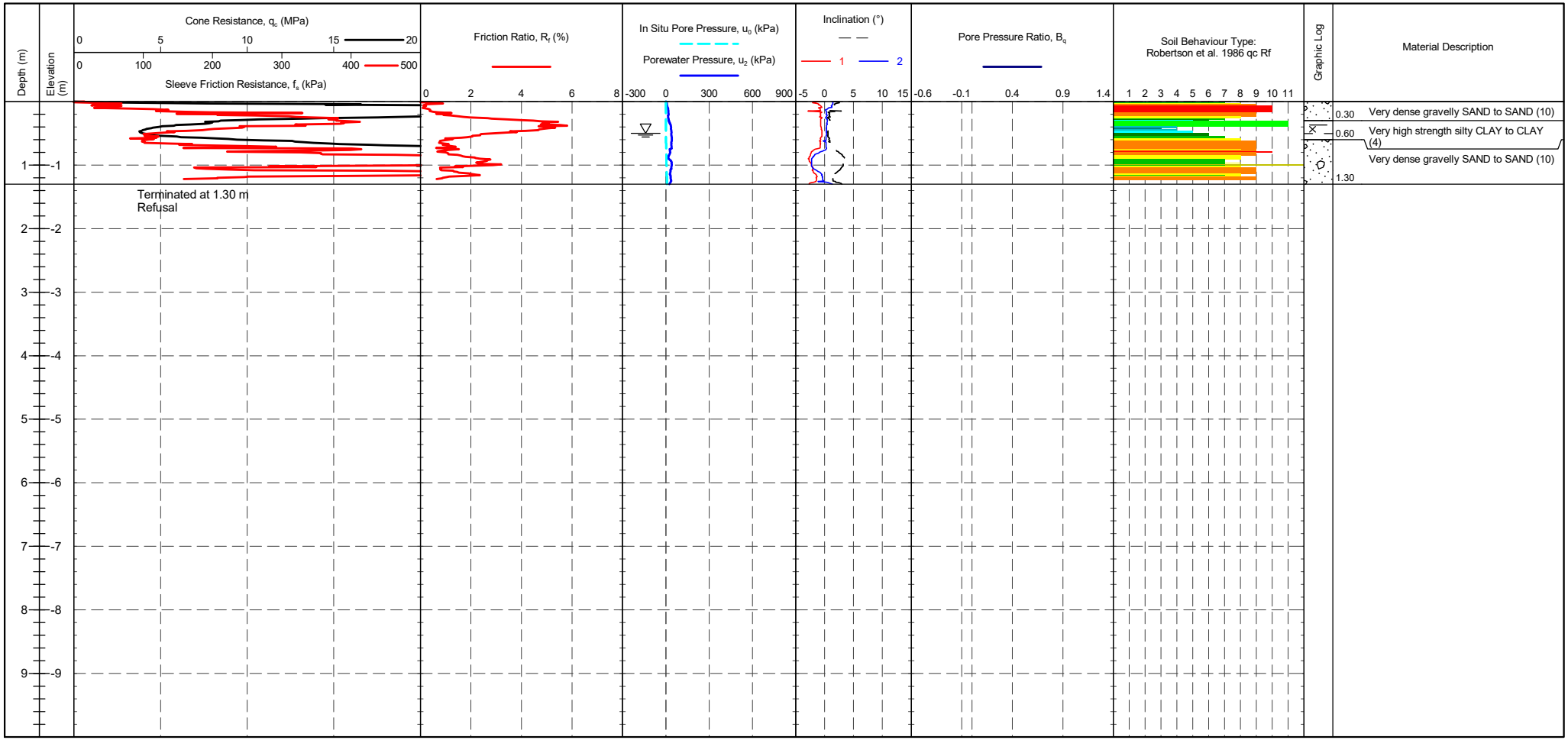
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:08 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID: **CPT213B**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649295.361 m NORTHING : 738124.931 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	224 mV	225 mV	0.012 MPa
Sleeve	200 mV	196 mV	-0.003 kPa
Pore Pressure 2	248 mV	226 mV	-0.006 kPa
X-Y Inclinometer	2305 mV	2316 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

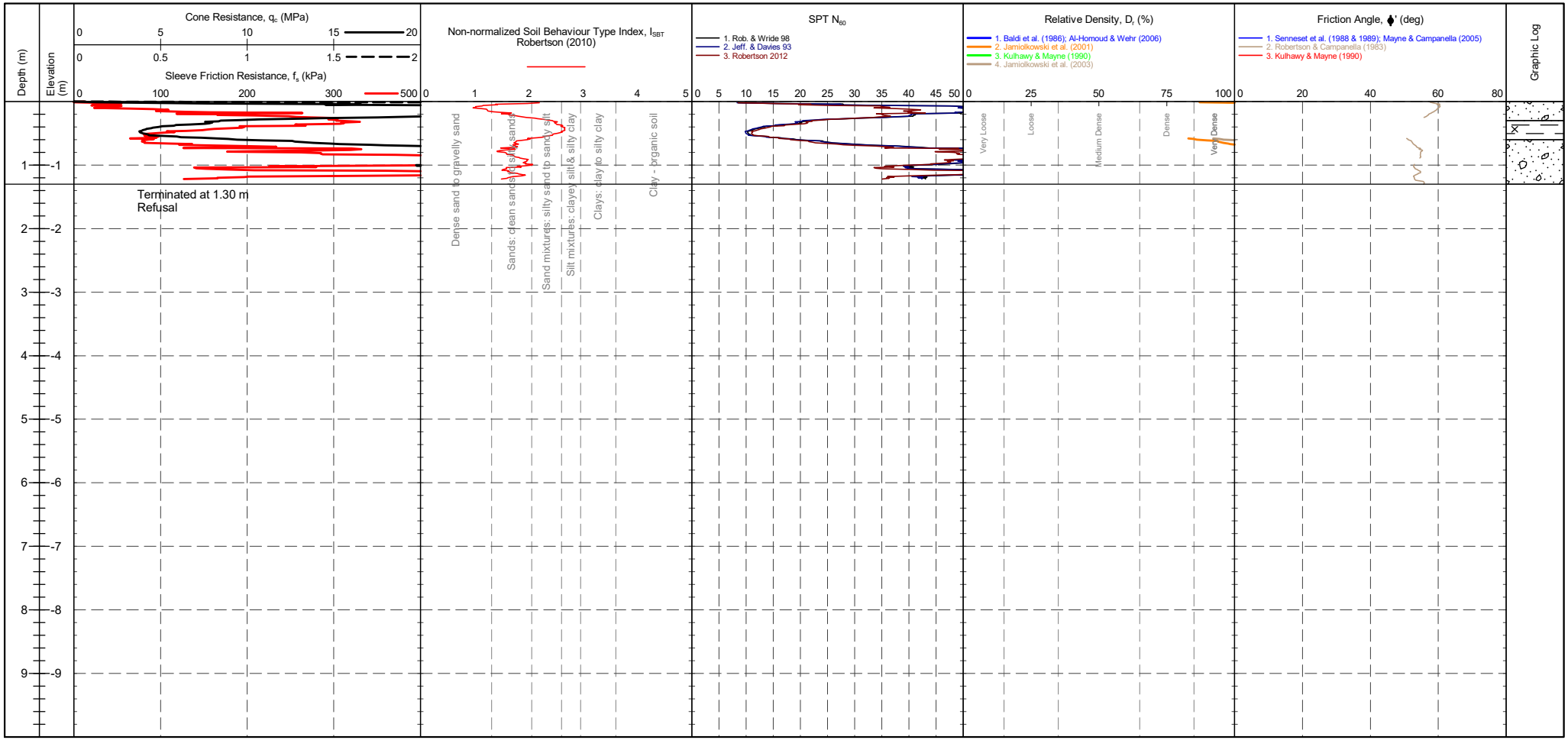
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT213B**

CLIENT : Irish Drilling	EASTING : 649295.361 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738124.931 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	224 mV	225 mV	0.012 MPa
Sleeve	200 mV	196 mV	-0.003 kPa
Pore Pressure 2	248 mV	226 mV	-0.006 kPa
X-Y Inclinometer	2305 mV	2316 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

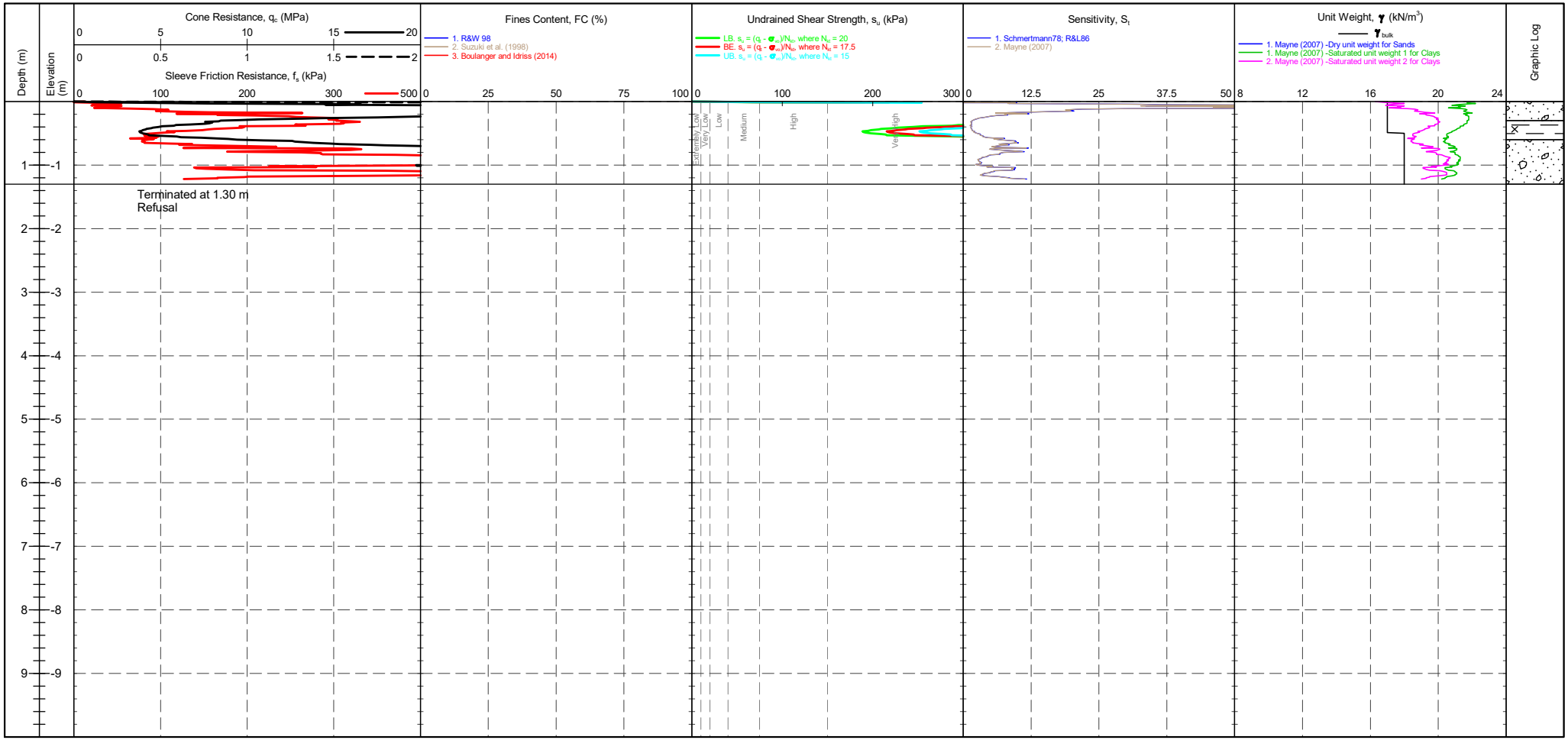
Dissipation Test

CPT LOG 03

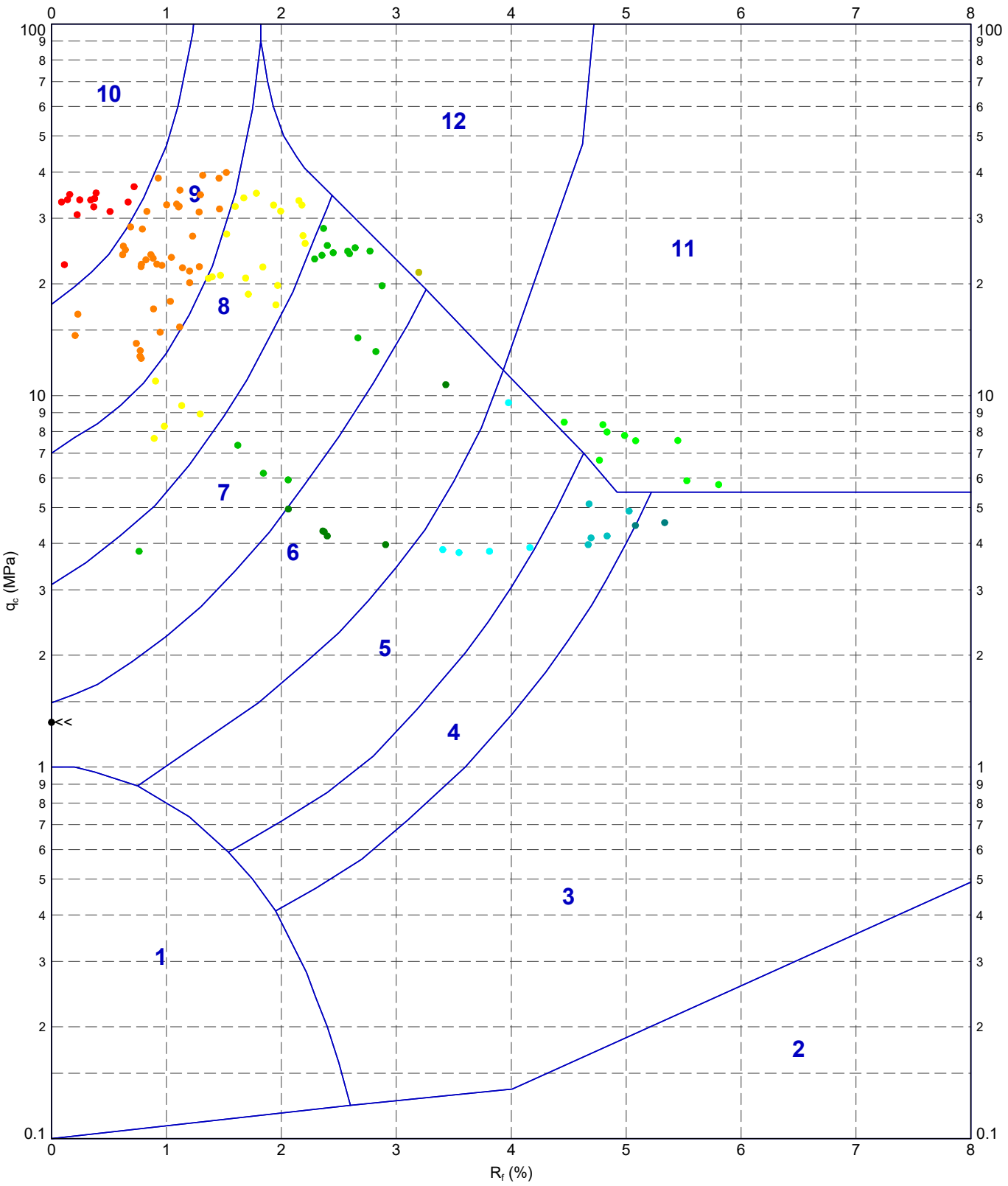
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT213B

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649295.361 m NORTHING : 738124.931 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 224 mV / 225 mV / 0.012 MPa Sleeve / 200 mV / 196 mV / -0.003 kPa Pore Pressure 2 / 248 mV / 226 mV / -0.006 kPa X-Y Inclinometer / 2305 mV / 2316 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT213B	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

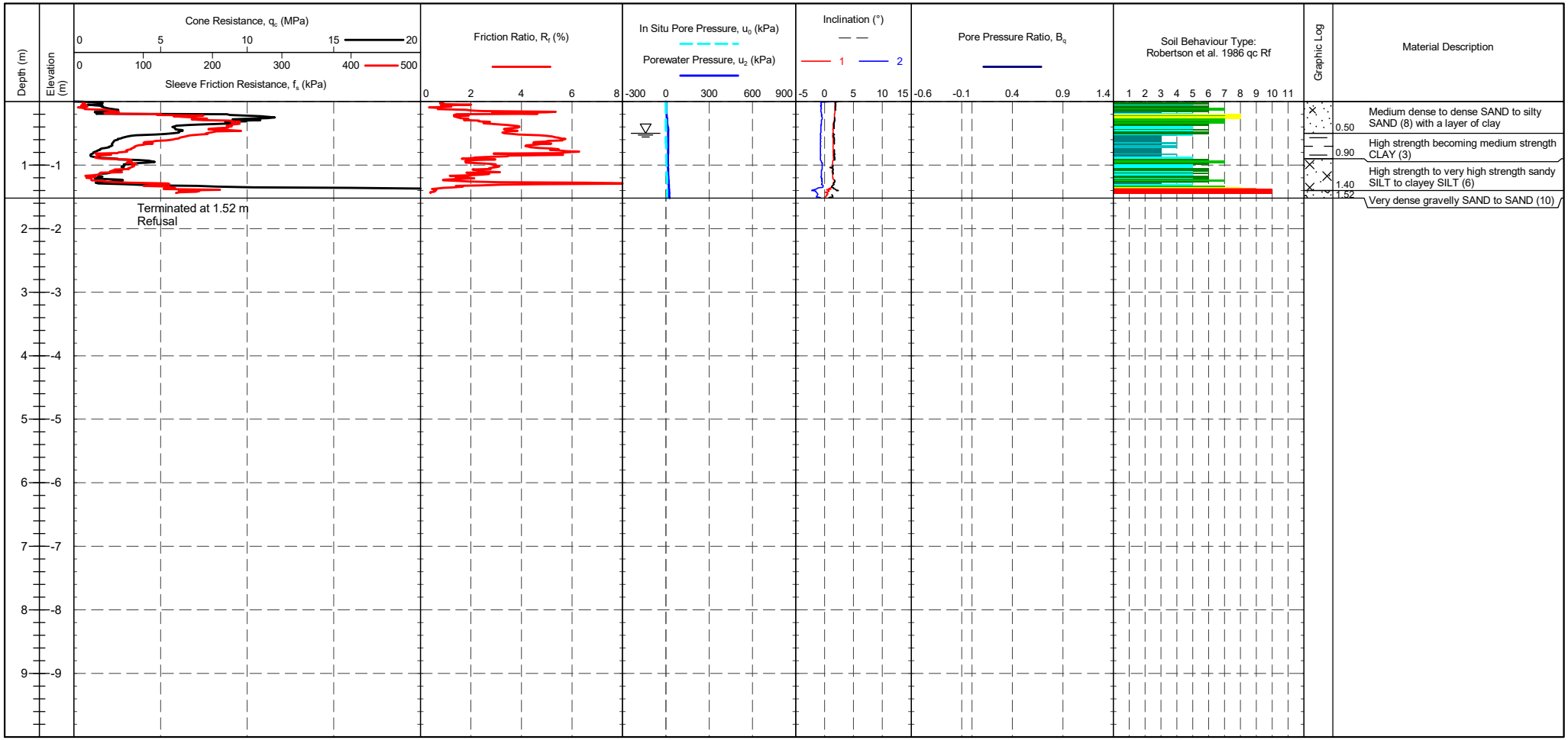
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:08 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID: **CPT216**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649477.729 m NORTHING : 738069.492 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CALIBRATION DATE : 05/12/2022 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 225 mV / 225 mV / 0 MPa Sleeve / 190 mV / 190 mV / 0 kPa Pore Pressure 2 / 321 mV / 343 mV / 0.006 kPa X-Y Inclinometer / 2569 mV / 2554 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

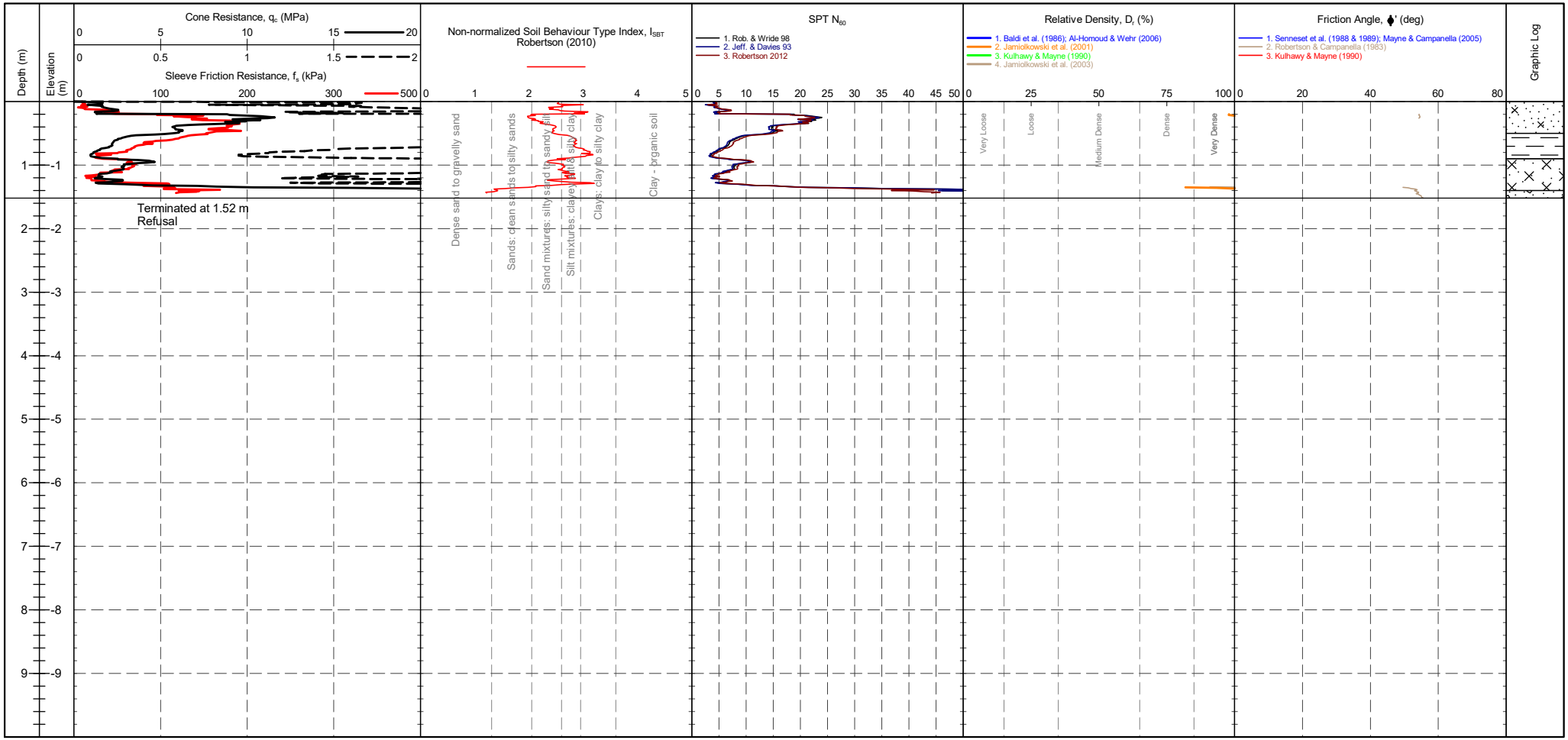
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT216**

CLIENT : Irish Drilling	EASTING : 649477.729 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738069.492 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	225 mV	0 MPa
Sleeve	190 mV	190 mV	0 kPa
Pore Pressure 2	321 mV	343 mV	0.006 kPa
X-Y Inclinometer	2569 mV	2554 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

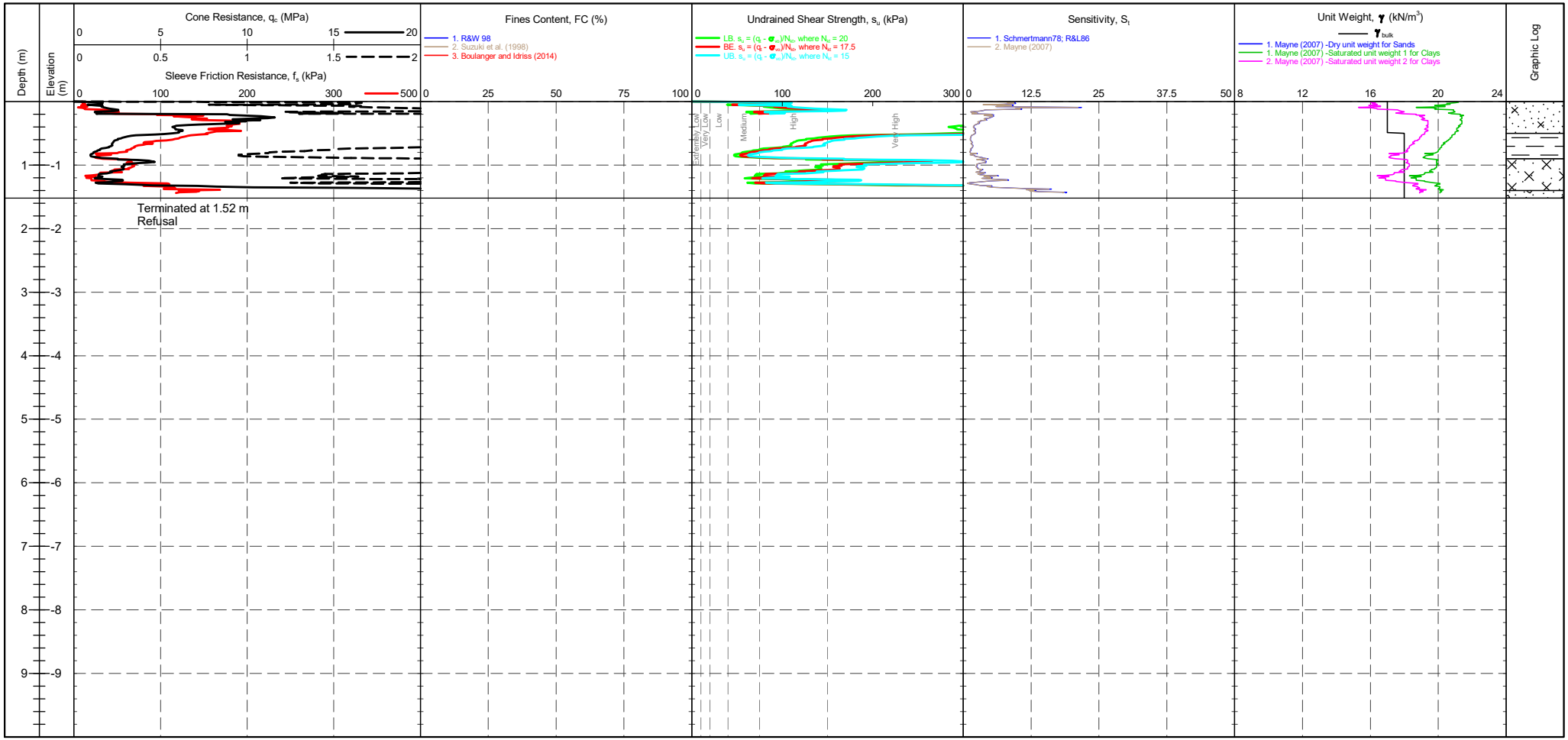
Dissipation Test

CPT LOG 03

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT216

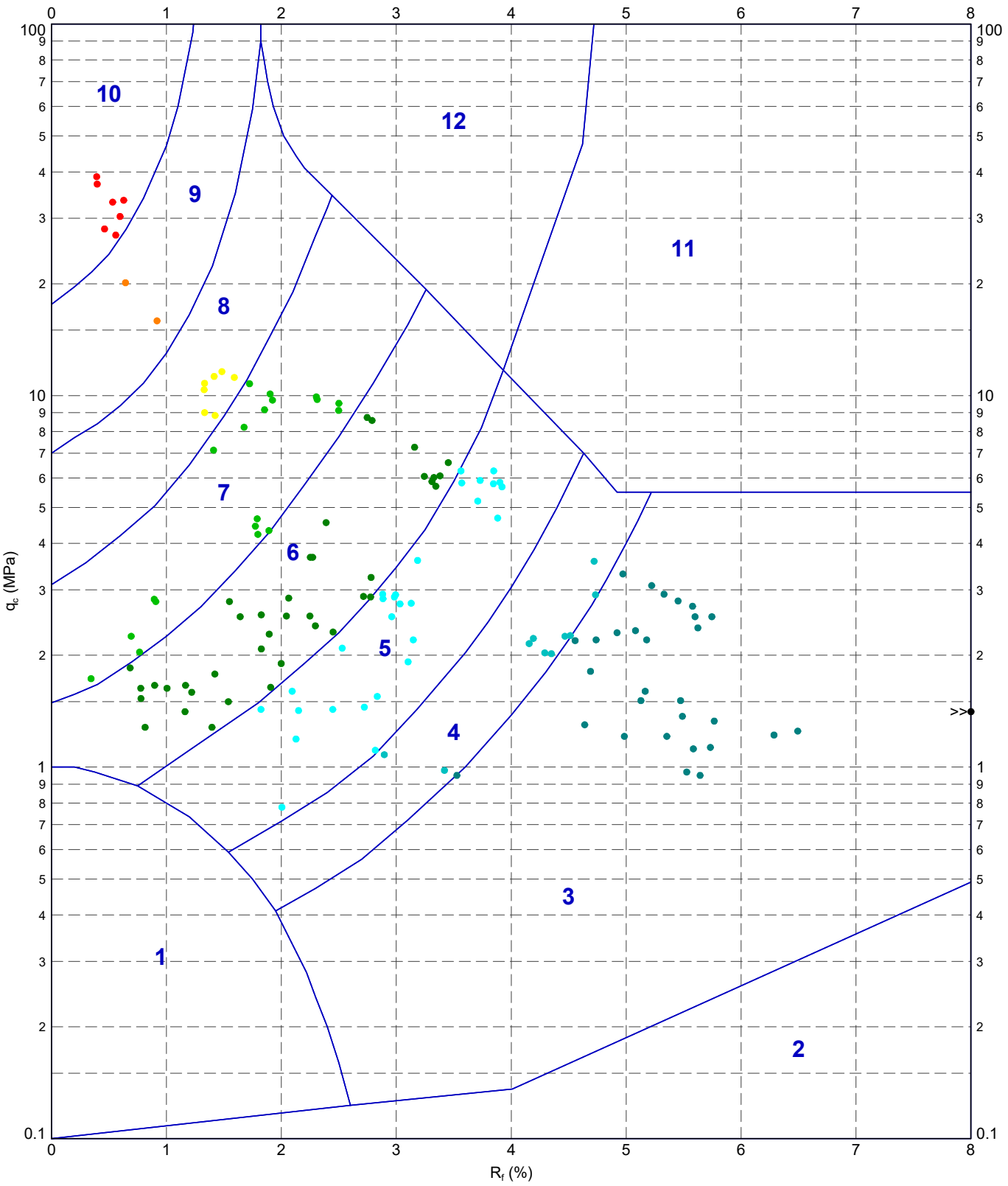
CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649477.729 m NORTHING : 738069.492 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 225 mV / 225 mV / 0 MPa Sleeve / 190 mV / 190 mV / 0 kPa Pore Pressure 2 / 321 mV / 343 mV / 0.006 kPa X-Y Inclinometer / 2569 mV / 2554 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40 Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT216	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

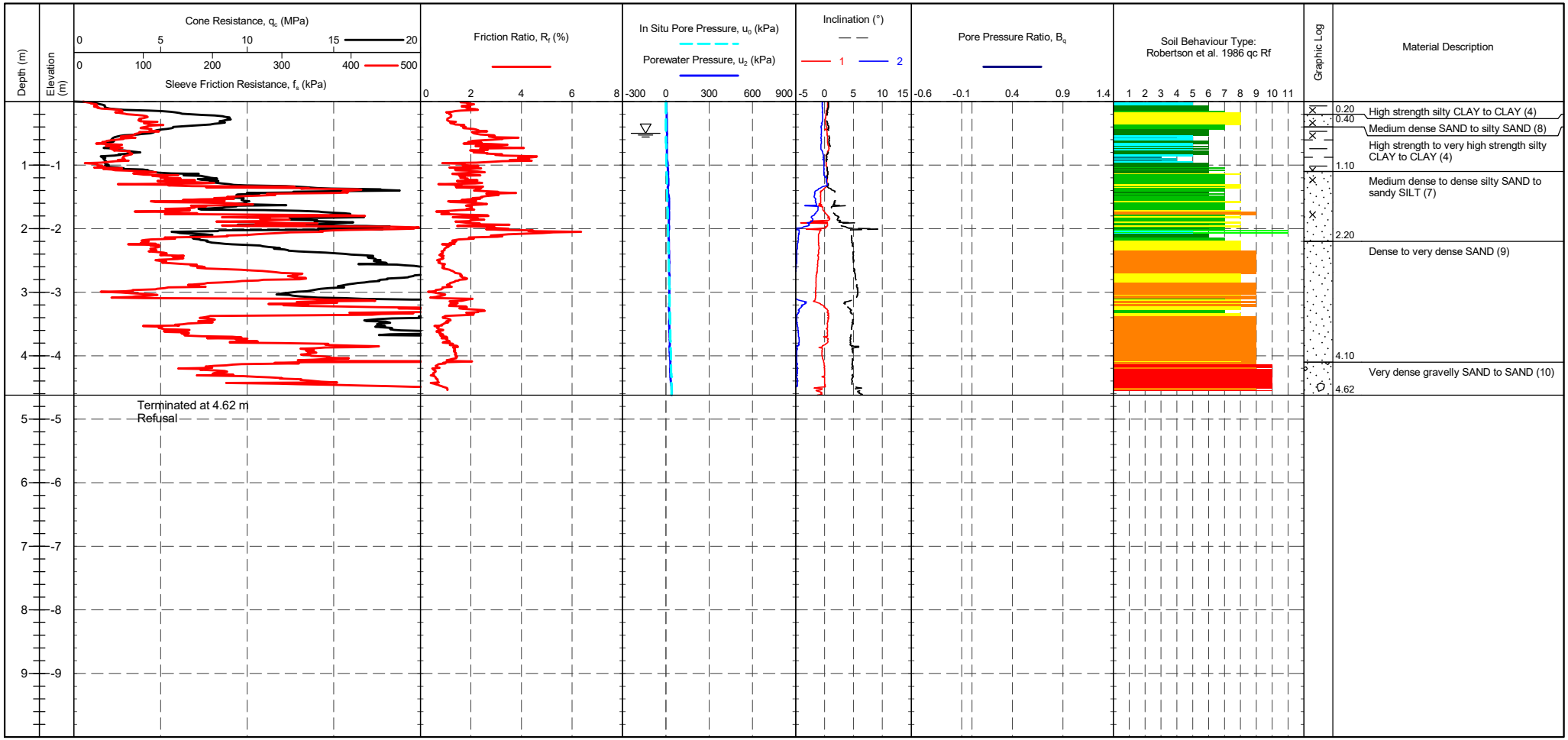
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:09 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT217

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649514.269 m NORTHING : 738131.053 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	224 mV	222 mV	-0.023 MPa
Sleeve	190 mV	185 mV	-0.004 kPa
Pore Pressure 2	321 mV	347 mV	0.007 kPa
X-Y Inclinometer	2452 mV	2446 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

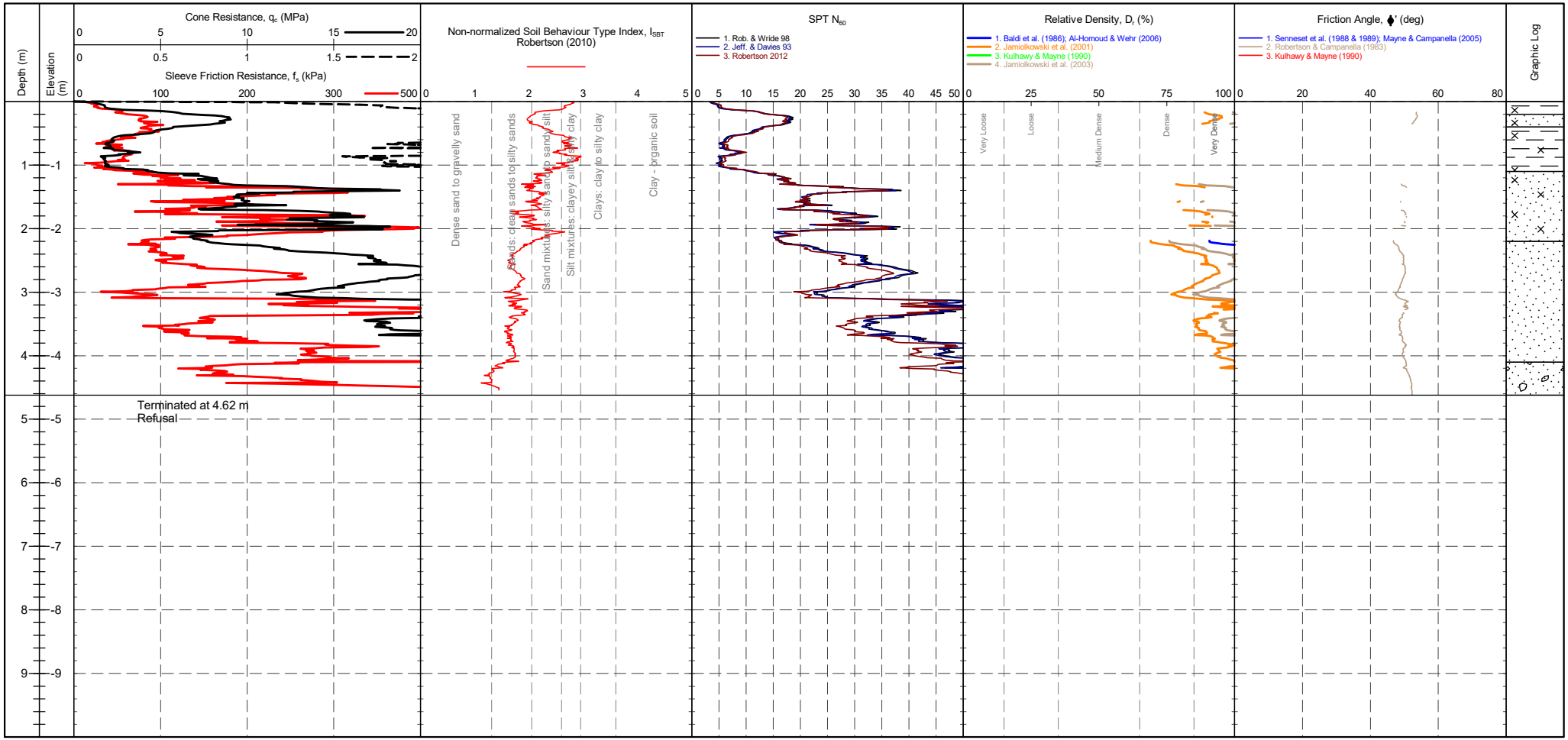
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT217**

CLIENT : Irish Drilling	EASTING : 649514.269 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738131.053 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	224 mV	222 mV	-0.023 MPa
Sleeve	190 mV	185 mV	-0.004 kPa
Pore Pressure 2	321 mV	347 mV	0.007 kPa
X-Y Inclinometer	2452 mV	2446 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

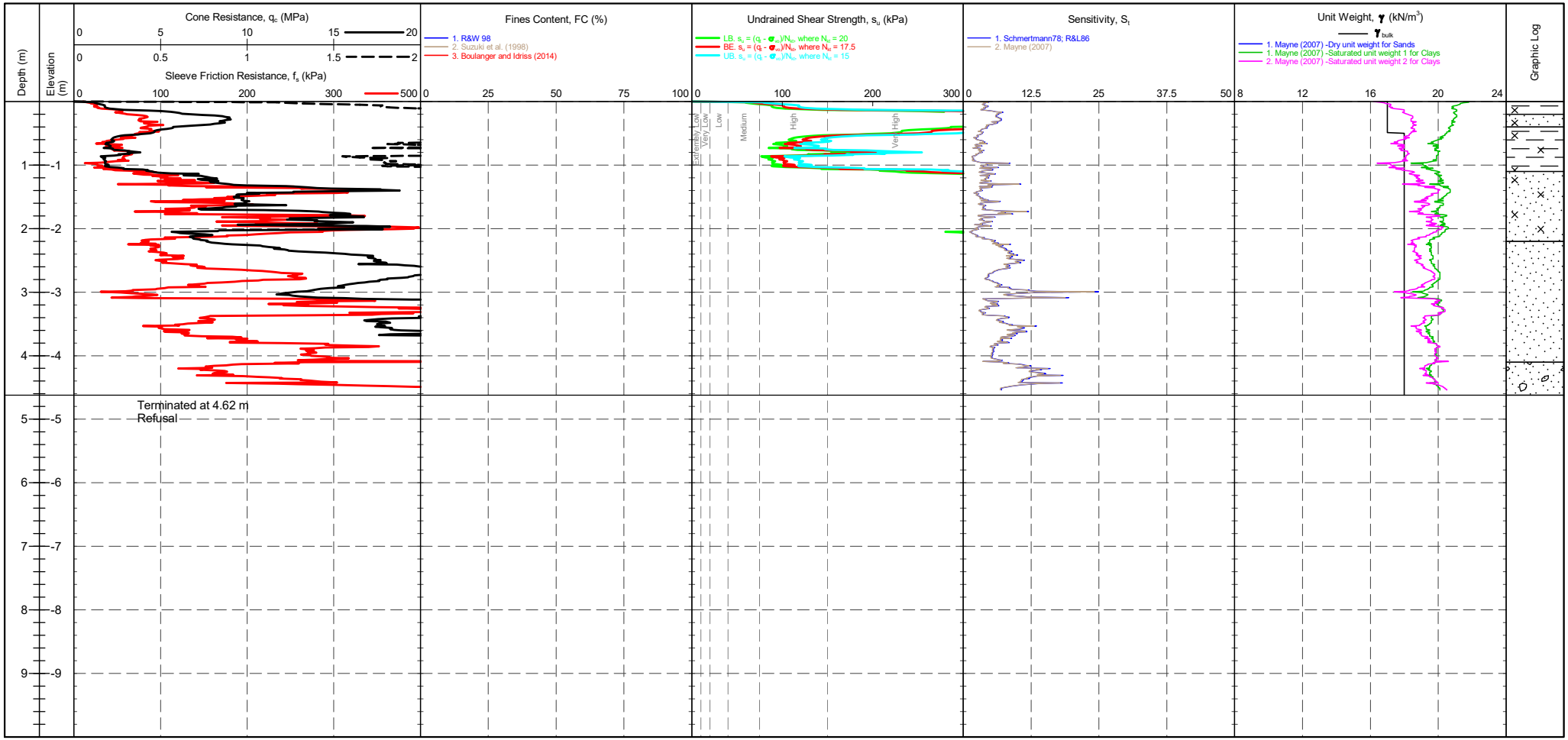
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 03

PointID: **CPT217**

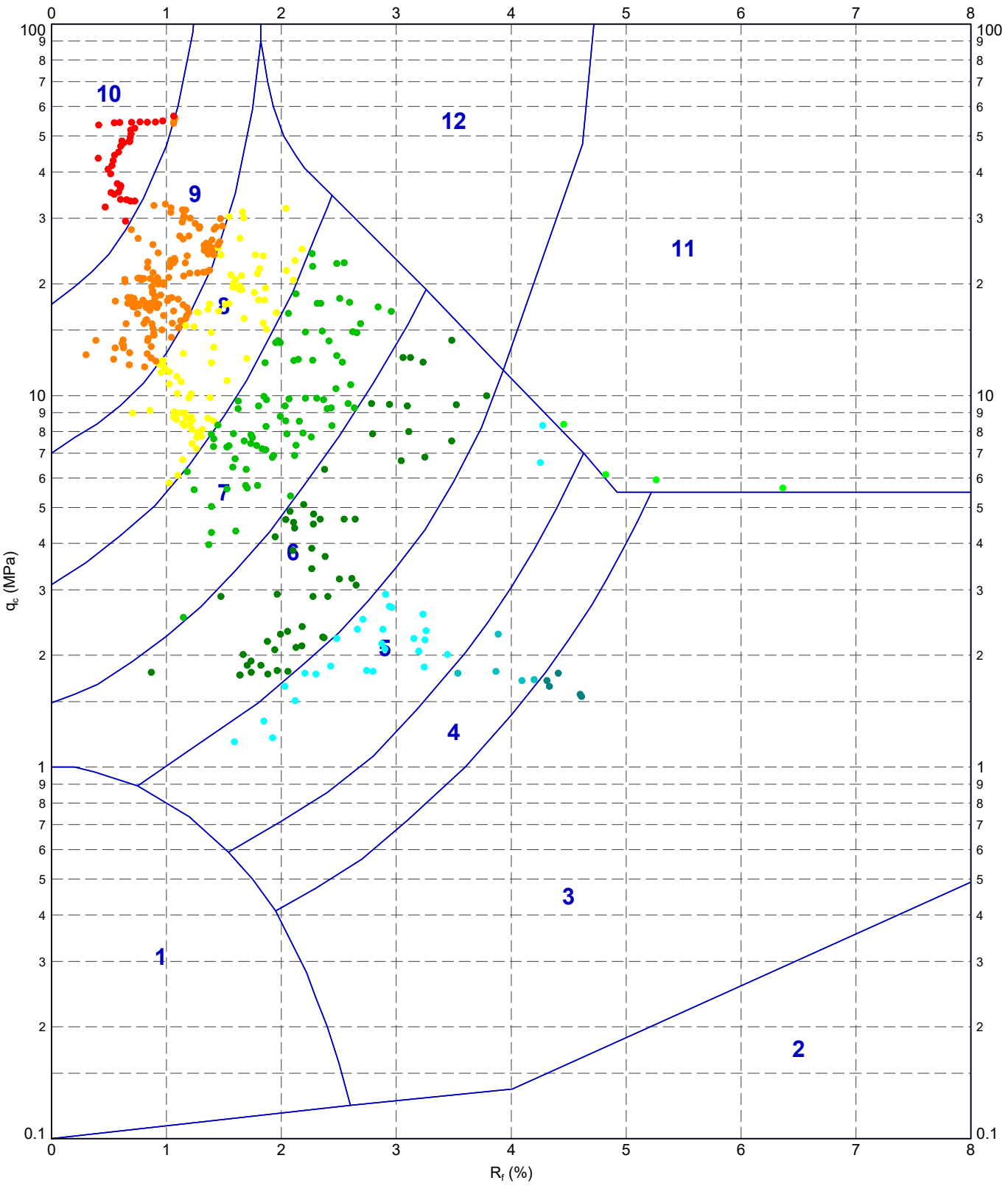
CLIENT : Irish Drilling	EASTING : 649514.269 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738131.053 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2	CPTU ZERO VALUES			COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11
CONE MODEL : Subtraction	APPLICATION CLASS : 2	Transducer / Pre / Post / Difference			Term based on measurement / su (kPa) / Term based on measurement / su (kPa)
CONE AREA : 15cm^2	RIG : CPT 017 - Griffen	Tip: 224 mV / 222 mV / -0.023 MPa			Extremely low strength <10 / Medium strength 40-75
CONE AREA RATIO : 0.79	OPERATOR : RS	Sleeve: 190 mV / 185 mV / -0.004 kPa			Very low strength 10-20 / High strength 75-150
FILTER POSITION : u2	FRICTION REDUCER : None	Pore Pressure 2: 321 mV / 347 mV / 0.007 kPa			Low strength 20-40 / Very high strength 150-300
FILTER TYPE : HDPE	WEATHER : Sunny & Mild	X-Y Inclinometer: 2452 mV / 2446 mV			Extremely high strength >300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT217	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

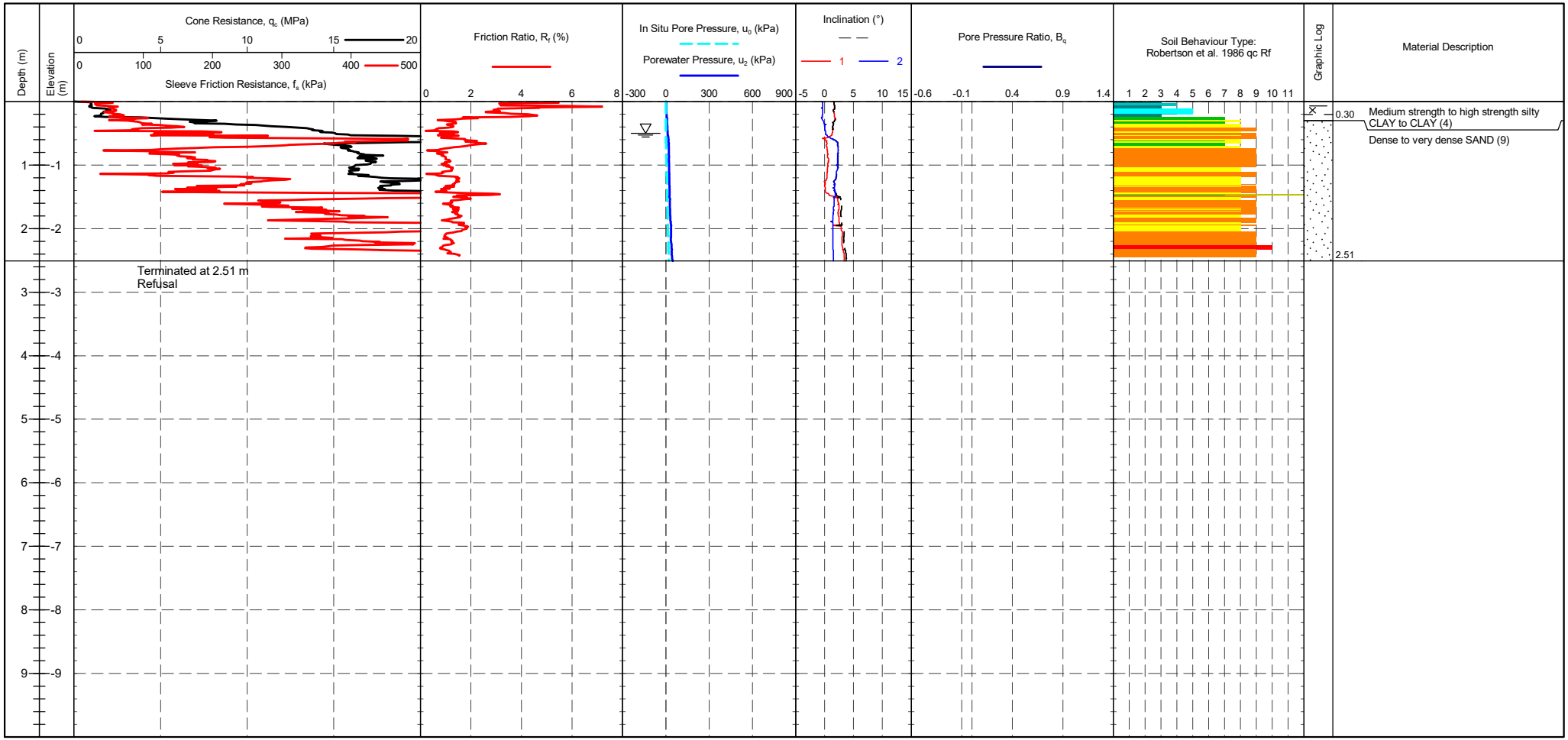
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:10 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID: **CPT218**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649615.443 m NORTHING : 738107.616 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CALIBRATION DATE : 05/12/2022 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES	METHOD: Robertson et al. 1986 qc Rf

Transducer	Pre	Post	Difference
Tip	225 mV	226 mV	0.012 MPa
Sleeve	190 mV	190 mV	0 kPa
Pore Pressure 2	329 mV	323 mV	-0.002 kPa
X-Y Inclinometer	2544 mV	2564 mV	

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

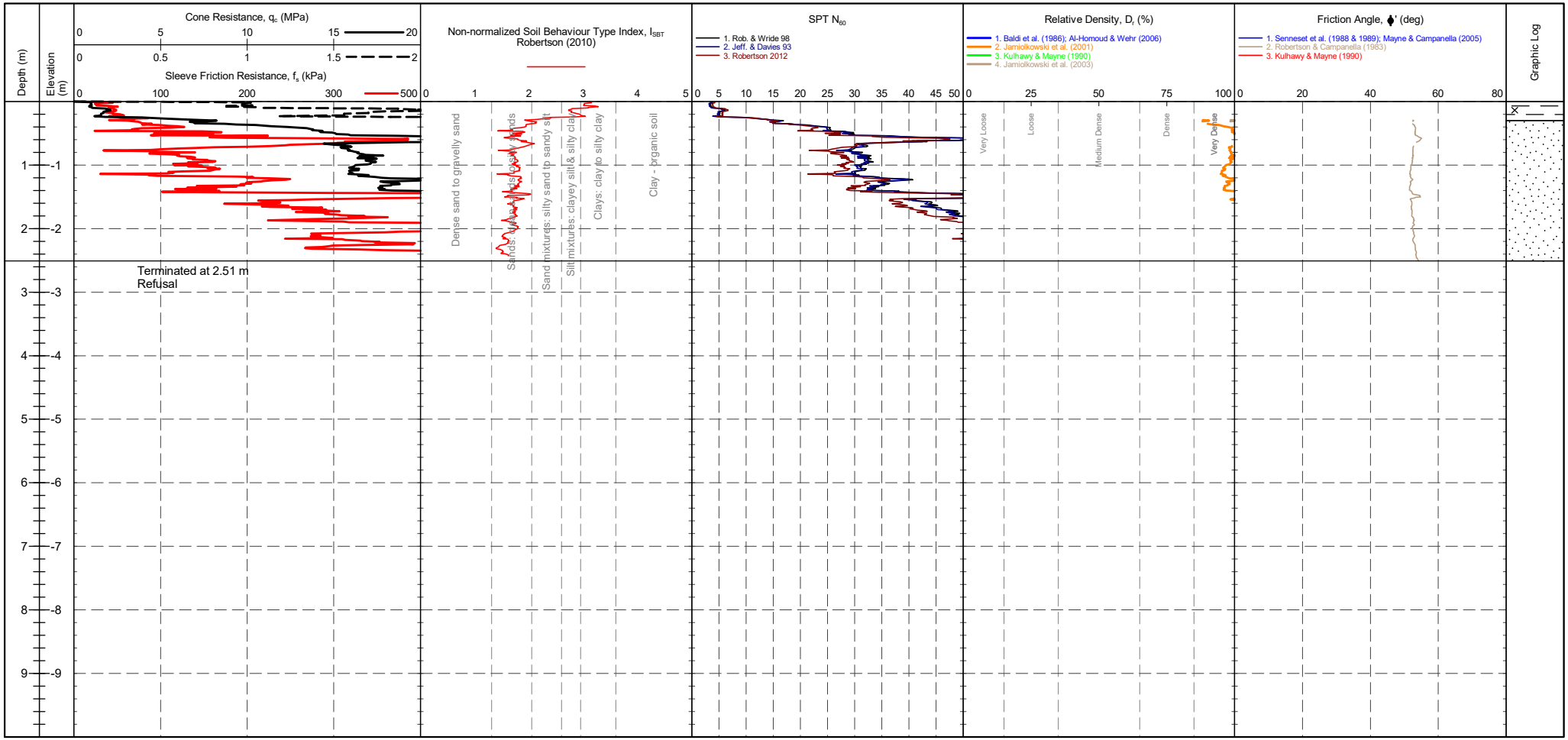
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT218**

CLIENT : Irish Drilling	EASTING : 649615.443 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738107.616 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	226 mV	0.012 MPa
Sleeve	190 mV	190 mV	0 kPa
Pore Pressure 2	329 mV	323 mV	-0.002 kPa
X-Y Inclinometer	2544 mV	2564 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

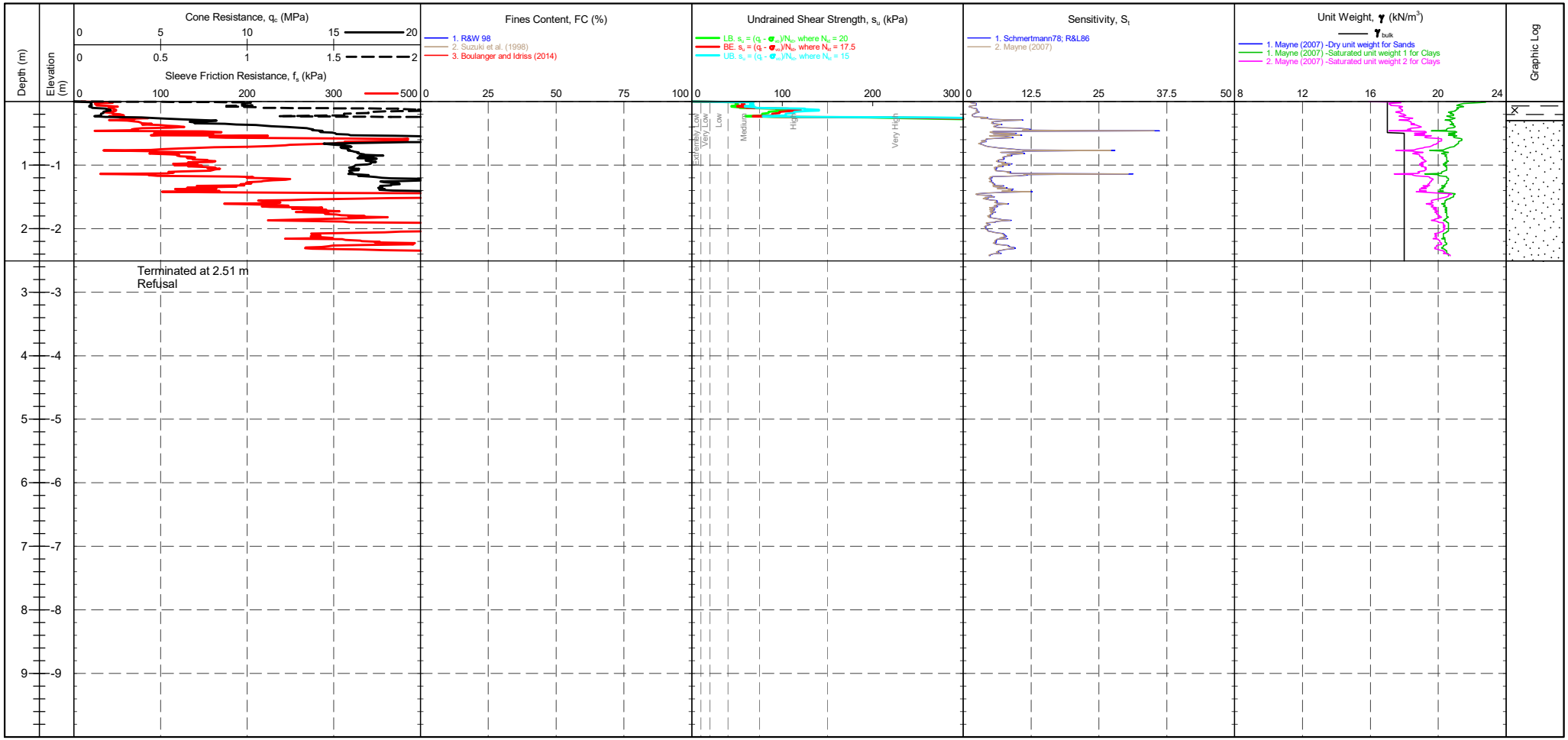
Dissipation Test

CPT LOG 03

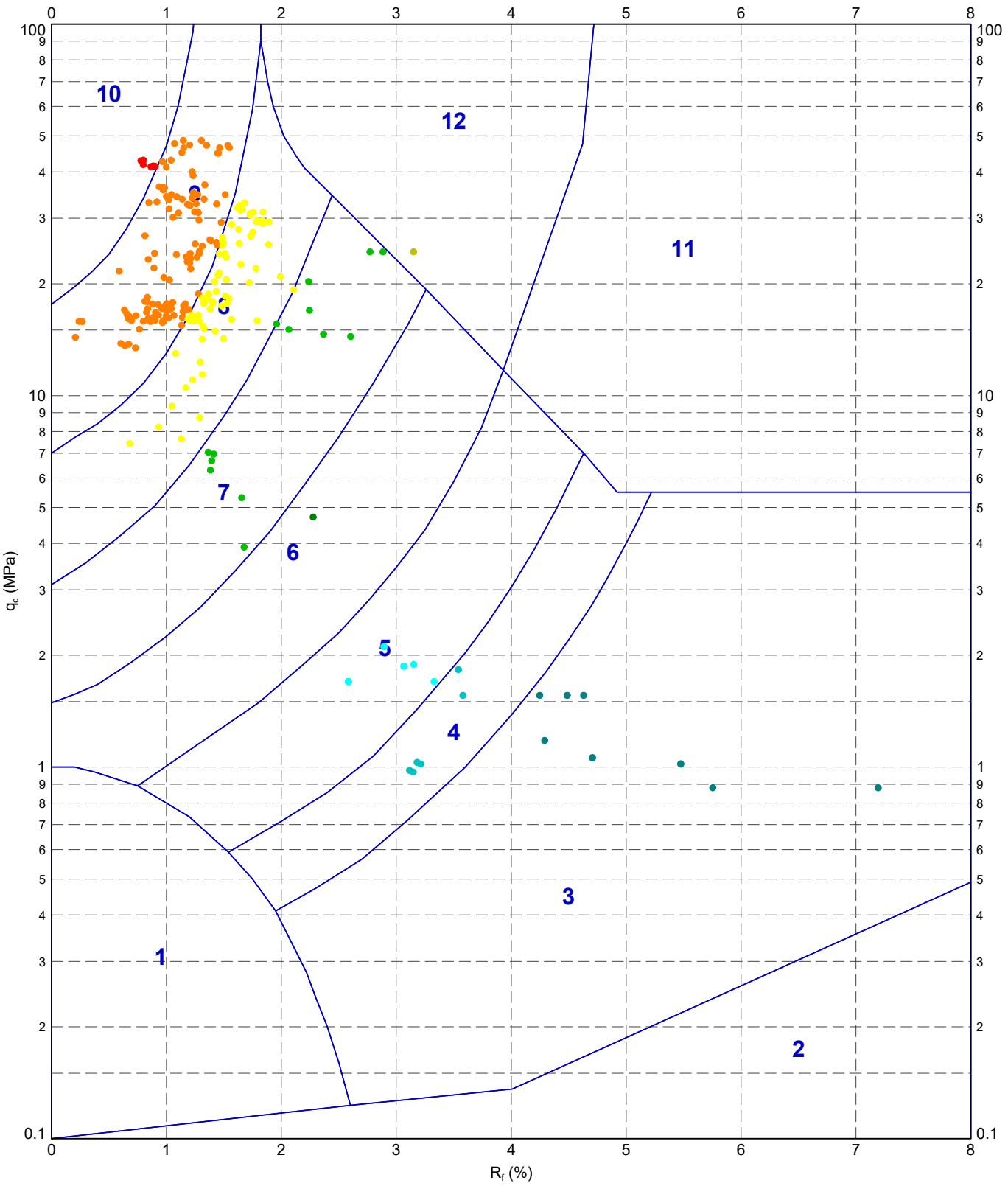
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT218

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649615.443 m NORTHING : 738107.616 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 225 mV / 226 mV / 0.012 MPa Sleeve / 190 mV / 190 mV / 0 kPa Pore Pressure 2 / 329 mV / 323 mV / -0.002 kPa X-Y Inclinometer / 2544 mV / 2564 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT218	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

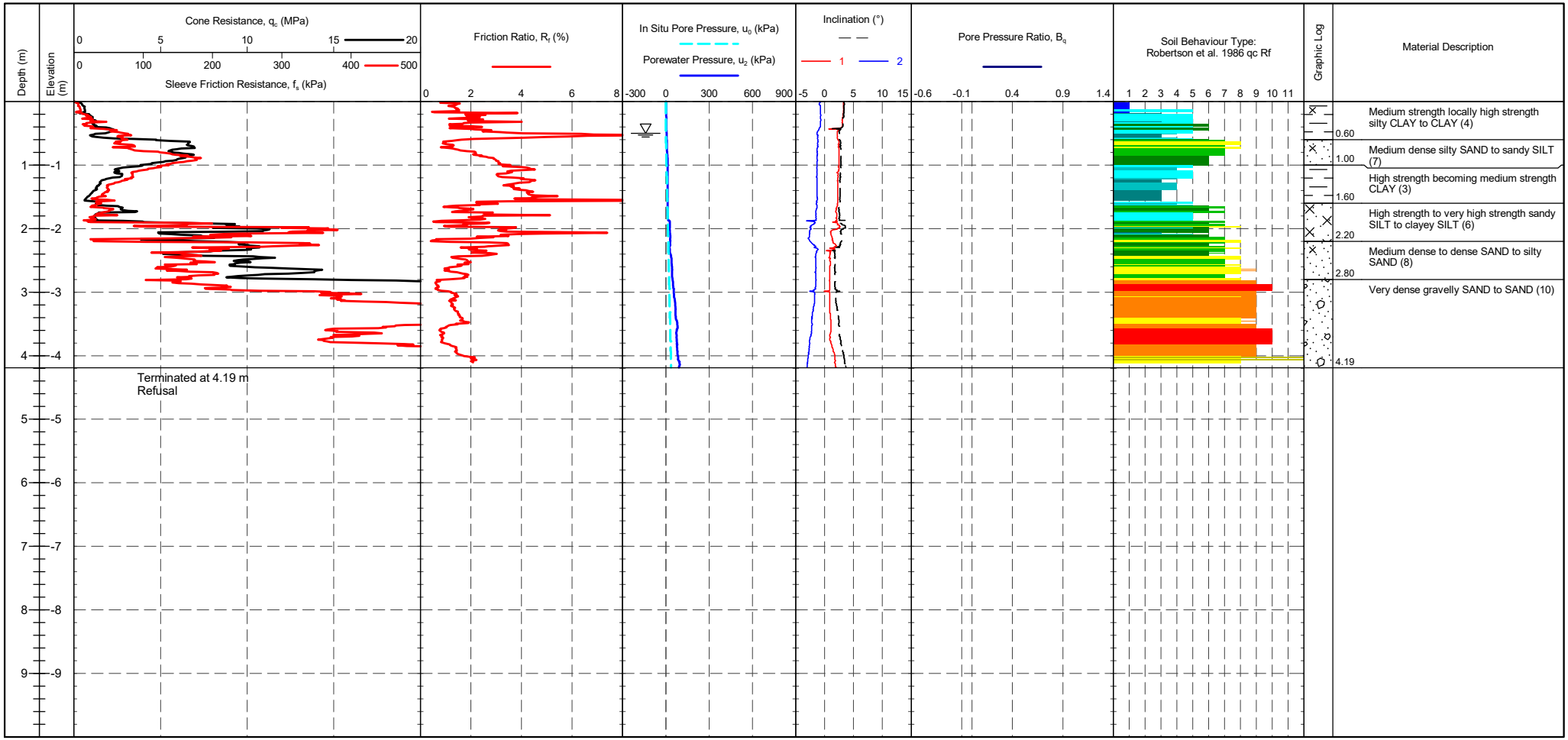
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:10 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT219

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649714.458 m NORTHING : 738144.608 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	220 mV	-0.058 MPa
Sleeve	192 mV	186 mV	-0.004 kPa
Pore Pressure 2	273 mV	361 mV	0.023 kPa
X-Y Inclinometer	2728 mV	2728 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

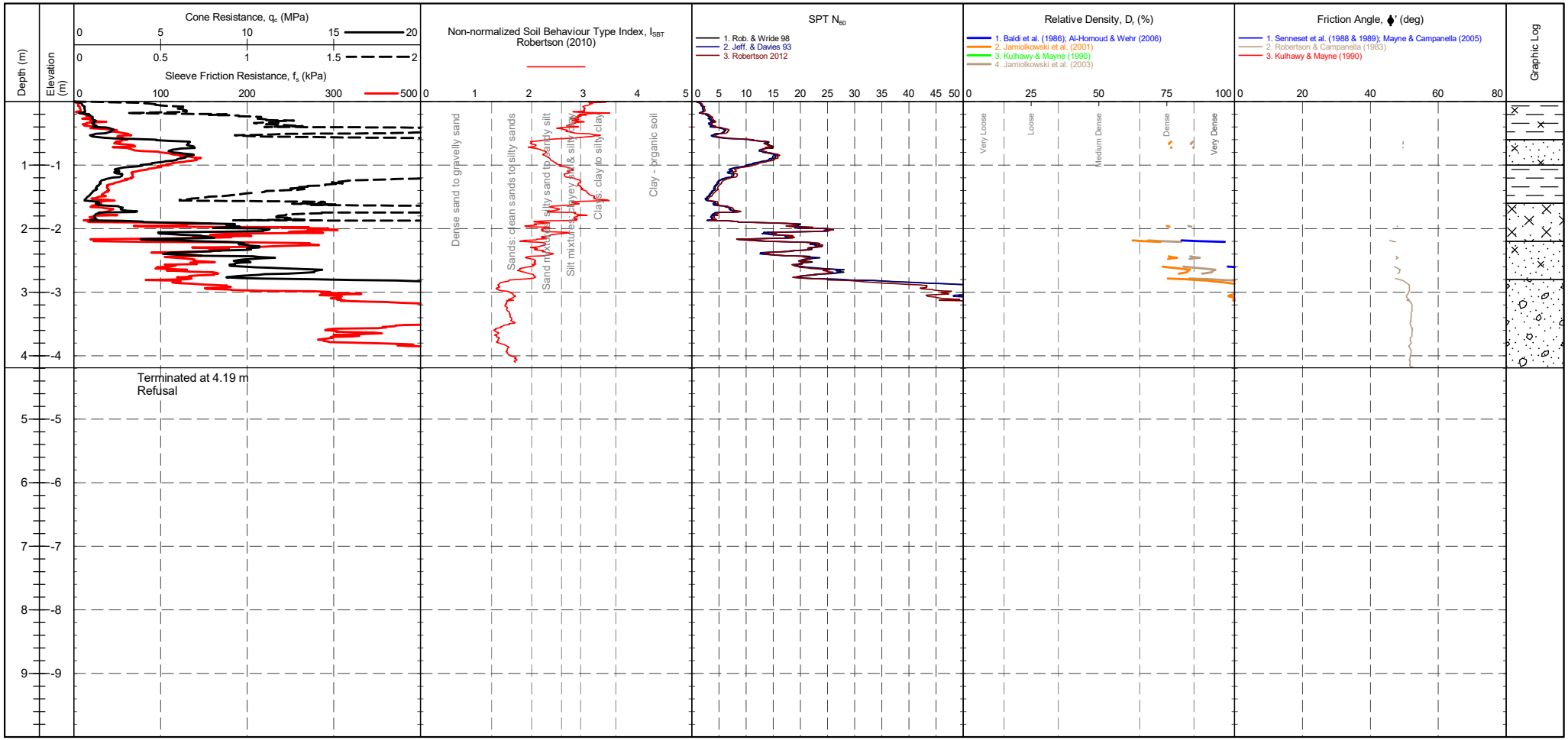
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT219**

CLIENT : Irish Drilling	EASTING : 649714.458 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738144.608 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	220 mV	-0.058 MPa
Sleeve	192 mV	186 mV	-0.004 kPa
Pore Pressure 2	273 mV	361 mV	0.023 kPa
X-Y Inclinometer	2728 mV	2728 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

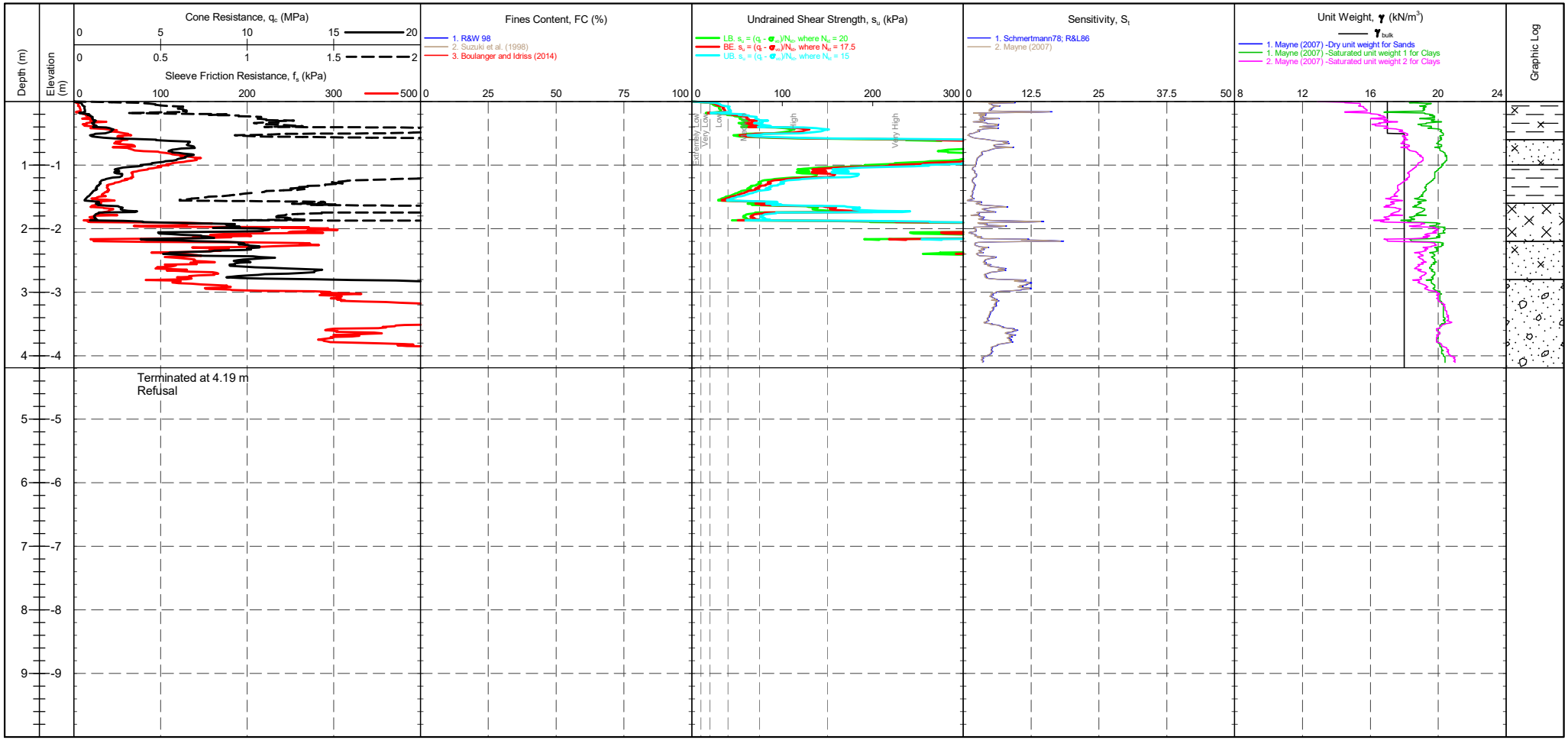
Dissipation Test

CPT LOG 03

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT219

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649714.458 m NORTHING : 738144.608 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



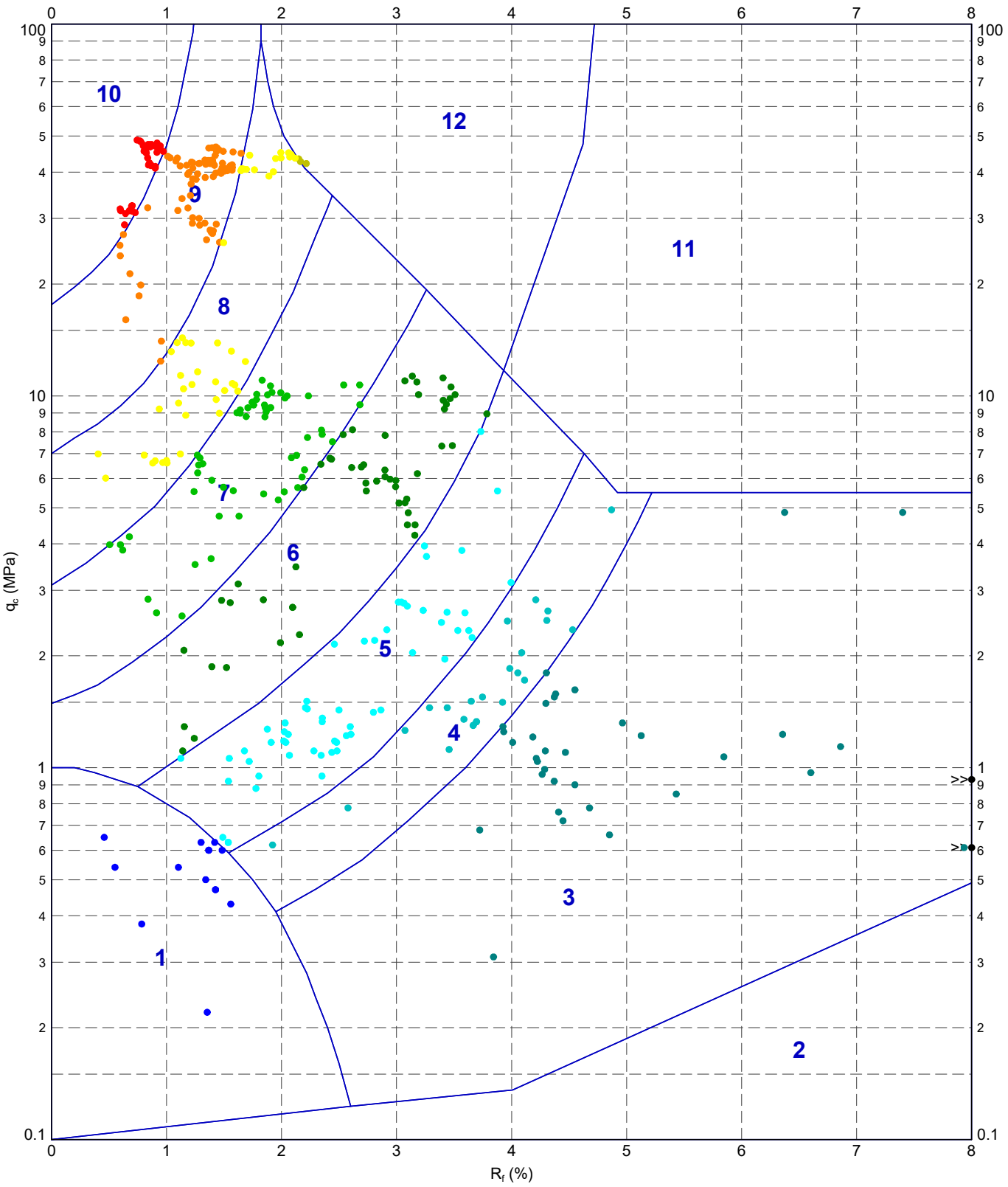
CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Transducer	Pre	Post	Difference
Tip	225 mV	220 mV	-0.058 MPa
Sleeve	192 mV	186 mV	-0.004 kPa
Pore Pressure 2	273 mV	361 mV	0.023 kPa
X-Y Inclinometer	2728 mV	2728 mV	

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION	TITLE Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT219	DRAWN	DATE 03/07/2023
		CHECKED	DATE 03/07/2023
		SCALE Not To Scale	A4
		PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1 LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:11 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION

Unit 23 Hastings Innovation Centre,
Highfield Drive
St. Leonards on Sea, East Sussex,
TN38 9UH, U.K.

Company No.: 6339499
VAT No.: 922 3561 41

Appendix 8A
Ground Water Readings

Groundwater Levels

Contract:	Derrygreenagh Thermal Power	*Test carried out by:*	**Irish Drilling Ltd.**
Location:	Derrygreenagh, Co. Offaly	*Operators:*	MM
Client:	Bord na Mona.	*Date installed:*	June 23-August '23
Engineer:	Bord na Mona.	*Date:*	13/09/2023

Standpipes	18/07/2023	17/08/2023	13/09/2023	Comments	O.D.
	m +/-(gl)	m +/-(gl)	m +/-(gl)		Ground Level
BH101	-7.60	-7.14	-7.40		
BH103	-8.63	-8.01	-8.40		
BH104	-7.66	-6.97	-7.20		
BH105	-10.84	-8.16	-8.42		
BH106	-9.8	-9.15	-9.4		
BH109	-7.60	-7.14	-7.31		
BH111A	-11.90	-11.35	-1.60		
BH112	-8.38	-7.9	-8.2		
BH116(Rotary)	-7.38	-6.92	-5.91		
BH116(Cable)	-5.9	-6.05	-7.07		
BH117	-7.6	-7.06	-7.16		
BH118	-4.57	-6.81	-6.89		

Remarks:
Depth recorded from ground level to top of water level.

Appendix 8B
Gas Readings

Gas & Water Levels *Contract: Derrygreenagh Power* *Location: Derrygreenagh* *Client: Bord an Mona* *Engineer: MM*		*Test carried out by: MM* *Operators: MM*	IRISH DRILLING LIMITED

Date:	Borehole I.D	O_2 %	CO_2 %	CH_4 %	H_2S ppm	N2 Bal. (%)	Temp (C°)	Pressure (hPa)	O2 Bal.	Comments
13/09/2023	BH112	20.59	0.00	0.00	0.00	79.400	14.600	0.0	3.9	
13/09/2023	BH101	20.00	0.02	0.00	0.00	79.980	17.900	0.0	4.0	
13/09/2023	BH105	18.60	0.52	0.00	0.00	79.840	17.0	0.0	3.6	
13/09/2023	BH106	19.91	0.05	0.00	0.00	80.040	16.6	0.0	4.02	
13/09/2023	BH109	20.01	0.01	0.01	1.00	79.970	18.300	0.0	4.0	

Appendix 9
Plate Bearing Test Records

IRISH DRILLING LTD.	Contract:	Derrygreenagh Power		
Loughrea Co. Galway	Client:			2023OY101
	Engineer:			
Tel: (091) 841274	Date:	02/05/2023		
Lab@IrishDrilling.ie	Tested by:	DF	Checked:	DCD

Plate Bearing Test: BS 1377:Part 9: 1990

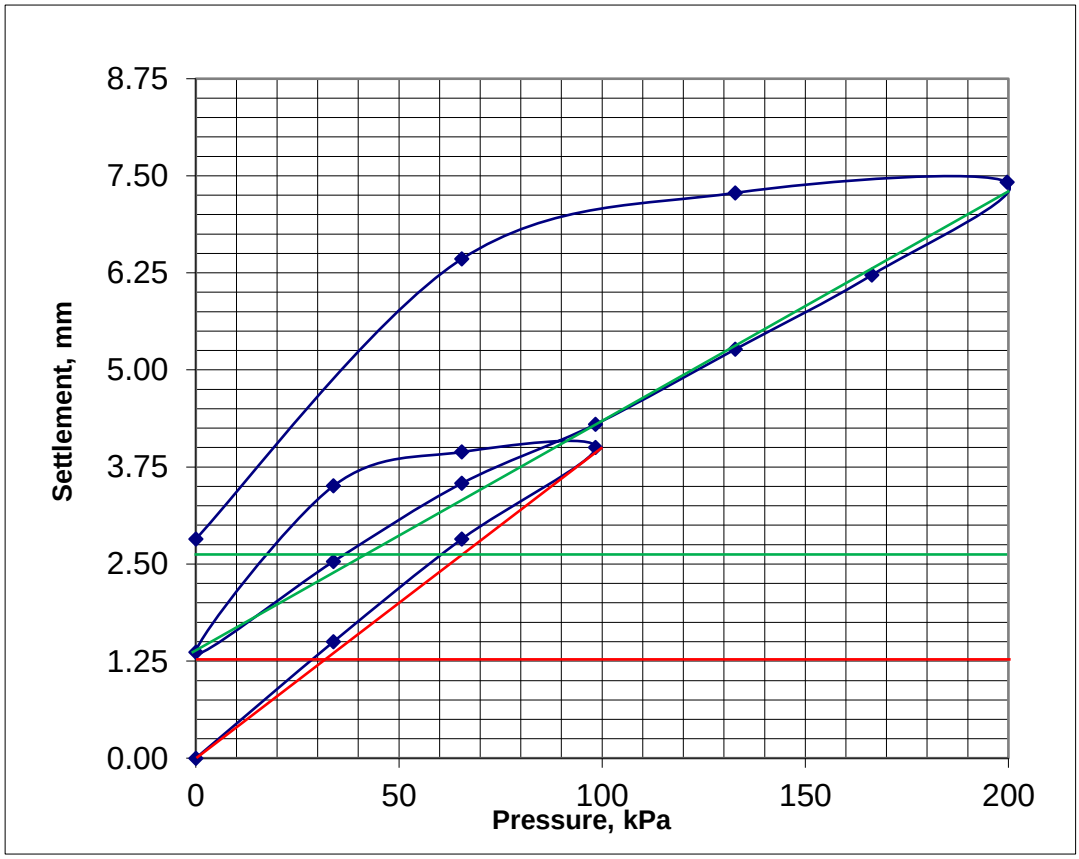
Plate diameter (mm) **600**

Pump D

Test Location Number:	TP 204	Depth / Level:	0.5m bgl
Peat and gravel			

PLATE TEST

Pressure kN/m^2	Settlement mm
0	0.00
33.9	1.50
65.5	2.82
98.4	4.00
65.5	3.94
33.9	3.51
0	1.36
33.9	2.53
65.5	3.54
98.4	4.30
132.8	5.27
166.4	6.22
199.7	7.42
132.8	7.28
65.5	6.43
0	2.82



Pressures to give 1.25mm settlement

Cycle 1		Cycle 2
1.25	(y) Settlement mm	1.25
30	(p) Pressure kN/m^2	40
24.00	Gradient (p/y)	32.00
0.829	Correction factor (to 762mm plate)	0.829
19.90	(k_s) Modulus of subgrade reaction kPa/mm	26.53
1.7	Approximate CBR (%)*	2.8

$$CBR = 6.1 \times 10^{-8} \times (k_{762})^{1.733}\%$$

*National Roads Authority, Design Manual for Roads and Bridges; Volume 7 Section 2, Part 2A HD25-26/10 (2010)**

IRISH DRILLING LTD.	Contract:	Derrygreenagh Power		
Loughrea Co. Galway	Client:			2023OY101
	Engineer:			
Tel: (091) 841274	Date:	09/05/2023		
Lab@IrishDrilling.ie	Tested by:	DF	Checked:	DCD

Plate Bearing Test: BS 1377:Part 9: 1990

Plate diameter (mm) **600**

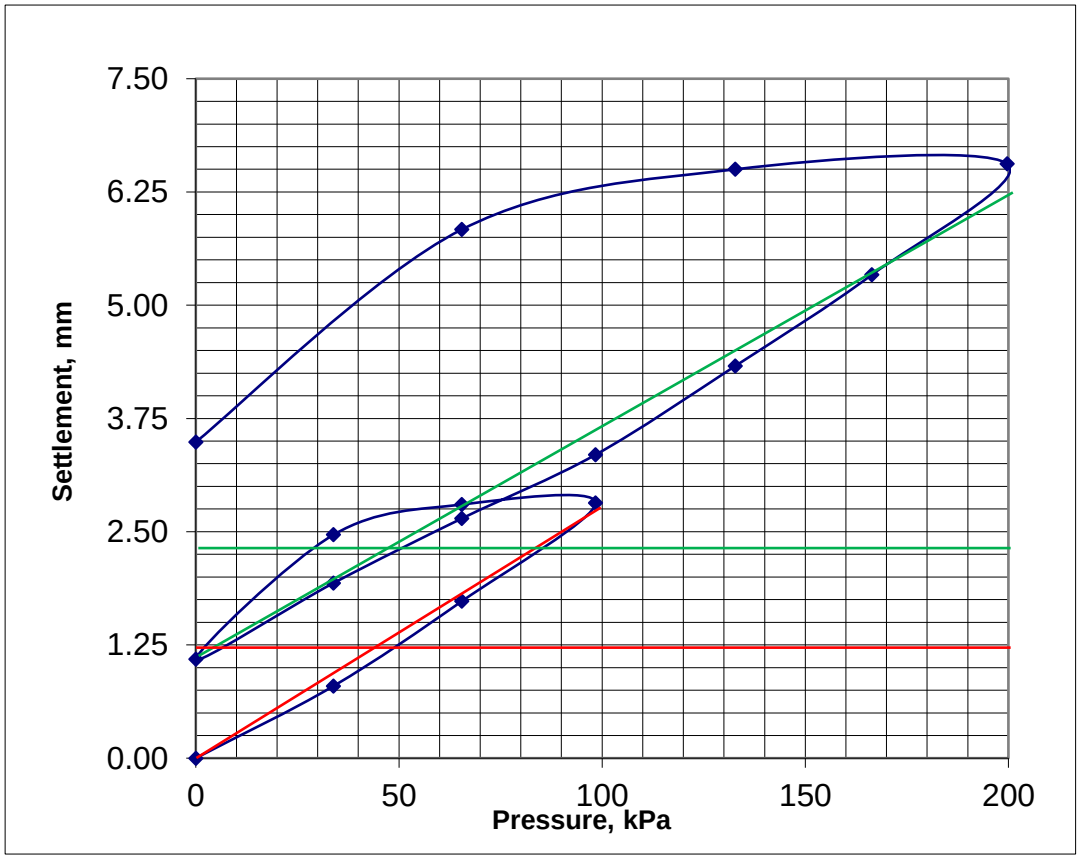
Pump D

Test Location Number:	TP 206a	Depth / Level:	0.5 m bgl

Yellow-brown cobbly clay.

PLATE TEST

Pressure kN/m^2	Settlement mm
0	0.00
33.9	0.80
65.5	1.73
98.4	2.82
65.5	2.80
33.9	2.47
0	1.09
33.9	1.93
65.5	2.65
98.4	3.35
132.8	4.33
166.4	5.34
199.7	6.56
132.8	6.50
65.5	5.84
0	3.49



Pressures to give 1.25mm settlement

Cycle 1		Cycle 2
1.25	(y) Settlement mm	1.25
45	(p) Pressure kN/m^2	50
36.00	Gradient (p/y)	40.00
0.829	Correction factor (to 762mm plate)	0.829
29.84	(k_s) Modulus of subgrade reaction kPa/mm	33.16
3.5	Approximate CBR (%)*	4.2

$$CBR = 6.1 \times 10^{-8} \times (k_{762})^{1.733}\%$$

*National Roads Authority, Design Manual for Roads and Bridges; Volume 7 Section 2, Part 2A HD25-26/10 (2010)**

IRISH DRILLING LTD.	Contract:	Derrygreenagh Power		
Loughrea Co. Galway	Client:			2023OY101
	Engineer:			
Tel: (091) 841274	Date:	02/05/2023		
Lab@IrishDrilling.ie	Tested by:	DF	Checked:	DCD

Plate Bearing Test: BS 1377:Part 9: 1990

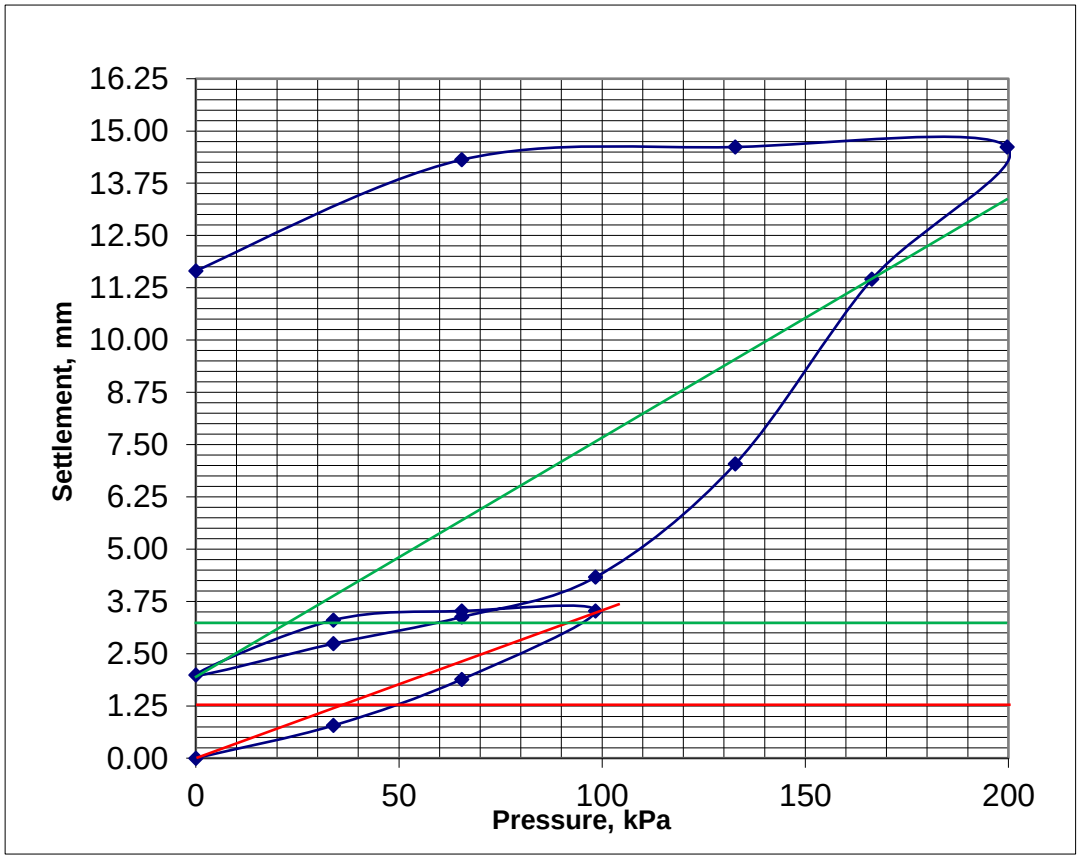
Plate diameter (mm) **600**

Pump D

Test Location Number:	TP 207	Depth / Level:	0.6m bgl
Peat and gravel			

PLATE TEST

Pressure kN/m^2	Settlement mm
0	0.00
33.9	0.78
65.5	1.89
98.4	3.52
65.5	3.52
33.9	3.30
0	1.99
33.9	2.74
65.5	3.38
98.4	4.33
132.8	7.04
166.4	11.45
199.7	14.62
132.8	14.62
65.5	14.31
0	11.66



Pressures to give 1.25mm settlement

Cycle 1		Cycle 2
1.25	(y) Settlement mm	1.25
35	(p) Pressure kN/m^2	25
28.00	Gradient (p/y)	20.00
0.829	Correction factor (to 762mm plate)	0.829
23.21	(k_s) Modulus of subgrade reaction kPa/mm	16.58
2.3	Approximate CBR (%)*	1.3

$$CBR = 6.1 \times 10^{-8} \times (k_{762})^{1.733}\%$$

*National Roads Authority, Design Manual for Roads and Bridges; Volume 7 Section 2, Part 2A HD25-26/10 (2010)**

IRISH DRILLING LTD.	Contract:	Derrygreenagh Power		
Loughrea Co. Galway	Client:			2023OY101
	Engineer:			
Tel: (091) 841274	Date:	03/05/2023		
Lab@IrishDrilling.ie	Tested by:	DF	Checked:	DCD

Plate Bearing Test: BS 1377:Part 9: 1990

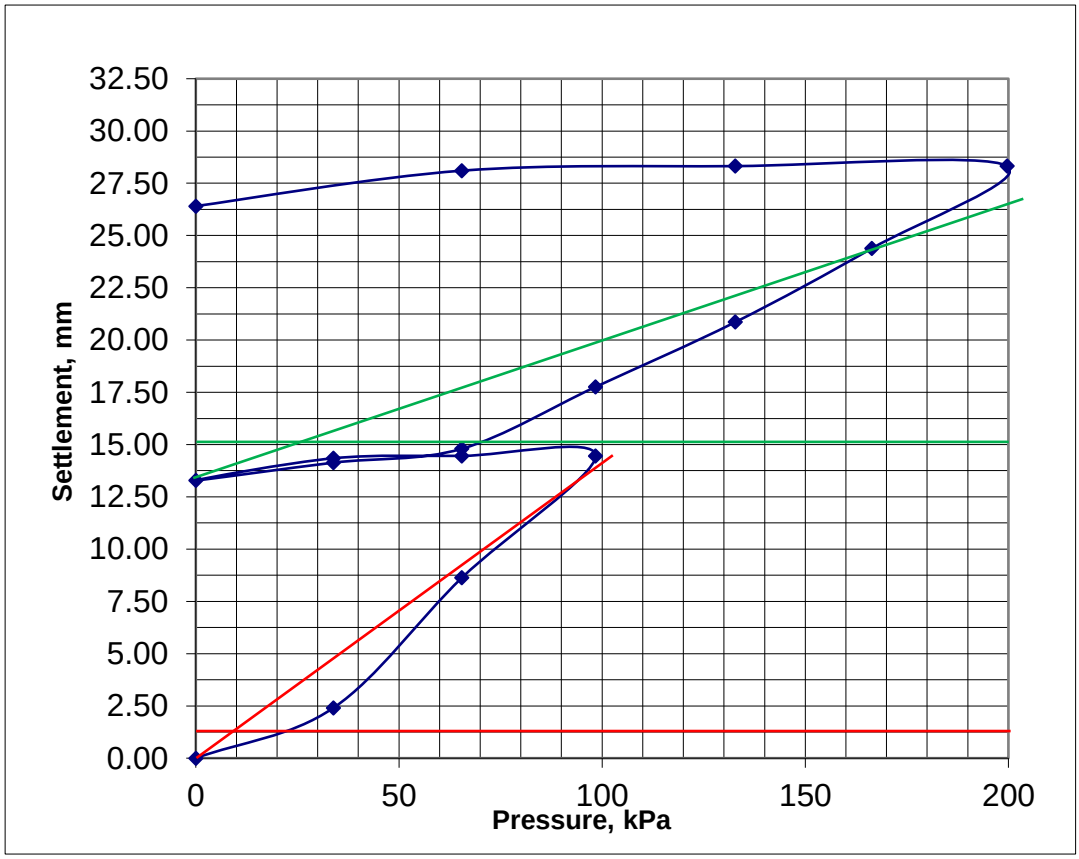
Plate diameter (mm) **600**

Pump D

Test Location Number:	TP 209	Depth / Level:	0.5m bgl
Peat and gravel			

PLATE TEST

Pressure kN/m^2	Settlement mm
0	0.00
33.9	2.41
65.5	8.63
98.4	14.46
65.5	14.46
33.9	14.35
0	13.29
33.9	14.14
65.5	14.80
98.4	17.76
132.8	20.86
166.4	24.39
199.7	28.32
132.8	28.32
65.5	28.10
0	26.41



Pressures to give 1.25mm settlement

Cycle 1		Cycle 2
1.25	(y) Settlement mm	1.25
10	(p) Pressure kN/m^2	25
8.00	Gradient (p/y)	20.00
0.829	Correction factor (to 762mm plate)	0.829
6.63	(k_s) Modulus of subgrade reaction kPa/mm	16.58
0.3	Approximate CBR (%)*	1.3

$$CBR = 6.1 \times 10^{-8} \times (k_{762})^{1.733}\%$$

*National Roads Authority, Design Manual for Roads and Bridges; Volume 7 Section 2, Part 2A HD25-26/10 (2010)**

IRISH DRILLING LTD.	Contract:	Derrygreenagh Power		
Loughrea Co. Galway	Client:			2023OY101
	Engineer:			
Tel: (091) 841274	Date:	09/05/2023		
Lab@IrishDrilling.ie	Tested by:	DF	Checked:	DCD

Plate Bearing Test: BS 1377:Part 9: 1990

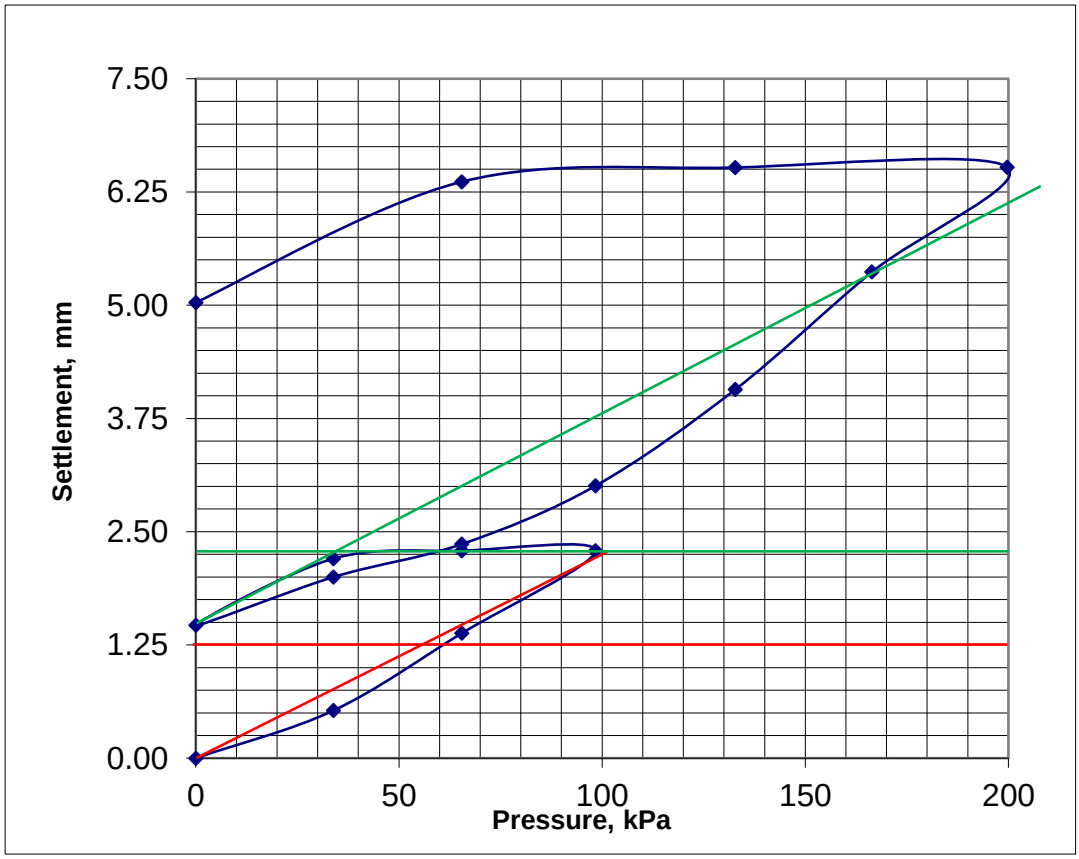
Plate diameter (mm) **600**

Pump D

Test Location Number:	TP 211	Depth / Level:	0.5 m bgl
Brown cobbly CLAY.			

PLATE TEST

Pressure kN/m^2	Settlement mm
0	0.00
33.9	0.53
65.5	1.38
98.4	2.29
65.5	2.29
33.9	2.20
0	1.47
33.9	2.00
65.5	2.36
98.4	3.01
132.8	4.07
166.4	5.37
199.7	6.52
132.8	6.52
65.5	6.36
0	5.03



Pressures to give 1.25mm settlement

Cycle 1		Cycle 2
1.25	(y) Settlement mm	1.25
55	(p) Pressure kN/m^2	35
44.00	Gradient (p/y)	28.00
0.829	Correction factor (to 762mm plate)	0.829
36.48	(k_s) Modulus of subgrade reaction kPa/mm	23.21
4.9	Approximate CBR (%)*	2.3

$$CBR = 6.1 \times 10^{-8} \times (k_{762})^{1.733}\%$$

*National Roads Authority, Design Manual for Roads and Bridges; Volume 7 Section 2, Part 2A HD25-26/10 (2010)**

IRISH DRILLING LTD.	Contract:	Derrygreenagh Power		
Loughrea Co. Galway	Client:			2023OY101
	Engineer:			
Tel: (091) 841274	Date:	09/05/2023		
Lab@IrishDrilling.ie	Tested by:	DF	Checked:	DCD

Plate Bearing Test: BS 1377:Part 9: 1990

Plate diameter (mm) **600**

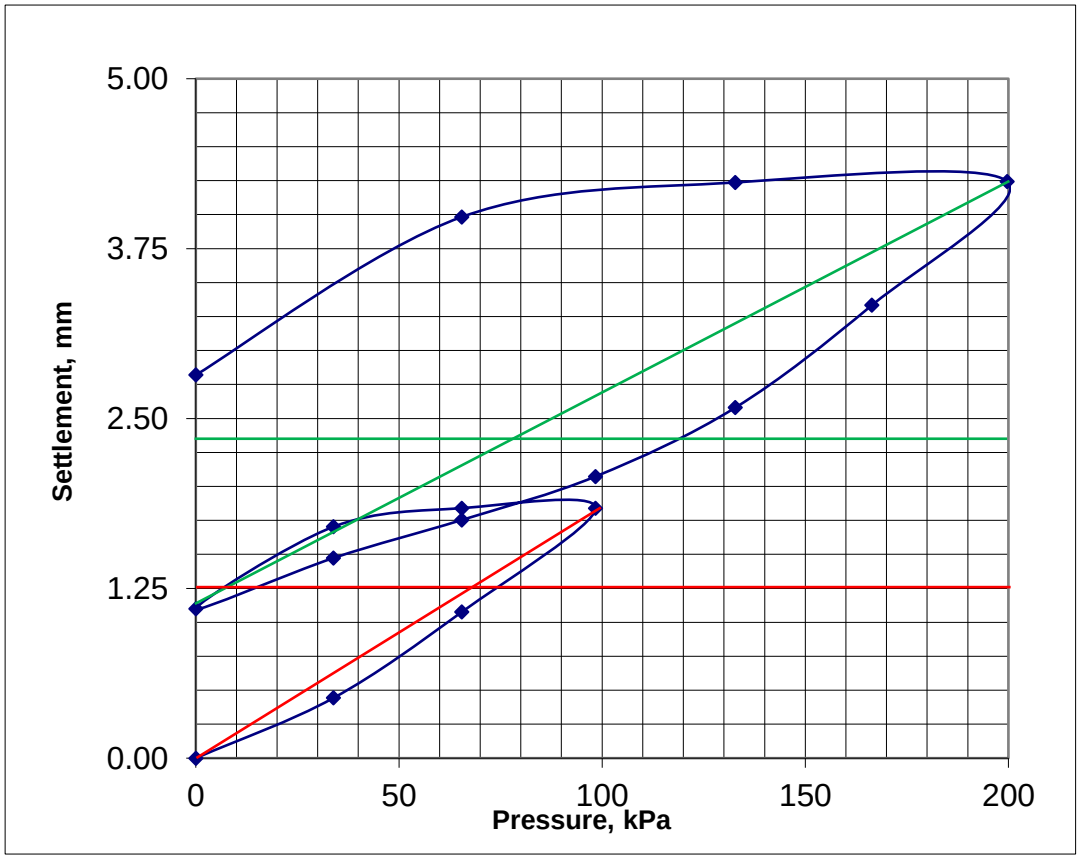
Pump D

Test Location Number:	TP 212	Depth / Level:	0.5 m bgl

Light brown slightly silty fine sand.

PLATE TEST

Pressure kN/m^2	Settlement mm
0	0.00
33.9	0.44
65.5	1.08
98.4	1.84
65.5	1.84
33.9	1.70
0	1.10
33.9	1.47
65.5	1.75
98.4	2.07
132.8	2.58
166.4	3.33
199.7	4.24
132.8	4.24
65.5	3.98
0	2.82



Pressures to give 1.25mm settlement

Cycle 1		Cycle 2
1.25	(y) Settlement mm	1.25
68	(p) Pressure kN/m^2	75
54.40	Gradient (p/y)	60.00
0.829	Correction factor (to 762mm plate)	0.829
45.10	(k_s) Modulus of subgrade reaction kPa/mm	49.74
7.1	Approximate CBR (%)*	8.4

$$CBR = 6.1 \times 10^{-8} \times (k_{762})^{1.733}\%$$

*National Roads Authority, Design Manual for Roads and Bridges; Volume 7 Section 2, Part 2A HD25-26/10 (2010)**

https://irishdrilling-my.sharepoint.com/personal/lab_irishdrilling_ie/Documents/Documents/CurrentDocuments/2023/23OY104.Derrygreenagh/PlateD600.TP212@0.5

Print Date: 18/05/2023

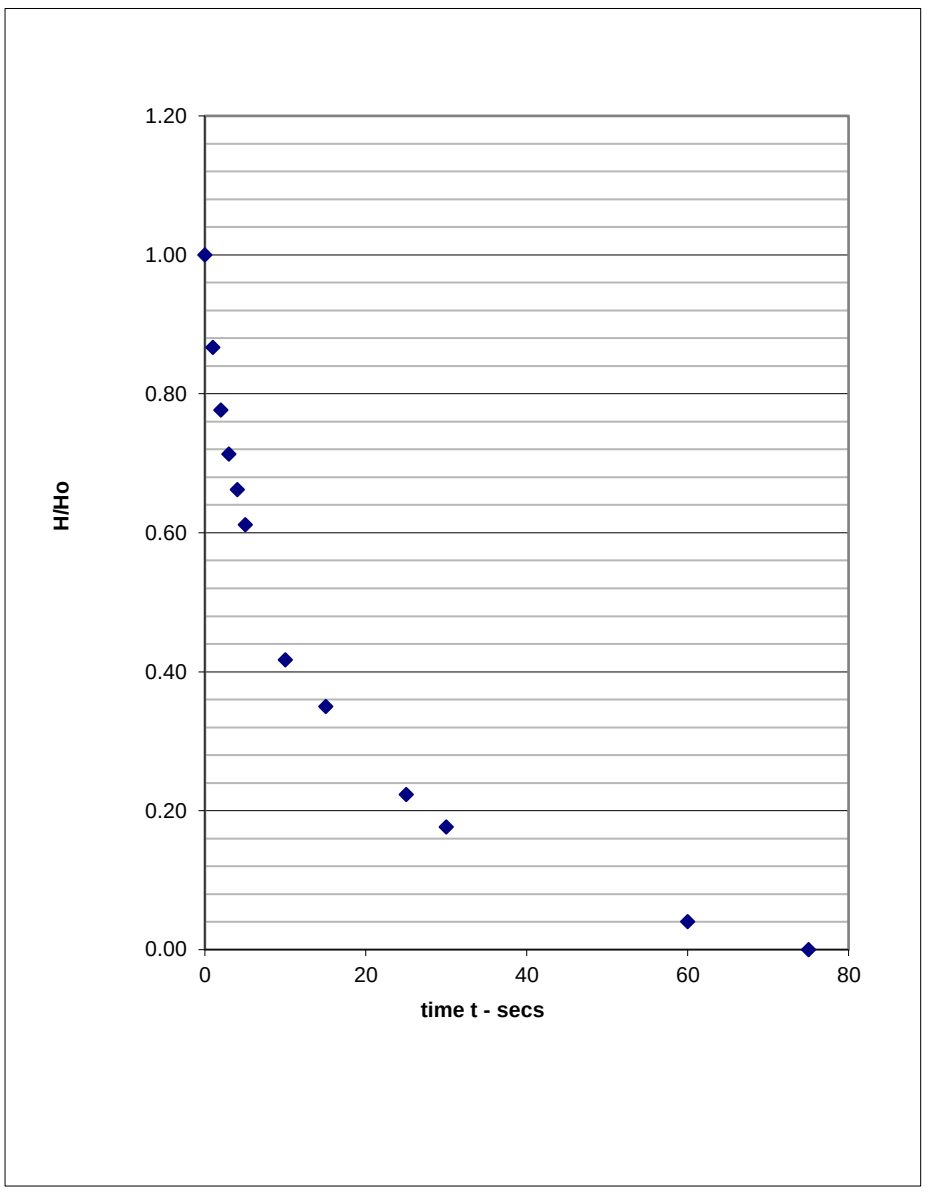
Appendix 10
Permeability Test Records

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 680110	**Contract:** Derrygreenagh Thermal Power		**Borehole:** **BH 101**
	Date: 14.04.2023	Revision:	
	Eng.: **Fichtner**	Operators: BT	

Bottom of borehole (below G.L.)		8.60m	Weather	Fair
Bottom of solid casing (below g.L.)		7.90m	Type of test	Falling Head
Top of filter material (m O.D.)		N/A	Diameter of borehole	0.200m
Initial water level (m bgl)		6.00m	Length of filter	0.70m
Ground level (m O.D.)		83.67	Diameter of filter	0.200m
Co-ordinates	649431.472E	738338.584N	Type of piezometer	

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	6.000	1.00
1	0.800	5.200	0.87
2	1.340	4.660	0.78
3	1.720	4.280	0.71
4	2.030	3.970	0.66
5	2.330	3.670	0.61
10	3.500	2.500	0.42
15	3.900	2.100	0.35
25	4.660	1.340	0.22
30	4.940	1.060	0.18
60	5.760	0.240	0.04
75	6.000	0.000	0.00



L	0.700	m
D	0.200	m
F	2.260	
A	0.0316	m^2
$t_2 - t_1$	75	min

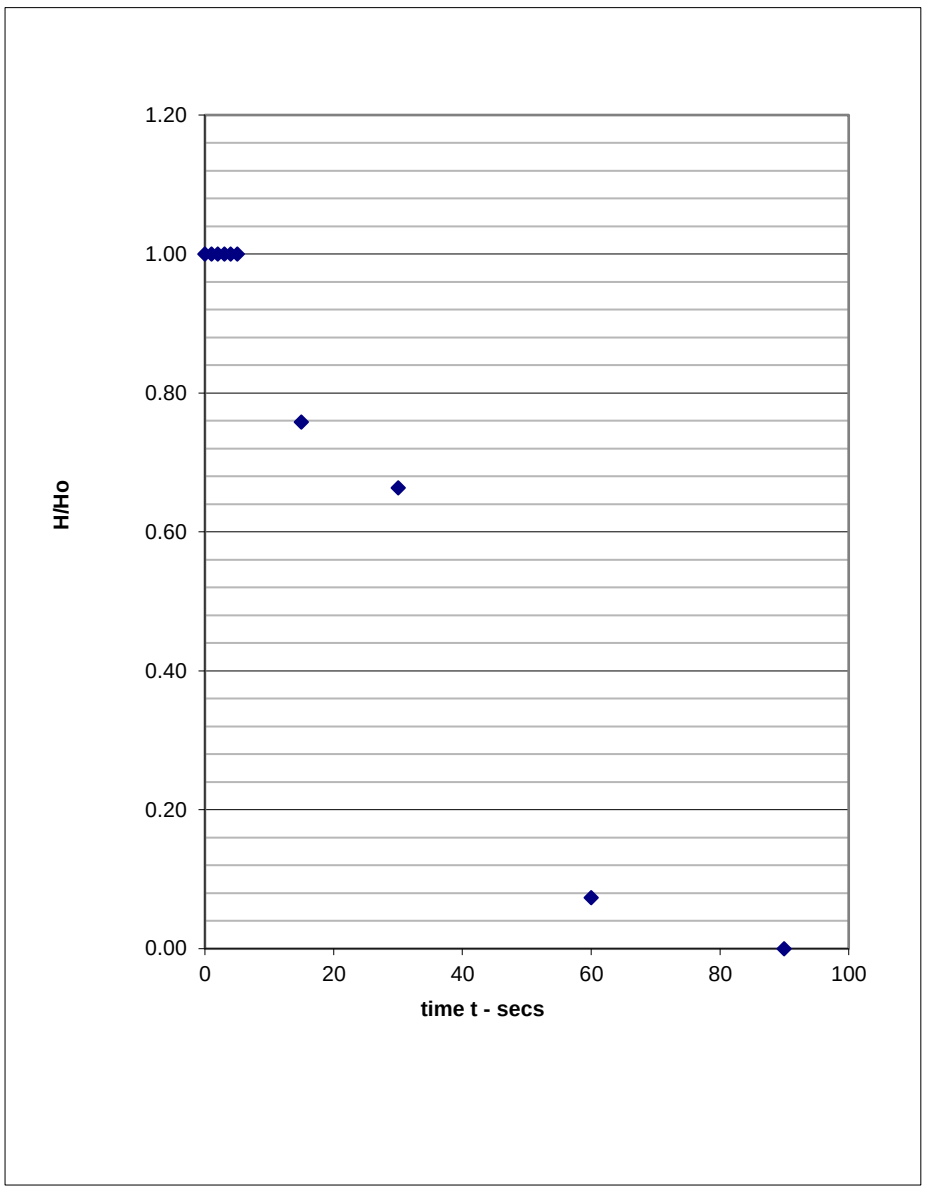
k (permeability) = 1.73E-06 m/sec

IRISH DRILLING LTD.	Contract:	Derrygreenagh Thermal Power	Borehole:
Loughrea Co. Galway			BH 102
Tel: (091) 841274			
Fax: (091) 680110	Date:	17.04.2023	Revision:
	Eng.:	**Fichtner**	Operators: DK

Bottom of borehole (below G.L.)	5.10m	Weather	Fair
Bottom of solid casing (below g.L.)	4.60m	Type of test	Falling Head
Top of filter material (m O.D.)	N/A	Diameter of borehole	0.200m
Initial water level (m bgl)	Dry	Length of filter	0.50m
Ground level (m O.D.)	82.943	Diameter of filter	0.200m
Co-ordinates 649532.908E	738384.326N	Type of piezometer	NA

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	0.950	1.00
1	0.000	0.950	1.00
2	0.000	0.950	1.00
3	0.000	0.950	1.00
4	0.000	0.950	1.00
5	0.000	0.950	1.00
15	0.230	0.720	0.76
30	0.320	0.630	0.66
60	0.880	0.070	0.07
90	0.950	0.000	0.00



L	0.500	m
D	0.200	m
F	1.950	
A	0.0316	m^2
$t_2 - t_1$	90	min

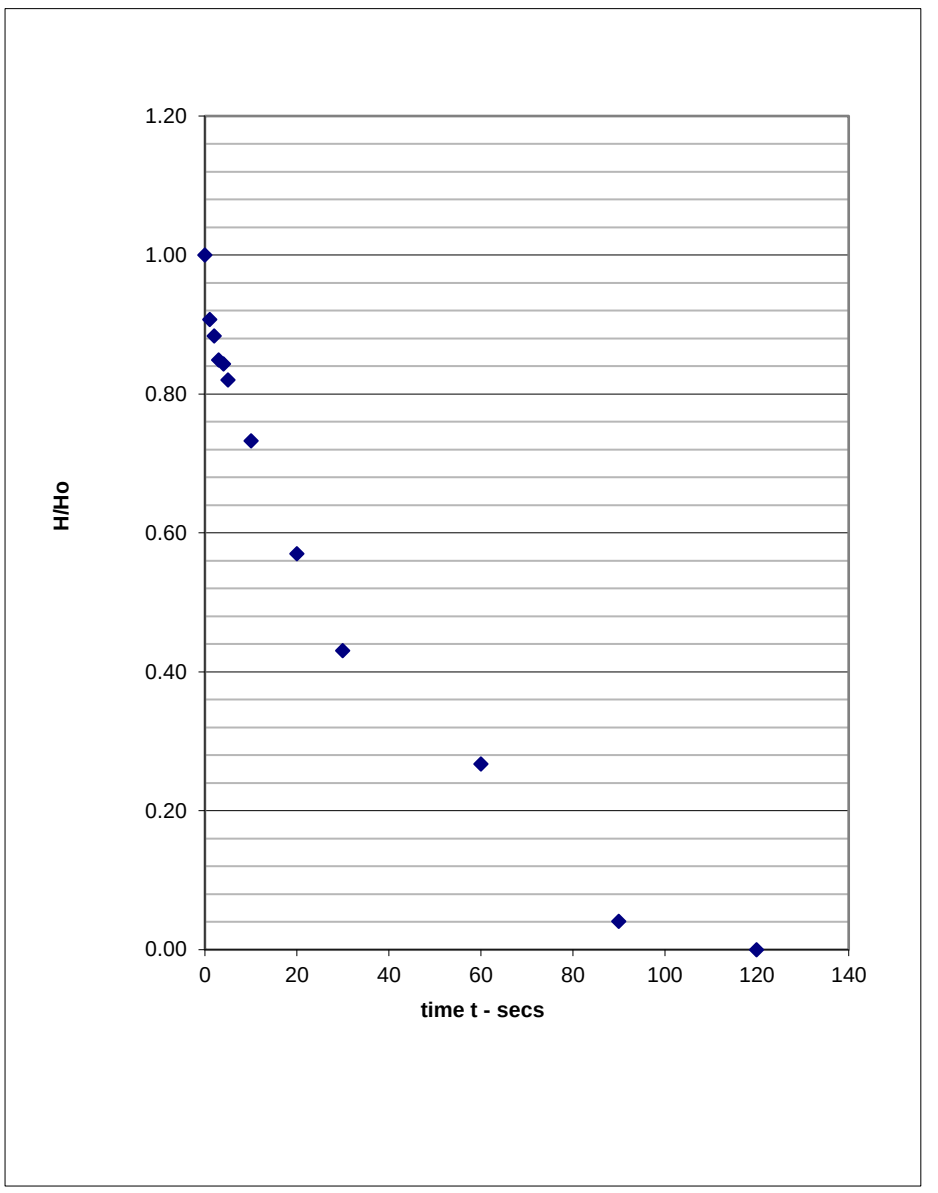
k (permeability) = 5.85E-05 m/sec

IRISH DRILLING LTD.	Contract:	Derrygreenagh Thermal Power	Borehole:
Loughrea Co. Galway			BH 103
Tel: (091) 841274			
Fax: (091) 680110	Date:	18.04.2023	Revision:
	Eng.:	**Fichtner**	Operators: BT

Bottom of borehole (below G.L.)	3.50m	Weather	Fair
Bottom of solid casing (below g.L.)	3.00m	Type of test	Falling Head
Top of filter material (m O.D.)	N/A	Diameter of borehole	0.200m
Initial water level (m bgl)	Dry	Length of filter	0.50m
Ground level (m O.D.)	84.362	Diameter of filter	0.200m
Co-ordinates 649513.621E	738320.714N	Type of piezometer	

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	1.720	1.00
1	0.160	1.560	0.91
2	0.200	1.520	0.88
3	0.260	1.460	0.85
4	0.270	1.450	0.84
5	0.310	1.410	0.82
10	0.460	1.260	0.73
20	0.740	0.980	0.57
30	0.980	0.740	0.43
60	1.260	0.460	0.27
90	1.650	0.070	0.04
120	1.720	0.000	0.00



L	0.500	m
D	0.200	m
F	2.260	
A	0.0316	m^2
$t_2 - t_1$	120	min

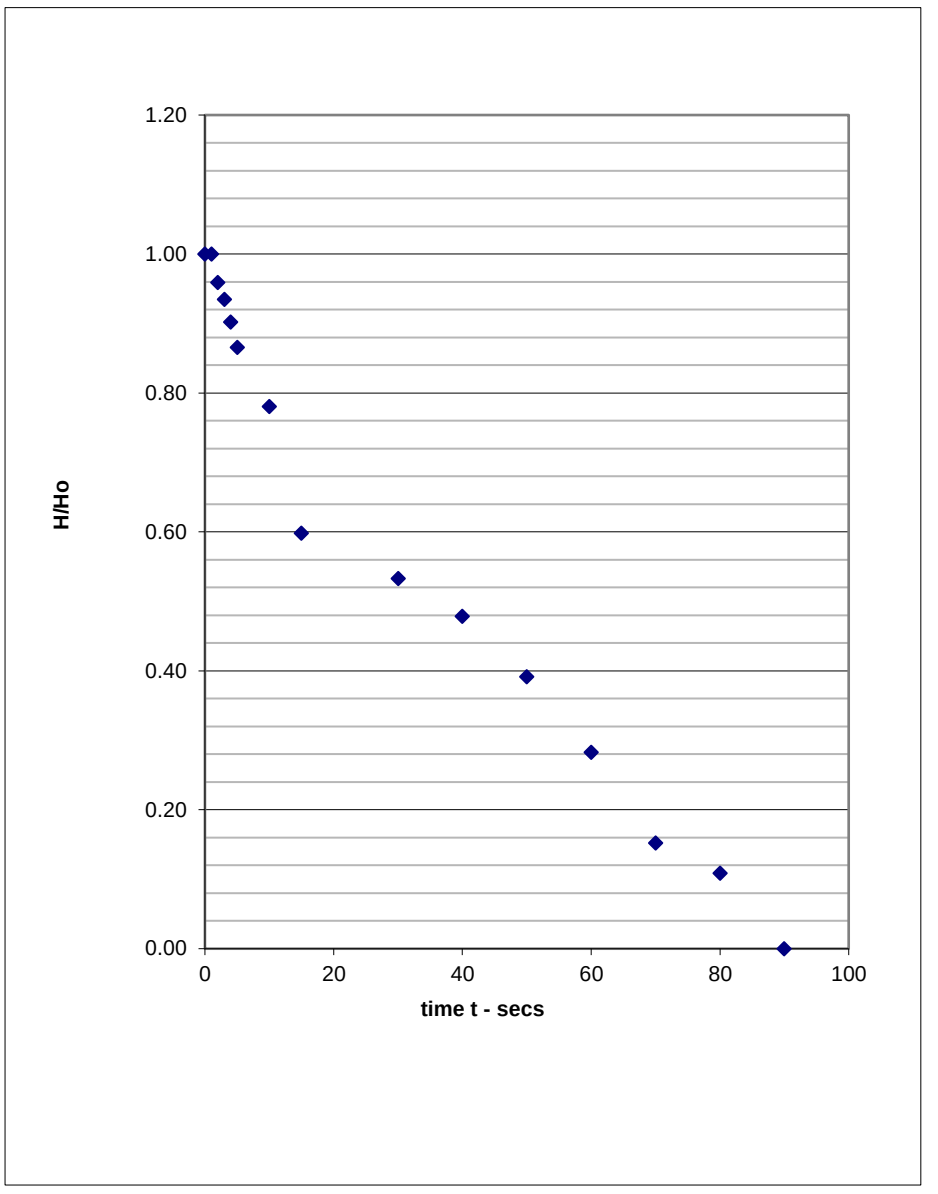
k (permeability) = 3.58E-06 m/sec

IRISH DRILLING LTD.	Contract:	Derrygreenagh Thermal Power	Borehole:
Loughrea Co. Galway			BH 104
Tel: (091) 841274			
Fax: (091) 680110	Date:	18.04.2023	Revision:
	Eng.:	**Fichtner**	Operators: BT

Bottom of borehole (below G.L.)		8.10m	Weather	Fair
Bottom of solid casing (below g.L.)		7.50m	Type of test	Falling Head
Top of filter material (m O.D.)		N/A	Diameter of borehole	0.200m
Initial water level (m bgl)		5.70m	Length of filter	0.60m
Ground level (m O.D.)		82.929	Diameter of filter	0.200m
Co-ordinates	649609.473E	738361.862N	Type of piezometer	NA

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	4.600	1.00
1	0.000	4.600	1.00
2	0.190	4.410	0.96
3	0.300	4.300	0.93
4	0.450	4.150	0.90
5	0.620	3.980	0.87
10	1.010	3.590	0.78
15	1.850	2.750	0.60
30	2.150	2.450	0.53
40	2.400	2.200	0.48
50	2.800	1.800	0.39
60	3.300	1.300	0.28
70	3.900	0.700	0.15
80	4.100	0.500	0.11
90	4.600	0.000	0.00



L	0.600	m
D	0.200	m
F	2.100	
A	0.0316	m^2
$t_2 - t_1$	90	min

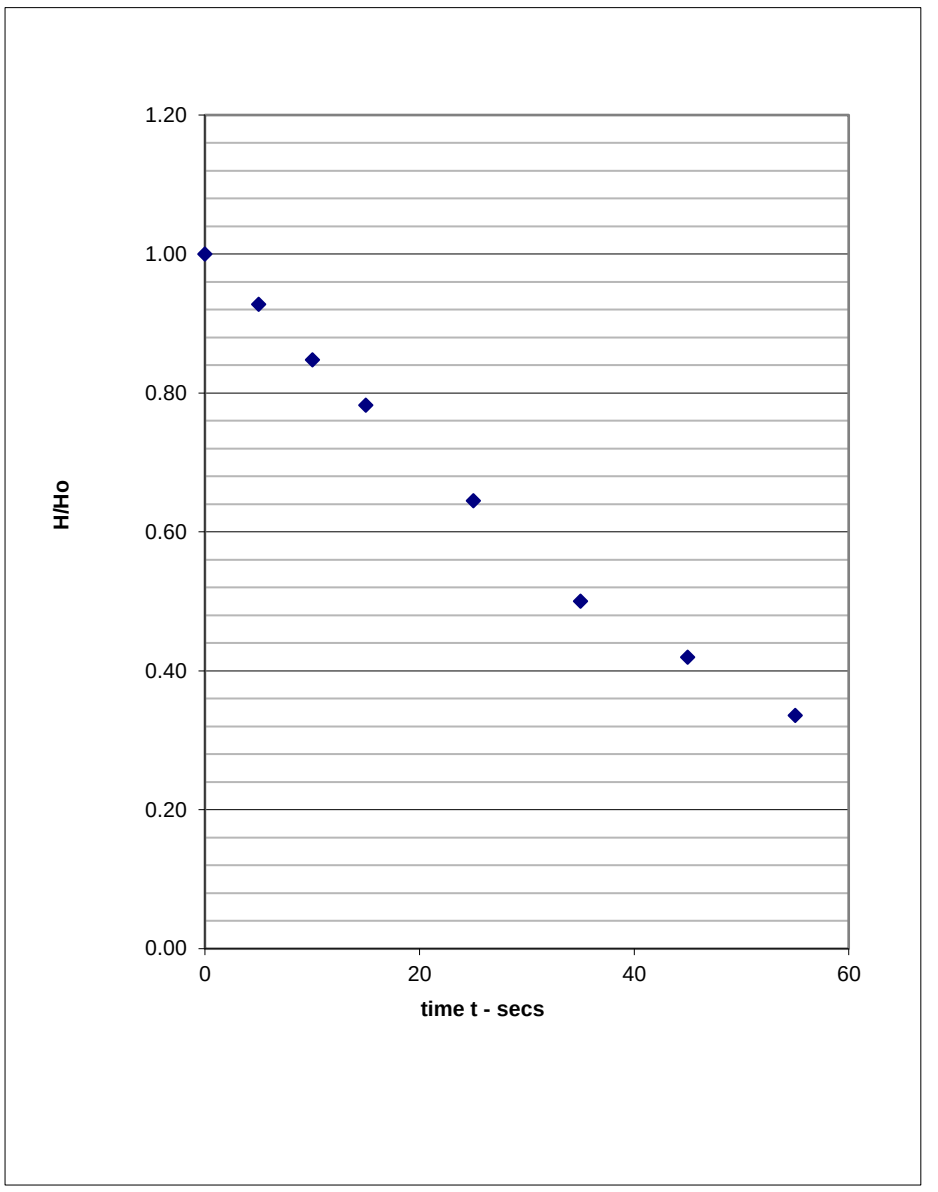
k (permeability) = 2.33E-06 m/sec

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 680110	**Contract:** Derrygreenagh Thermal Power		**Borehole:** **BH 105**
	Date: 19.04.2023	Revision:	
	Eng.: **Fichtner**	Operators: BT	

Bottom of borehole (below G.L.)		10.20m	Weather	Fair
Bottom of solid casing (below g.L.)		6.00m	Type of test	Falling Head
Top of filter material (m O.D.)		N/A	Diameter of borehole	0.200m
Initial water level (m bgl)		Dry	Length of filter	4.20m
Ground level (m O.D.)		84.384	Diameter of filter	0.200m
Co-ordinates	64562.558E	738294.923N	Type of piezometer	NA

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	2.620	1.00
5	0.190	2.430	0.93
10	0.400	2.220	0.85
15	0.570	2.050	0.78
25	0.930	1.690	0.65
35	1.310	1.310	0.50
45	1.520	1.100	0.42
55	1.740	0.880	0.34
65	2.010	0.610	0.23
75	2.390	0.230	0.09
90	2.620	0.000	0.00



L	4.200	m
D	0.200	m
F	7.070	
A	0.0316	m^2
$t_2 - t_1$	90	min

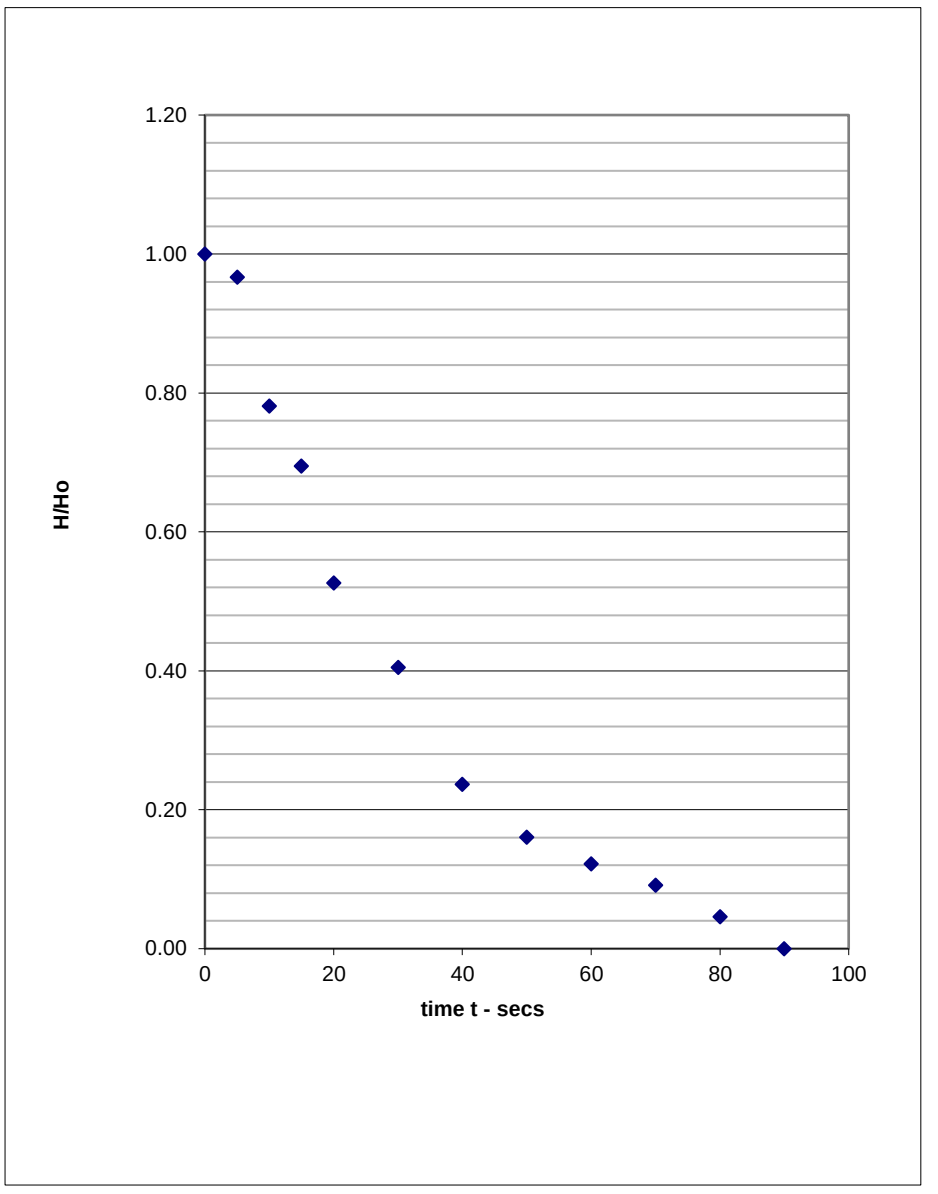
k (permeability) = 8.59E-07 m/sec

IRISH DRILLING LTD.	Contract:	Derrygreenagh Thermal Power	Borehole:
Loughrea Co. Galway			BH 106
Tel: (091) 841274			
Fax: (091) 680110	Date:	20.04.2023	Revision:
	Eng.:	**Fichtner**	Operators: BT

Bottom of borehole (below G.L.)		6.60m	Weather	Fair
Bottom of solid casing (below g.L.)		5.50m	Type of test	Falling Head
Top of filter material (m O.D.)		N/A	Diameter of borehole	0.200m
Initial water level (m bgl)		Dry	Length of filter	1.10m
Ground level (m O.D.)		85.447	Diameter of filter	0.200m
Co-ordinates	649588.706E	738249.735N	Type of piezometer	NA

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	1.310	1.00
5	0.044	1.266	0.97
10	0.287	1.023	0.78
15	0.400	0.910	0.69
20	0.620	0.690	0.53
30	0.780	0.530	0.40
40	1.000	0.310	0.24
50	1.100	0.210	0.16
60	1.150	0.160	0.12
70	1.190	0.120	0.09
80	1.250	0.060	0.05
90	1.310	0.000	0.00



L	1.100	m
D	0.200	m
F	2.890	
A	0.0316	m^2
$t_2 - t_1$	90	min

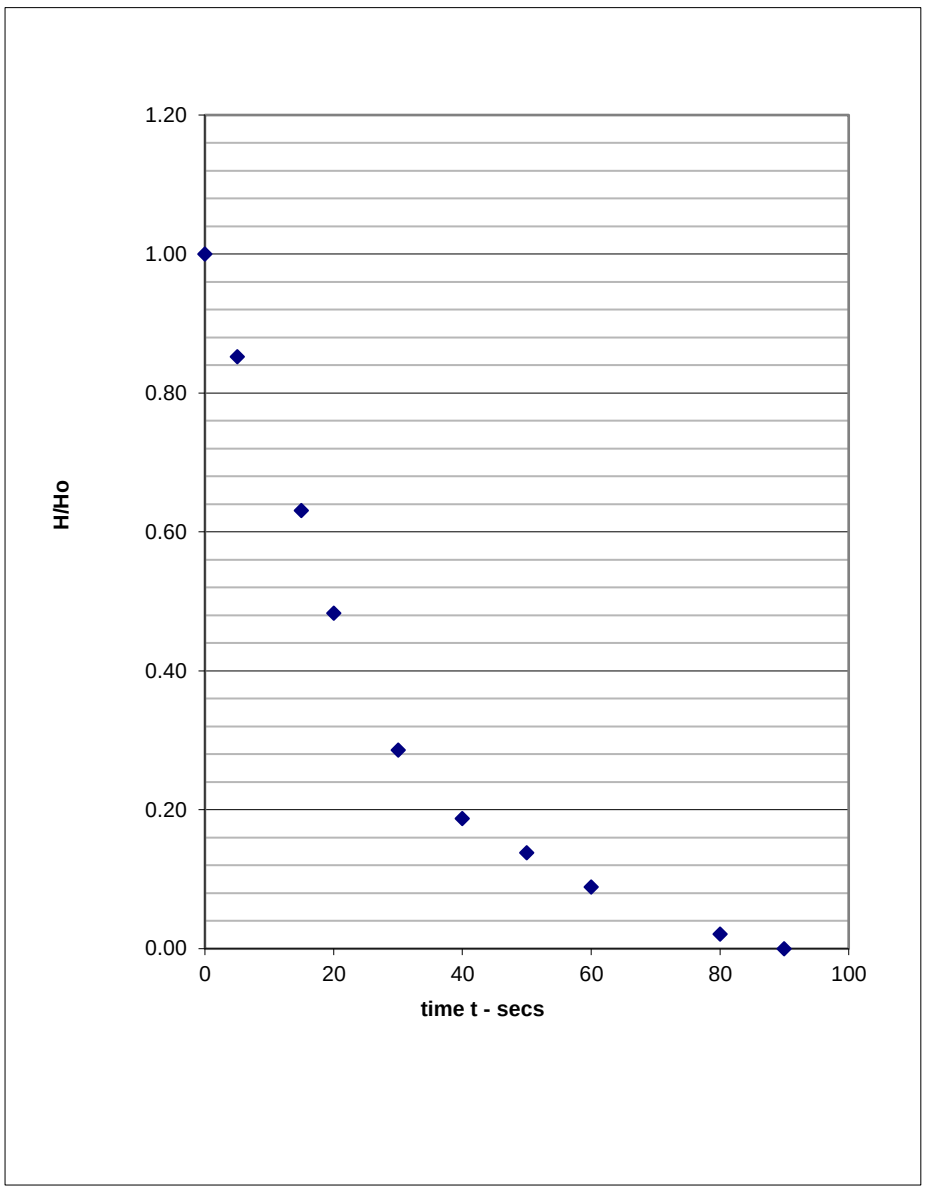
k (permeability) = 7.50E-06 m/sec

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 680110	**Contract:** Derrygreenagh Thermal Power		**Borehole:** **BH 107**
	Date: 27.04.2023	Revision:	
	Eng.: **Fichtner**	Operators: BT	

Bottom of borehole (below G.L.)		9.50m	Weather	Fair
Bottom of solid casing (below g.L.)		8.00m	Type of test	Falling Head
Top of filter material (m O.D.)		N/A	Diameter of borehole	0.200m
Initial water level (m bgl)		Dry	Length of filter	1.50m
Ground level (m O.D.)		87.19	Diameter of filter	0.200m
Co-ordinates	649439.026E	7381465.223N	Type of piezometer	NA

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	8.120	1.00
5	1.200	6.920	0.85
15	3.000	5.120	0.63
20	4.200	3.920	0.48
30	5.800	2.320	0.29
40	6.600	1.520	0.19
50	7.000	1.120	0.14
60	7.400	0.720	0.09
80	7.950	0.170	0.02
90	8.120	0.000	0.00



L	1.500	m
D	0.200	m
F	3.480	
A	0.0316	m^2
$t_2 - t_1$	90	min

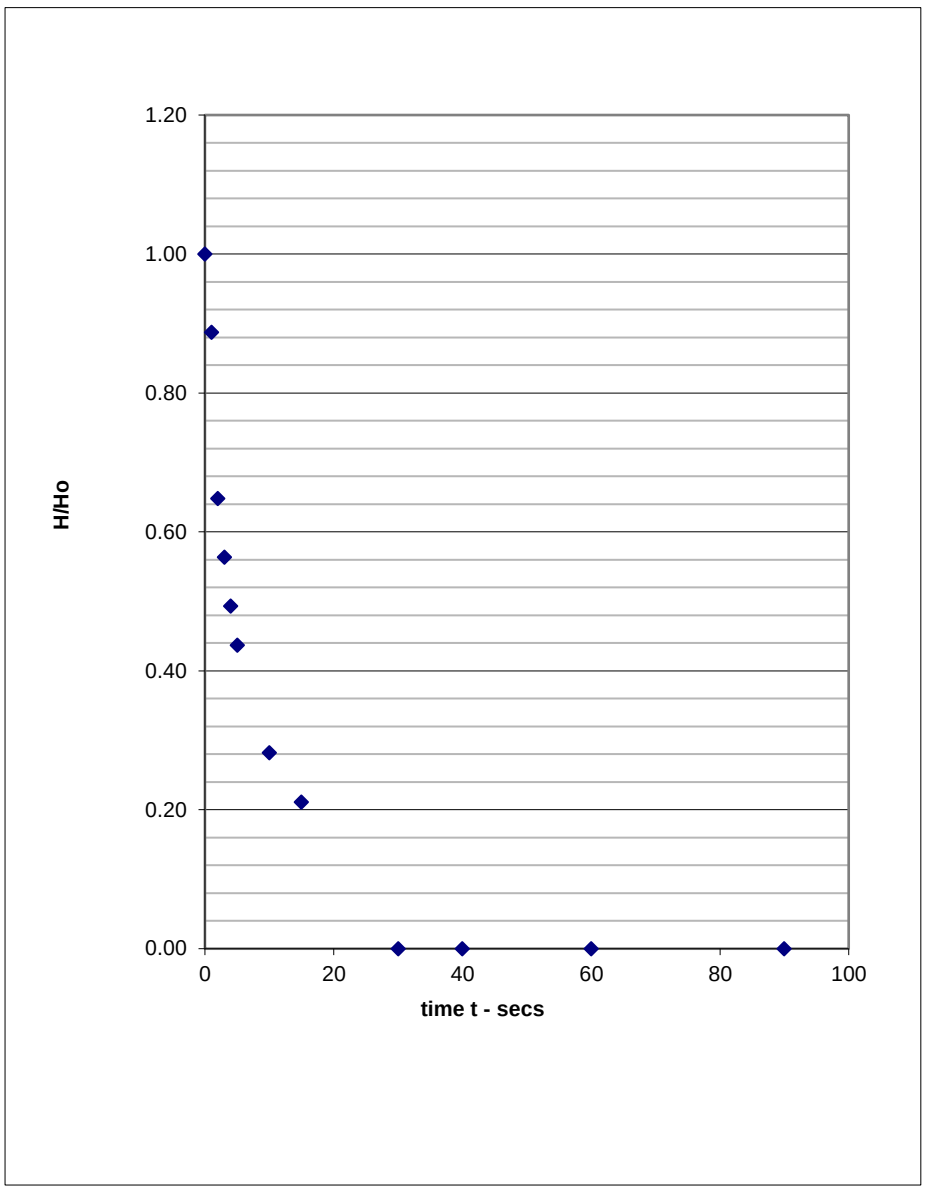
k (permeability) = 8.03E-07 m/sec

IRISH DRILLING LTD.	Contract:	Derrygreenagh Thermal Power	Borehole:
Loughrea Co. Galway			BH 109
Tel: (091) 841274			
Fax: (091) 680110	Date:	21.04.2023	Revision:
	Eng.:	**Fichtner**	Operators: DK

Bottom of borehole (below G.L.)		8.80m	Weather	Fair
Bottom of solid casing (below g.L.)		8.00m	Type of test	Falling Head
Top of filter material (m O.D.)		N/A	Diameter of borehole	0.200m
Initial water level (m bgl)		8.50m	Length of filter	0.80m
Ground level (m O.D.)		82.727	Diameter of filter	0.200m
Co-ordinates	649687.441E	738383.487N	Type of piezometer	NA

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	7.100	1.00
1	0.800	6.300	0.89
2	2.500	4.600	0.65
3	3.100	4.000	0.56
4	3.600	3.500	0.49
5	4.000	3.100	0.44
10	5.100	2.000	0.28
15	5.600	1.500	0.21
30	7.100	0.000	0.00
40	7.100	0.000	0.00
60	7.100	0.000	0.00
90	7.100	0.000	0.00



L	0.800	m
D	0.200	m
F	2.420	
A	0.0316	m^2
$t_2 - t_1$	30	min

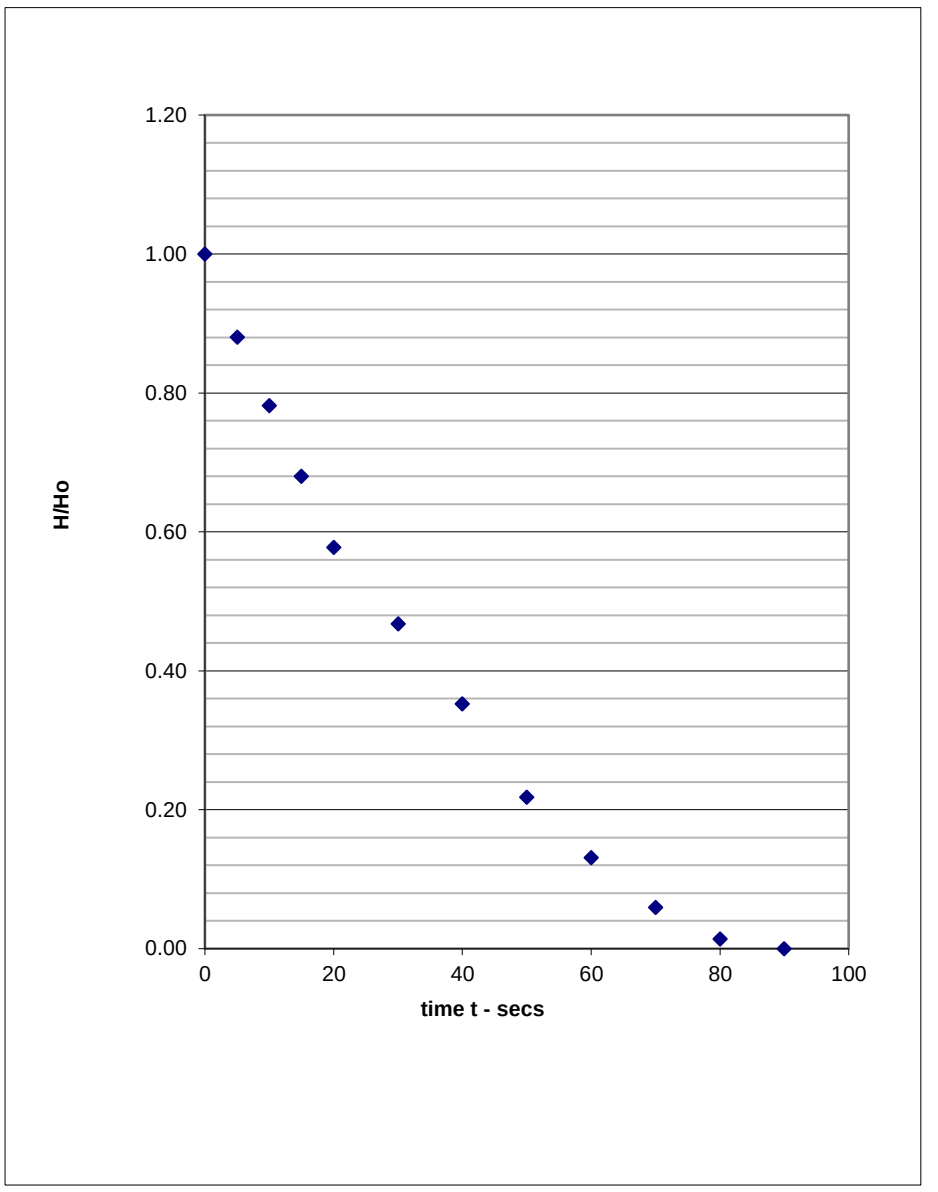
k (permeability) = 3.70E-06 m/sec

IRISH DRILLING LTD.	Contract:	Derrygreenagh Thermal Power	Borehole:
Loughrea Co. Galway			BH 110
Tel: (091) 841274			
Fax: (091) 680110	Date:	28.04.2023	Revision:
	Eng.:	**Fichtner**	Operators: BT

Bottom of borehole (below G.L.)	7.30m	Weather	Fair
Bottom of solid casing (below g.L.)	6.00m	Type of test	Falling Head
Top of filter material (m O.D.)	N/A	Diameter of borehole	0.200m
Initial water level (m bgl)	Dry	Length of filter	1.300m
Ground level (m O.D.)	86.107	Diameter of filter	0.200m
Co-ordinates 649461.416E	738212.711N	Type of piezometer	N/A

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	7.100	1.00
5	0.850	6.250	0.88
10	1.550	5.550	0.78
15	2.270	4.830	0.68
20	3.000	4.100	0.58
30	3.780	3.320	0.47
40	4.600	2.500	0.35
50	5.550	1.550	0.22
60	6.170	0.930	0.13
70	6.680	0.420	0.06
80	7.000	0.100	0.01
90	7.100	0.000	0.00



L	1.300	m
D	0.200	m
F	3.030	
A	0.0316	m^2
$t_2 - t_1$	90	min

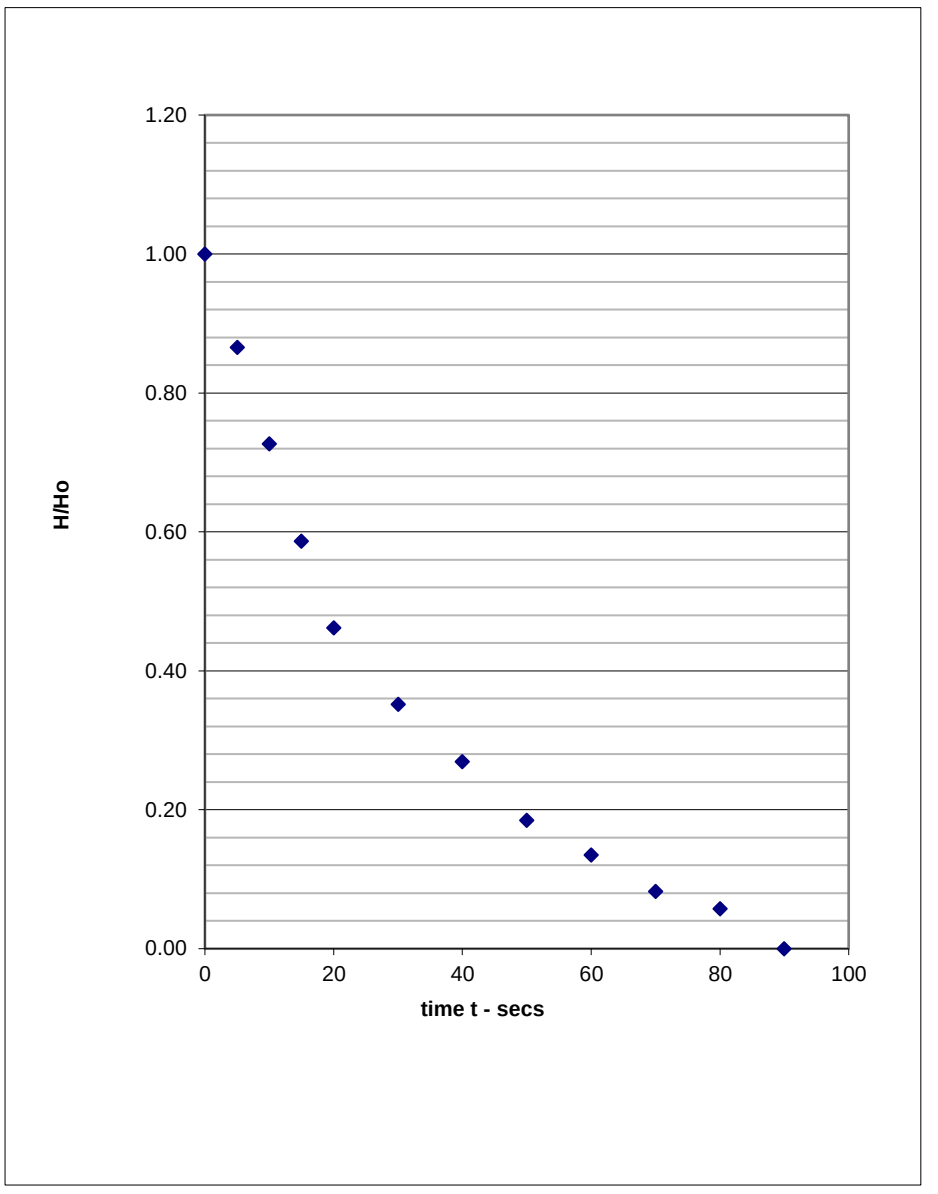
k (permeability) = 9.85E-07 m/sec

IRISH DRILLING LTD.	Contract:	Derrygreenagh Thermal Power	Borehole:
Loughrea Co. Galway			BH 111
Tel: (091) 841274			
Fax: (091) 680110	Date:	02.05.2023	Revision:
	Eng.:	**Fichtner**	Operators: BT

Bottom of borehole (below G.L.)	5.50m	Weather	Fair
Bottom of solid casing (below g.L.)	4.50m	Type of test	Falling Head
Top of filter material (m O.D.)	N/A	Diameter of borehole	0.200m
Initial water level (m bgl)	Dry	Length of filter	1.00m
Ground level (m O.D.)	87.591	Diameter of filter	0.200m
Co-ordinates 649571.431E	738206.241N	Type of piezometer	N/A

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	5.200	1.00
5	0.700	4.500	0.87
10	1.420	3.780	0.73
15	2.150	3.050	0.59
20	2.800	2.400	0.46
30	3.370	1.830	0.35
40	3.800	1.400	0.27
50	4.240	0.960	0.18
60	4.500	0.700	0.13
70	4.770	0.430	0.08
80	4.900	0.300	0.06
90	5.200	0.000	0.00



L	1.000	m
D	0.200	m
F	2.730	
A	0.0316	m^2
$t_2 - t_1$	90	min

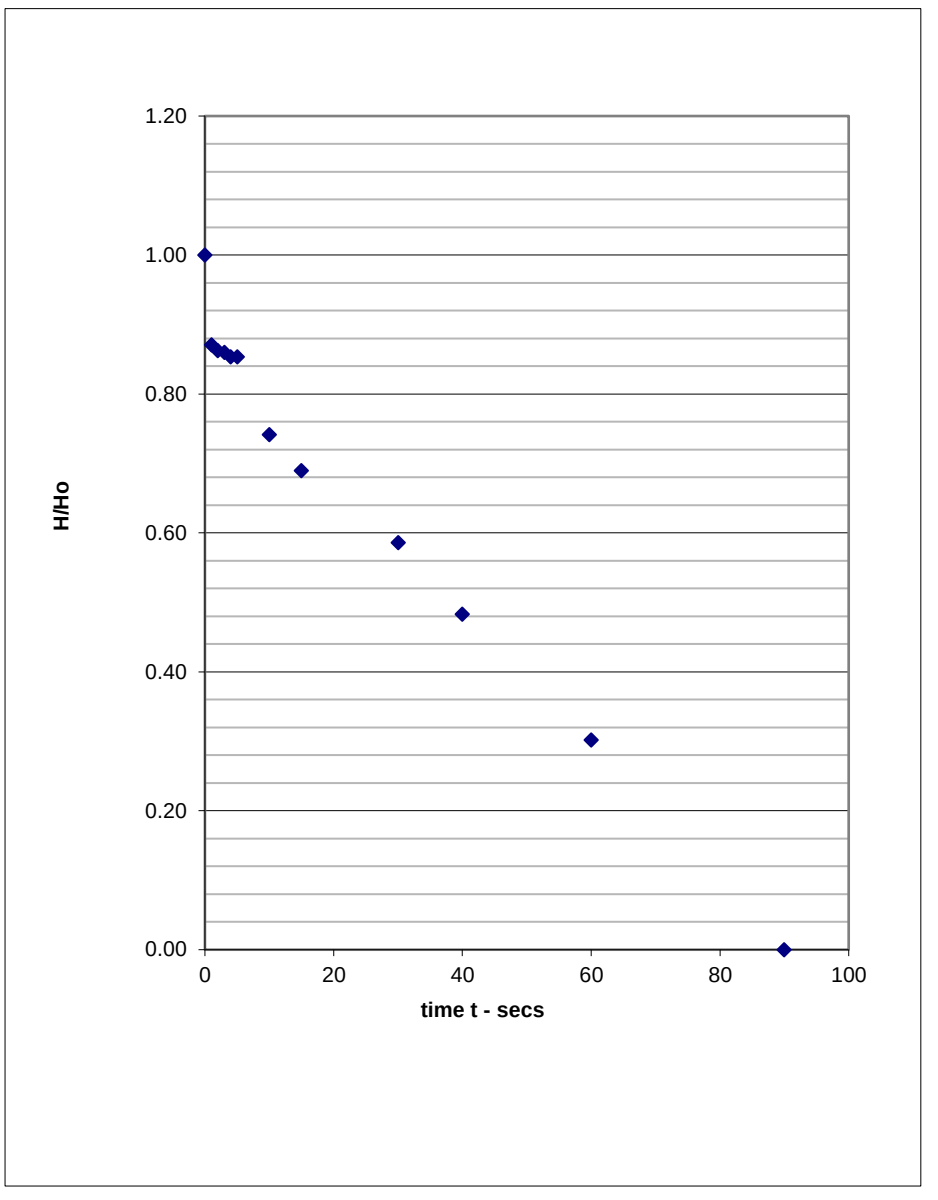
k (permeability) = 1.30E-06 m/sec

IRISH DRILLING LTD.	Contract:	Derrygreenagh Thermal Power	Borehole:
Loughrea Co. Galway			BH 112
Tel: (091) 841274			
Fax: (091) 680110	Date:	13.04.2023	Revision:
	Eng.:	**Fichtner**	Operators: BT

Bottom of borehole (below G.L.)		5.10m	Weather	Fair
Bottom of solid casing (below g.L.)		4.60m	Type of test	Falling Head
Top of filter material (m O.D.)		N/A	Diameter of borehole	0.200m
Initial water level (m bgl)		Dry	Length of filter	0.50m
Ground level (m O.D.)		84.418	Diameter of filter	0.200m
Co-ordinates	649358.581E	738261.102N	Type of piezometer	NA

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	1.160	1.00
1	0.150	1.010	0.87
2	0.160	1.000	0.86
3	0.163	0.997	0.86
4	0.170	0.990	0.85
5	0.170	0.990	0.85
10	0.300	0.860	0.74
15	0.360	0.800	0.69
30	0.480	0.680	0.59
40	0.600	0.560	0.48
60	0.810	0.350	0.30
90	1.160	0.000	0.00



L	0.500	m
D	0.200	m
F	1.950	
A	0.0316	m^2
$t_2 - t_1$	90	min

k (permeability) = 2.02E-05 m/sec

Appendix 11A
Soil Infiltration Test Records

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 880861	*Contract:* Derrygreenagh *Client:* Bord na Mona *Engineer:* Fichtner *Date:* 01.6.'23 *Tested by:* MM

INFILTRATION TEST - to BRE 365

SOAKAWAY:

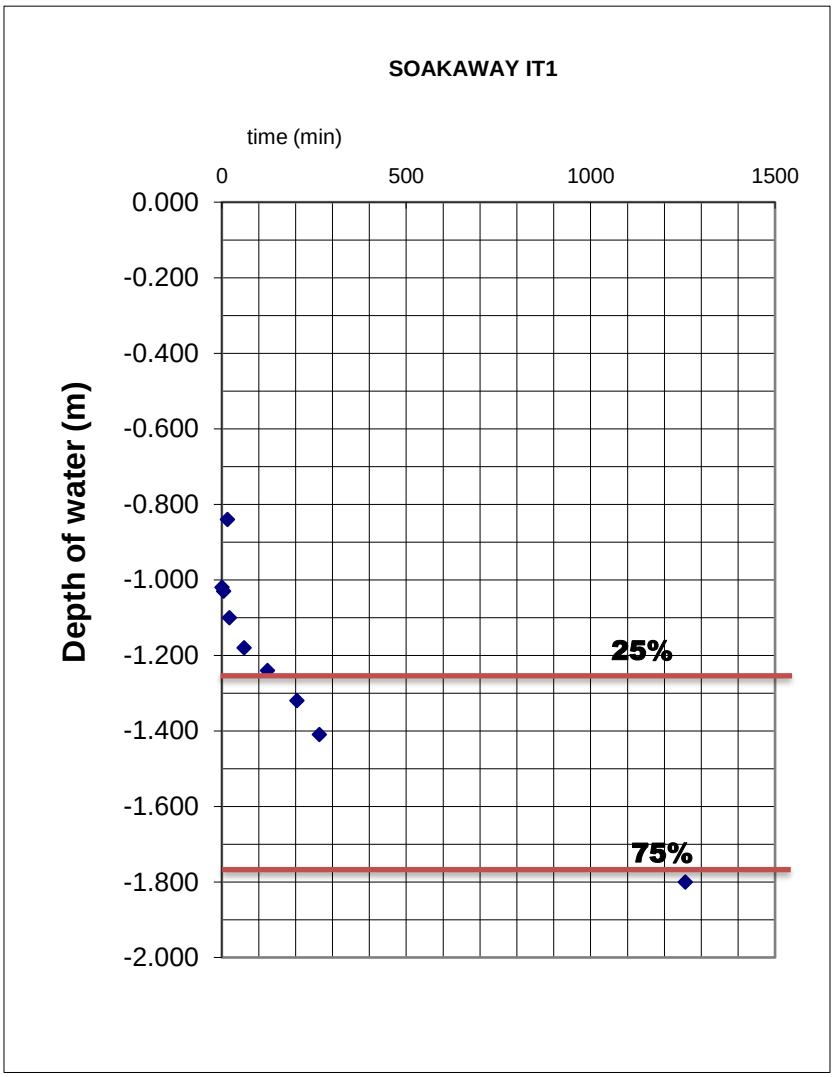
IT 1

1st FILL

Top of water level:	1.02 m		
Base of trial pit:	2.00 m		
Dims. of trial pit:	2	x	1.1

Coordinates : (E 649327.981) (N 738194.918) (83.925O.D)

time min	WL m
0	-1.020
5	-1.030
15	-0.840
20	-1.100
60	-1.180
124	-1.240
204	-1.320
264	-1.410
1257	-1.800



Result:

Soil Infiltration Rate = 5.22 x 10-6 m/sec

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 880861	*Contract:* Derrygreenagh *Client:* Bord na Mona *Engineer:* Fichtner *Date:* 02.6.'23 *Tested by:* MM

INFILTRATION TEST - to BRE 365

SOAKAWAY:

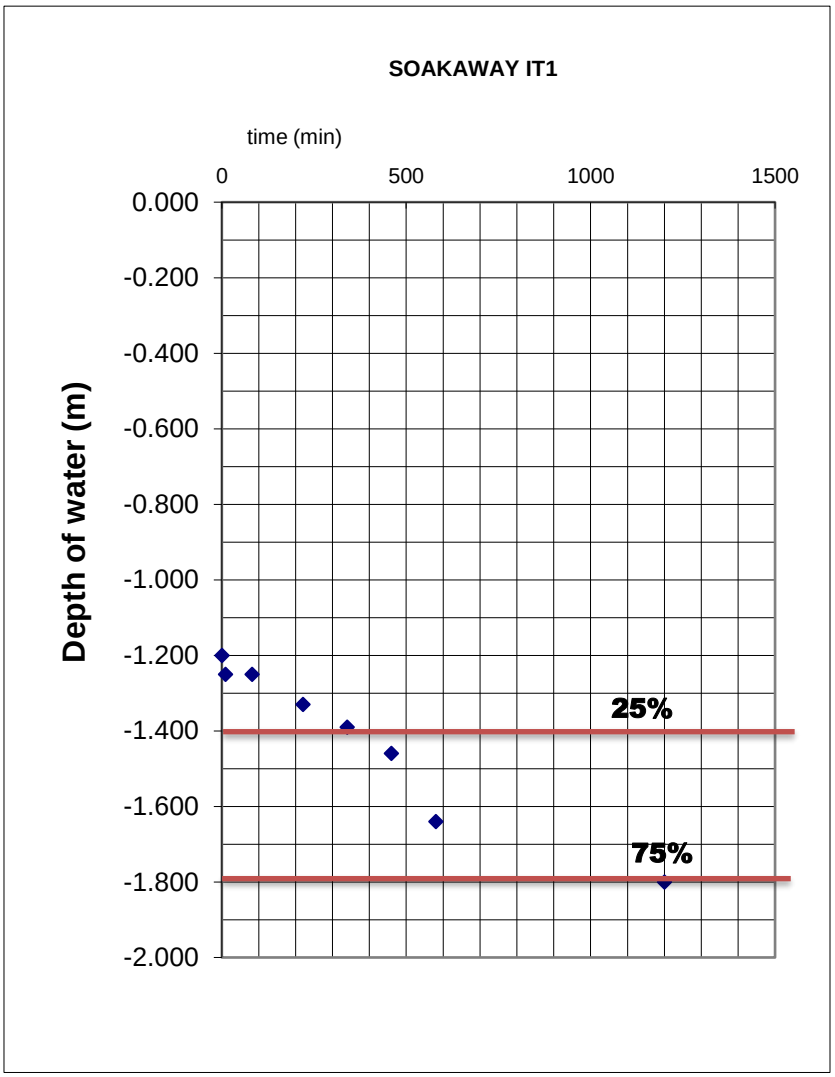
IT 1

2nd FILL

Top of water level:	1.20 m		
Base of trial pit:	2.00 m		
Dims. of trial pit:	2	x	1.1

Coordinates : (E 649327.981) (N 738194.918) (83.925O.D)

time min	WL m
0	-1.200
10	-1.250
82	-1.250
220	-1.330
340	-1.390
460	-1.460
580	-1.640
1200	-1.800



Result:

Soil Infiltration Rate = 6.88 x 10-6 m/sec

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 880861	*Contract:* Derrygreenagh *Client:* Bord na Mona *Engineer:* Fichtner *Date:* 06.6.'23 *Tested by:* MM

INFILTRATION TEST - to BRE 365

SOAKAWAY:

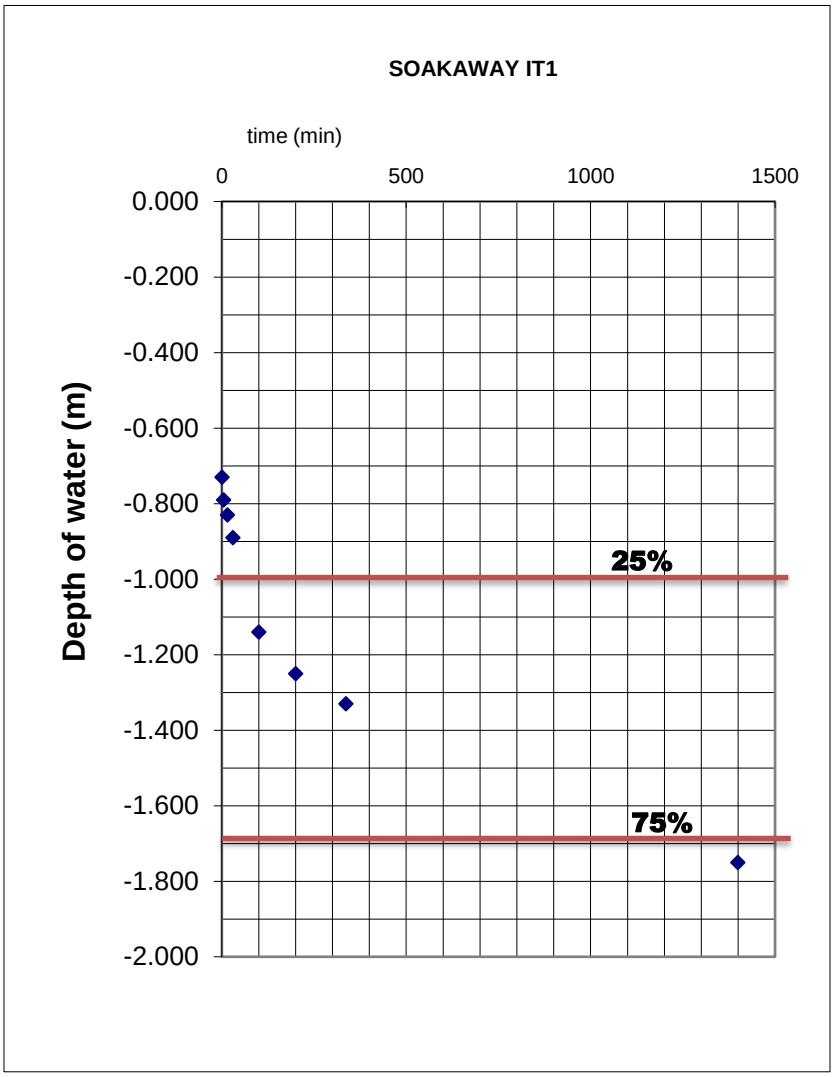
IT 1

3rd FILL

Top of water level:	0.73 m		
Base of trial pit:	2.00 m		
Dims. of trial pit:	2	x	1.1

Coordinates : (E 649327.981) (N 738194.918) (83.925O.D)

time min	WL m
0	-0.730
5	-0.790
15	-0.830
30	-0.890
100	-1.140
200	-1.250
336	-1.330
1399	-1.750



Result:

Soil Infiltration Rate = 5.18 x 10-6 m/sec

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 880861	*Contract:* Derrygreenagh *Client:* Bord na Mona *Engineer:* Fichtner *Date:* 01.6.'23 *Tested by:* MM

INFILTRATION TEST - to BRE 365

SOAKAWAY:

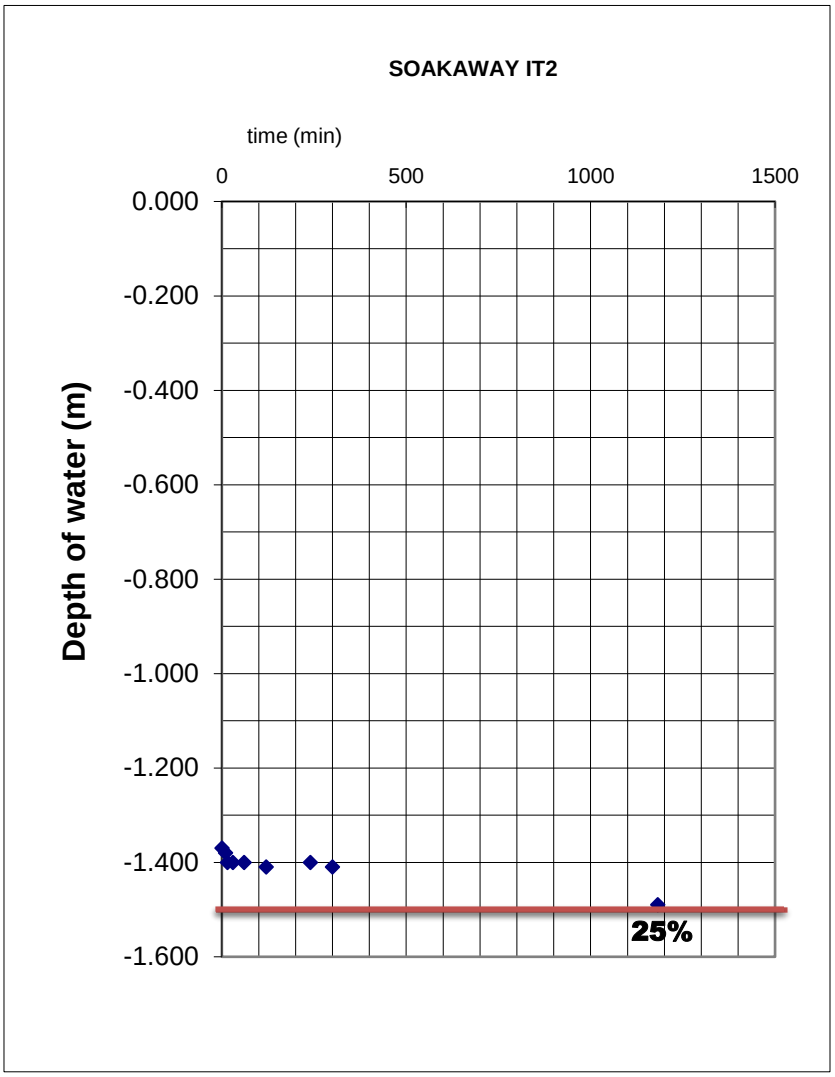
IT 2

1st FILL

Top of water level:	1.37 m		
Base of trial pit:	2.00 m		
Dims. of trial pit:	2	x	1.1

Coordinates : (E 649316.482) (N 738217.762) (83.821O.D)

time min	WL m
0	-1.370
10	-1.380
15	-1.400
30	-1.400
60	-1.400
120	-1.410
240	-1.400
300	-1.410
1182	-1.490



Result:

Soil Infiltration Rate = Near Impermeable

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 880861	*Contract:* Derrygreenagh *Client:* Bord na Mona *Engineer:* Fichtner *Date:* 01.6.'23 *Tested by:* MM

INFILTRATION TEST - to BRE 365

SOAKAWAY:

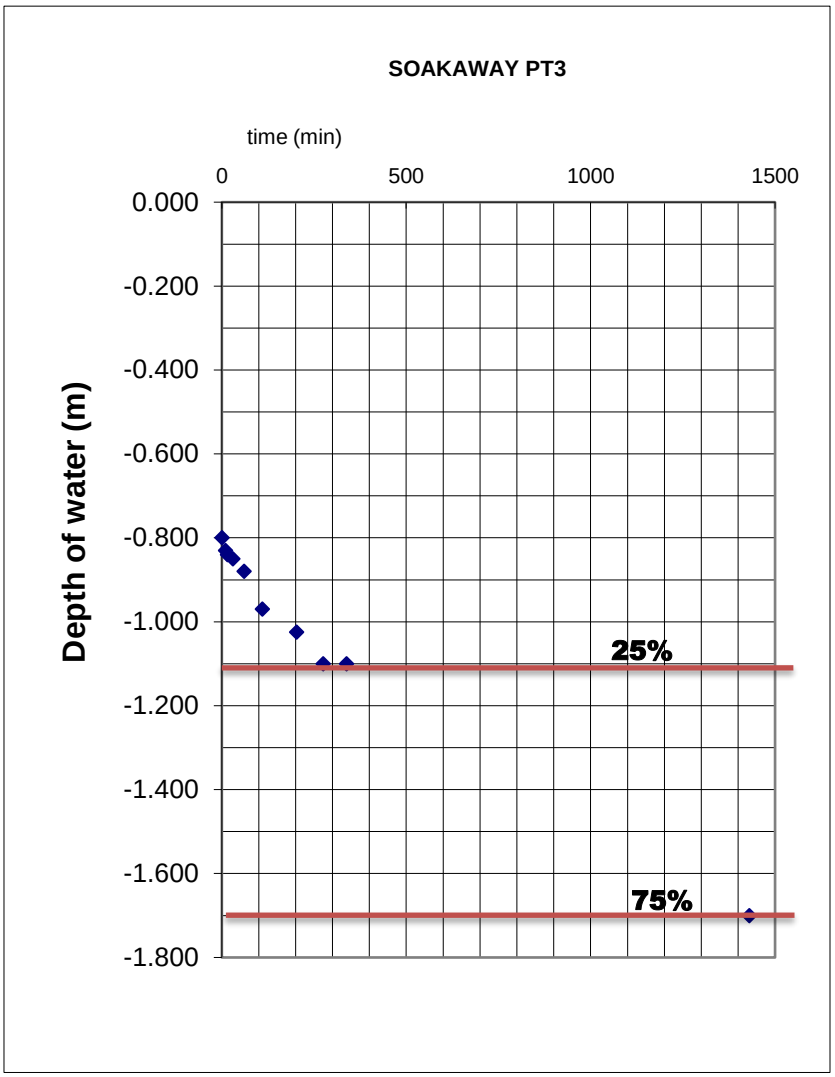
IT 3

1st FILL

Top of water level:	0.80 m		
Base of trial pit:	2.00 m		
Dims. of trial pit:	2	x	1.1

Coordinates : (E 649211.572) (N 738162.952) (80.434O.D)

time min	WL m
0	-0.800
10	-0.830
15	-0.840
30	-0.850
60	-0.880
110	-0.970
203	-1.025
275	-1.100
338	-1.100
1430	-1.700



Result:

Soil Infiltration Rate = 5.12 x 10-6 m/sec

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 880861	*Contract:* Derrygreenagh *Client:* Bord na Mona *Engineer:* Fichtner *Date:* 02.6.'23 *Tested by:* MM

INFILTRATION TEST - to BRE 365

SOAKAWAY:

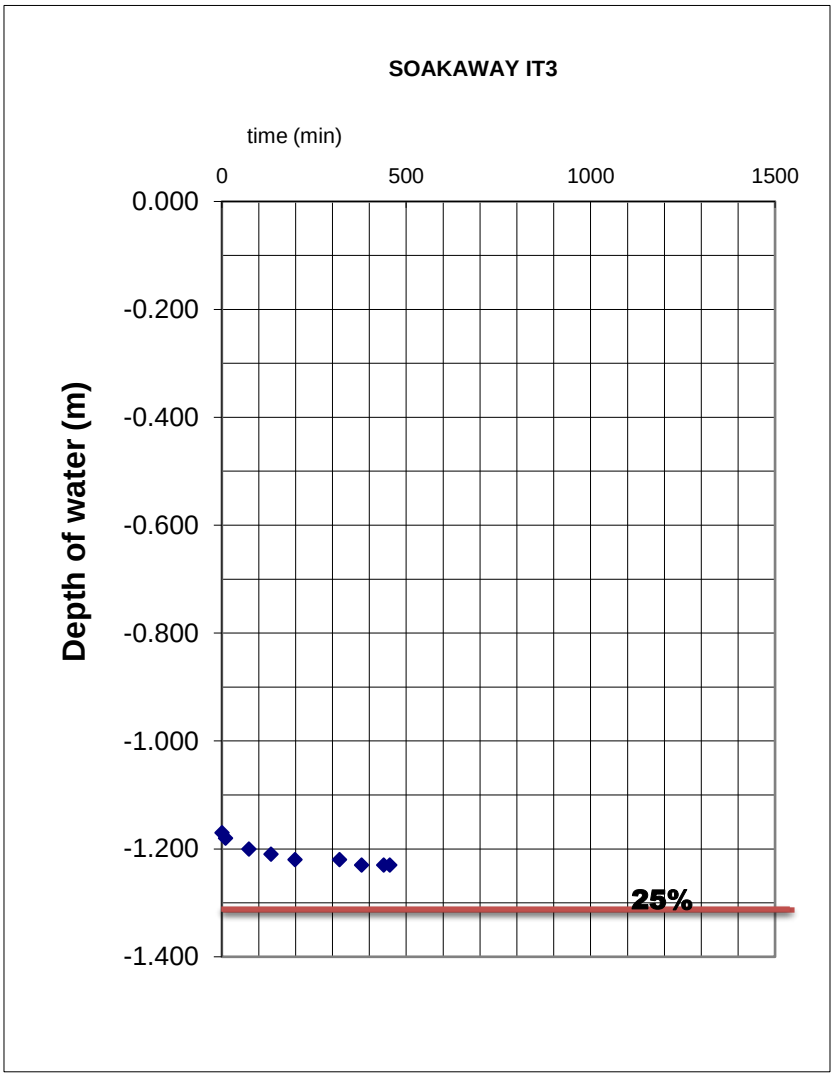
IT 3

2nd FILL

Top of water level:	1.17 m		
Base of trial pit:	2.00 m		
Dims. of trial pit:	2	x	1.1

Coordinates : (E 649640.313) (N 738302.289) (83.344O.D)

time min	WL m
0	-1.170
10	-1.180
73	-1.200
133	-1.210
198	-1.220
319	-1.220
379	-1.230
439	-1.230
455	-1.230



Result:

Soil Infiltration Rate = Near Impermeable

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 880861	*Contract:* Derrygreenagh *Client:* Bord na Mona *Engineer:* Fichtner *Date:* 01.6.'23 *Tested by:* MM

INFILTRATION TEST - to BRE 365

SOAKAWAY:

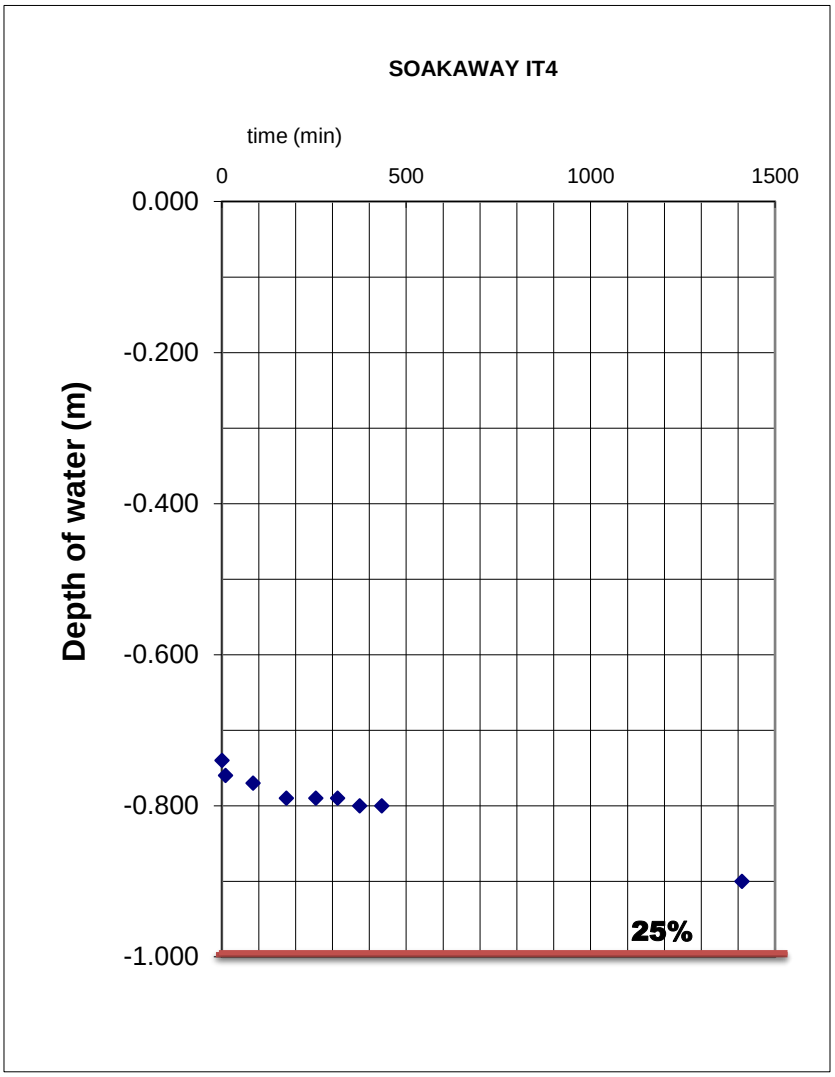
IT 4

1st FILL

Top of water level:	0.74 m		
Base of trial pit:	2.00 m		
Dims. of trial pit:	2	x	1.1

Coordinates :(E 649664.922) (N 738279.258) (83.738O.D)

time min	WL m
0	-0.740
10	-0.760
85	-0.770
175	-0.790
255	-0.790
314	-0.790
374	-0.800
434	-0.800
1410	-0.900



Result:

Soil Infiltration Rate = Near Impermeable

Appendix 11B
Soil Percolation Test Records
Refer to Folder Appendix 11B

Appendix 11C
Pump Test Records

HYDRO ENVIRONMENTAL SERVICES

22 Lower Main St
Dungarvan
Co.Waterford
Ireland

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fax: +353 (0)58 44244
email: info@hydroenvironmental.ie
web: www.hydroenvironmental.ie

FACTUAL REPORT ON RECONDITIONING AND TEST PUMPING OF PW1: DERRYGREENAGH, CO. OFFALY

Prepared for:

Bord na Móna Powergen Limited

Prepared by:

HYDRO-ENVIRONMENTAL SERVICES

DOCUMENT INFORMATION

Document Title:	**FACTUAL REPORT ON RECONDITIONING AND TEST PUMPING OF PW1: DERRYGREENAGH, CO. OFFALY**
Issue Date:	**04th October 2023**
Project Number:	**P1655-0**
Project Reporting History:	**None**
Current Revision No:	**P1655-0 FINAL F0**
Author(s):	**Michael Gill** **Jennifer Law** **John Twomey**
Signed:	 **Michael Gill B.A., B.A.I., M.Sc., MIEI** **Managing Director – Hydro-Environmental Services**

Disclaimer:
This report has been prepared by HES with all reasonable skill, care and diligence within the terms of the contract with the client, incorporating our terms and conditions and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. The flood risk assessment undertaken as part of this study is site specific and the report findings cannot be applied to other sites outside of the survey area which is defined by the site boundary. This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.

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APPENDIX II STEP TEST DATA
APPENDIX III ORIGINAL GROUNDWATER LABORATORY REPORTS
APPENDIX IV CONSTANT RATE PUMPING TEST DATA PLOTS

1. INTRODUCTION

1.1 BACKGROUND

Bord na Móna Powergen Ltd propose to develop a gas fired power station as part of the Derrygreenagh Power Project at Derrygreenagh Co. Offaly. The proposal requires a reliable and significant water supply.

The purpose of this investigation is to provide additional information on an existing groundwater borehole (subsequently referred to as PW1) onsite for purposes of supplying the Derrygreenagh Power Project.

Well PW1 was completed, developed and test pumped in 2008 to determine the deployable yield, which was determined at the time of testing to be 630 m^3/day.

As outlined in this report contemporary investigation works have been completed in accordance with the specification document entitled: "*Reconditioning and Test Pumping: Derrygreenagh, Co. Offaly – Specification for Investigation Works, Rev B, dated 04th July 2023*".

The works included:

- Reconditioning of well PW1;
- Step pumping test in PW1;
- Constant rate pumping test in PW1;
- Monitoring of various observation wells during the step test and constant rate pumping test; and,
- Water sampling for laboratory analysis during the step test (2 no. samples), and during the constant rate pumping test (2 no).
- Factual reporting.

The main works proposed, and the purpose of this contract are the reconditioning, development and test pumping of borehole PW1, the impact on the groundwater levels across the Main Site and to identify any variations in the quality of the pumped groundwater.

1.2 SITE LOCATION

The Site is located in the townland of Derrygreenagh, Co. Offaly and is situated along the R400, 2.25km southeast of Junction 3, of the M6 motorway.

Elevation on the Site is ranges from 80mOD – 90mOD. The surrounding land is relatively flat, with elevation steadily remaining at 80mOD.

The centre of the site is given in the following coordinates: 649513.632, 738320.753 (ITM). A site location map is shown in **Figure A** below.

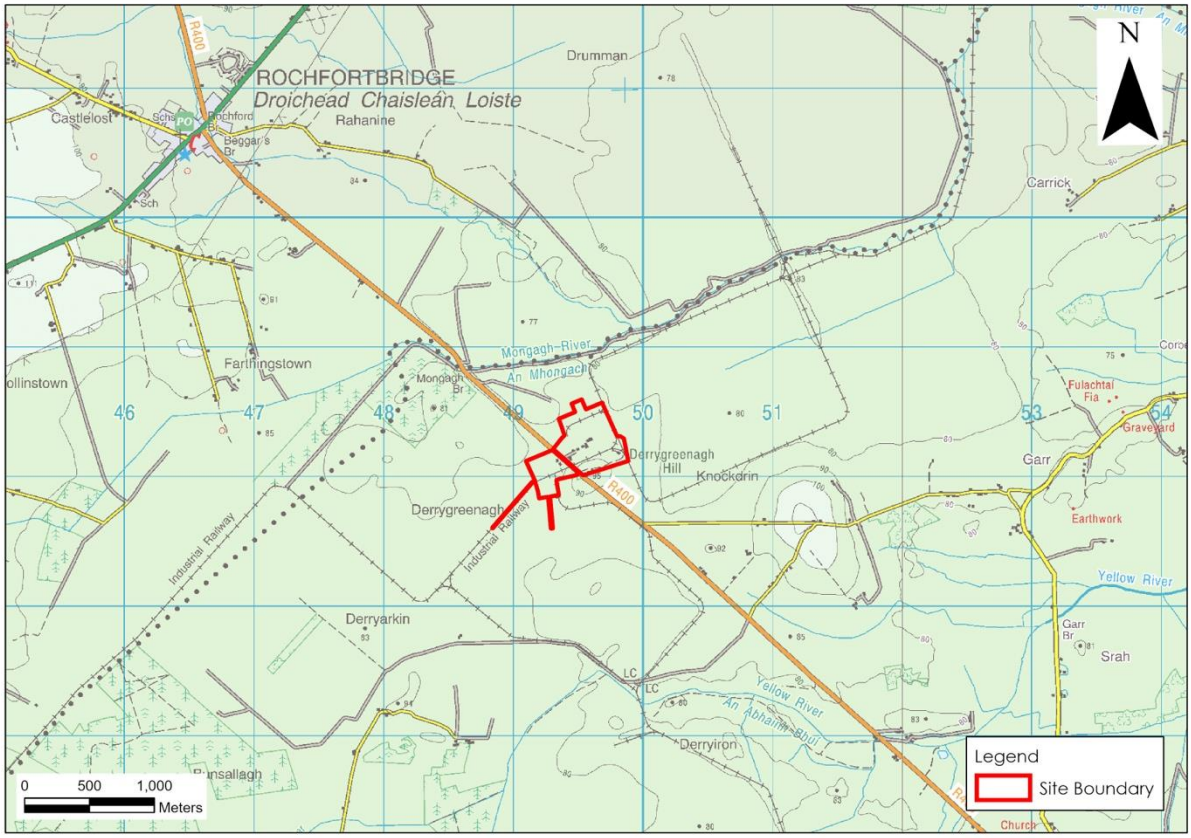

Figure A: Site Location Map

2. ENVIRONMENTAL SETTING

2.1 SITE GEOLOGY

The Site itself is a "mineral island", situated between an extensive area of peat bog on all sides. The GSI (www.gsi.ie) has mapped the soils underneath the Site to be till derived chiefly from limestone. These limestone tills are described as being deep basic mineral soils that are well drained (BminDW). The immediate surrounding land has been mapped by the GSI as consisting of Cut Peat, which is very poorly drained.

The Site is situated over the Lucan Formation, denoted by its dark limestone and shale (calp). The GSI maps this formation as ranging in thickness, from 300m – 800m. There are smaller areas of volcanic agglomerate to the southwest and northwest of the Site.

There are no faults directly beneath the Site, however there are a number of faults in the surrounding areas, some as close as 1.25km to the south.

2.2 SITE HYDROGEOLOGY

The Site is located over the Athboy GWB (IE_EA_G_001) which is shown by the EPA (www.epa.ie) to be of 'poorly productive bedrock' within the Dinantian Upper Impure Limestones. This groundwater body is also deemed to be at risk from agricultural activities.

The majority of the land around the Site, which consists of peat, will favour surface water runoff as the peat is very poorly drained, and this has an annual recharge coefficient of 4% or 22mm/year. The Site itself, the GSI has mapped has an annual recharge coefficient of 7.5% or 39mm/year. Made ground on the Site has been given an annual recharge coefficient of 20%.

Static groundwater level in pumping borehole PW1 is 6.72mbtoc (below top of casing).

A number of sand and gravel extractions pits have been excavated below the surrounding peat bogs. These areas of exposed subsoils will likely increase groundwater vulnerability, but will also increase recharge locally.

There are no Group Waster Schemes or Public Water Supply Schemes or any associated source protection areas located near the site. The Toberdaly PWS is located 5km southeast of the Site (GSI, 1996)[1].

2.3 PREVIOUS SITE INVESTIGATIONS

Previous site investigations works included:

- PW1 – drilled in 2008, well log attached in **Appendix I**;
- Current SI monitoring wells (IDL, 2023), including BH101, BH103, BH104, BH105, BH106, BH109, BH111A, BH112 , BH113, BH116C, BH116R, BH117, BHSS04, and BHSS07.

The Hostel Well supplies water to the existing works site. There are no details (drill date, depth, contractor, etc) available for this well.

We also used an existing monitoring well (which we have referred to as OB1/BH4) for water level monitoring during the pumping test. This older monitoring well is located beside BH104 and close to PW1.

A site map showing locations of the pumping well PW1, and all the other observation wells around the site is presented in **Figure B**.

[1] *Toberdaly Public Supply – Groundwater Source Protection Zones (draft), (GSI, 1996).*

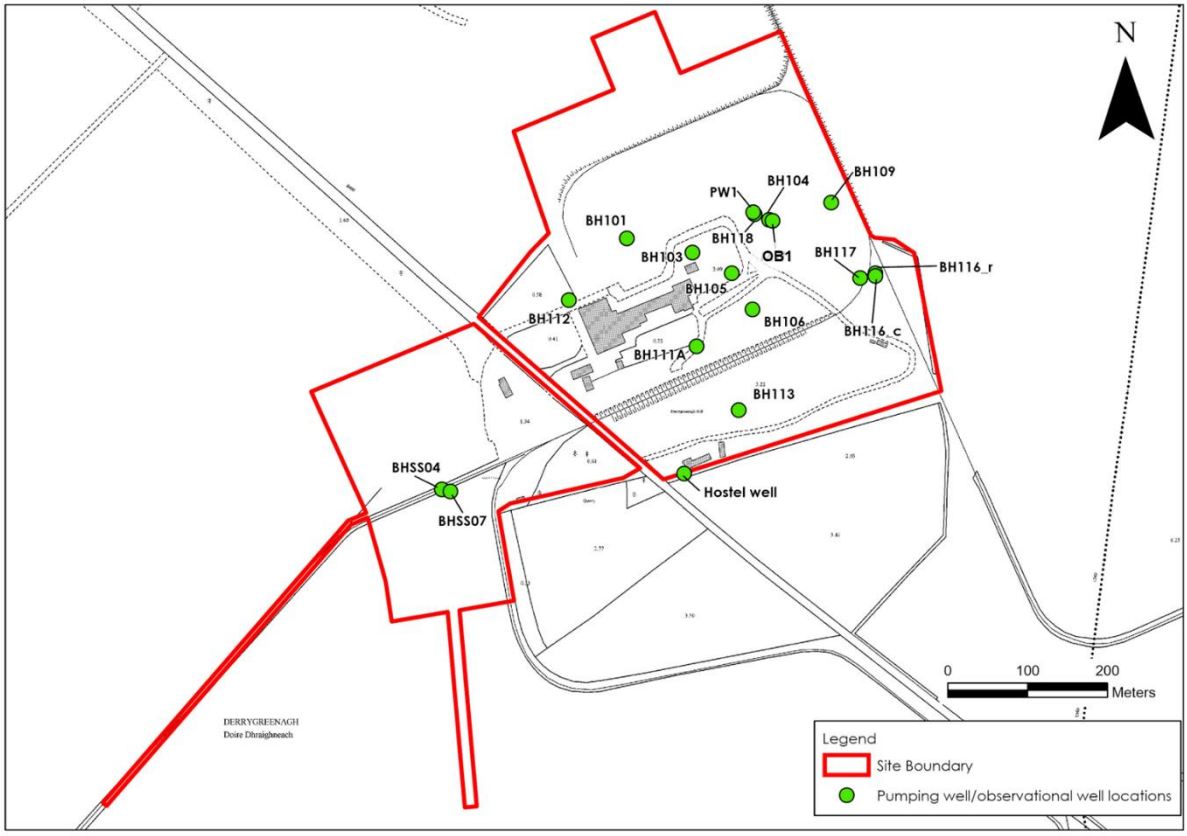

Figure B: Pumping Well and Observation Well Location Map

2.4 PREVIOUS PUMPING TEST IN PW1

A previous step test and constant rate pumping test was completed in PW1 in 2008 (Appendix H: Glover Site Investigation Ltd: Report Ref 08-0221). Drawdown curves for PW1 and observation wells (including OB1/BH4 (Ob Well 1)) during of those tests are included in **Figure C** and **Figure D**.

In 2008 records indicate that PW1 was pumped at 604.8 m^3/day, and a total drawdown of 4.7m was recorded.

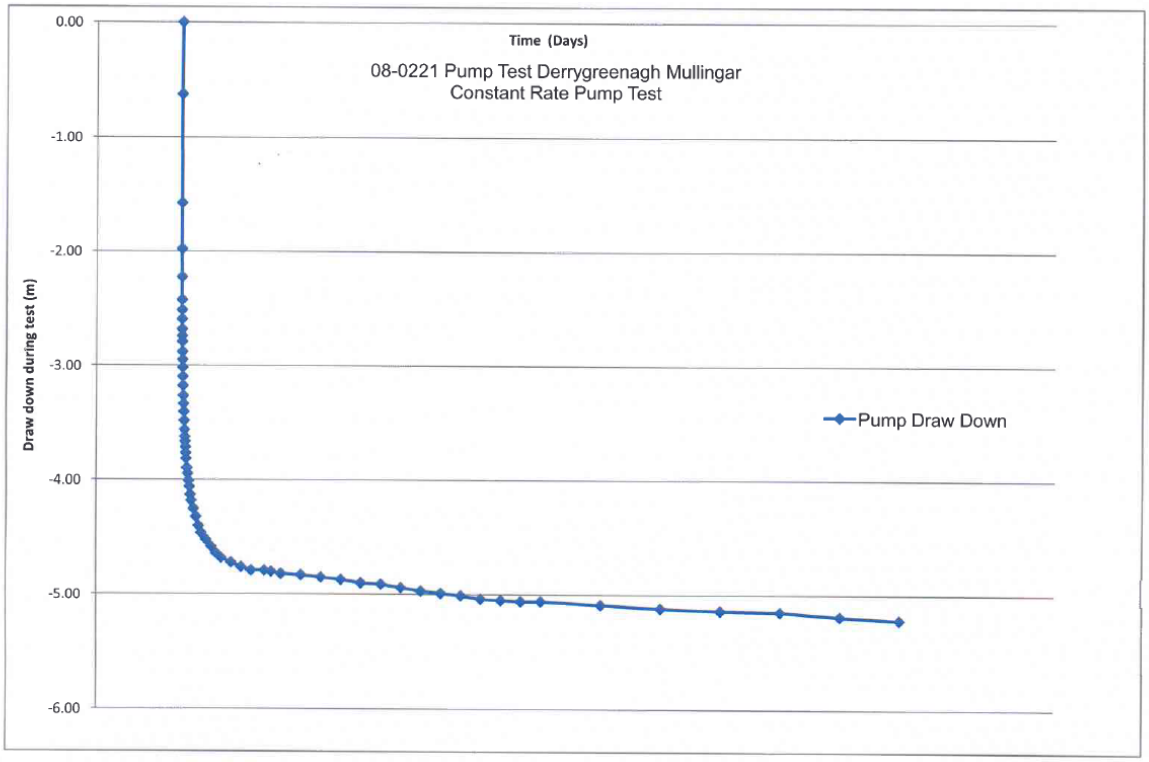

Figure C: 2008 CRT Pumping Test Plot – PW1

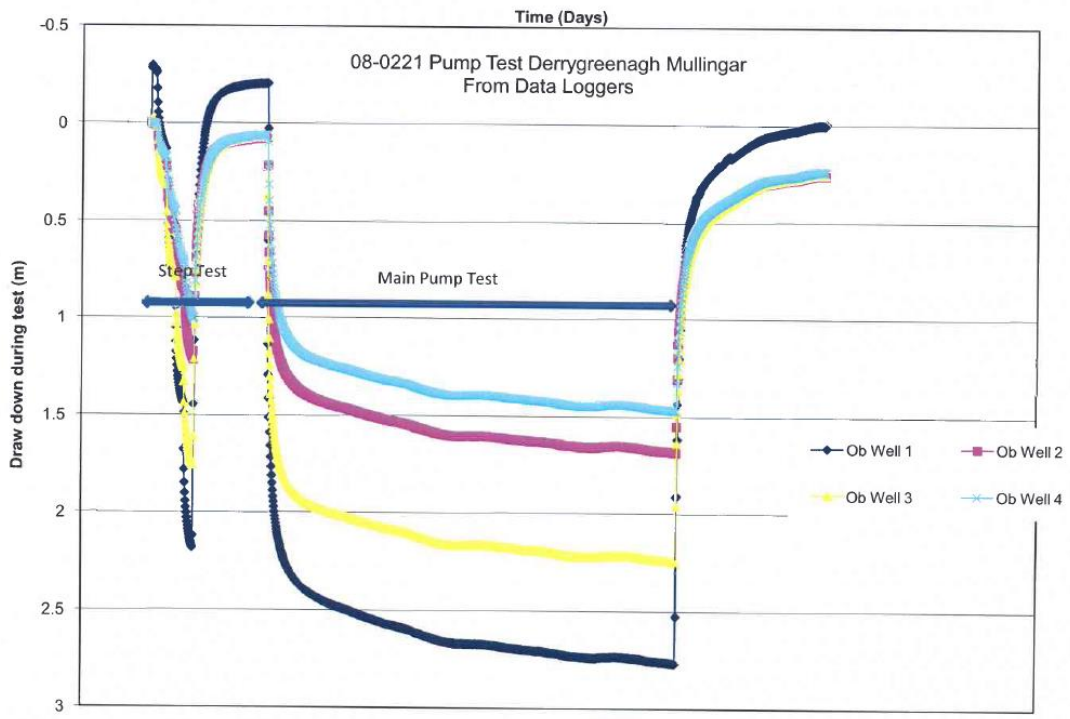

Figure D: 2008 ST and CRT Pumping Test Plot – Observation Wells

3. WELL REHABILITATION WORKS

Dempsey's well drilling completed the well rehabilitation works.

Rehabilitation works comprised the following:

- Day 1 setup drill rig over the well
- Day 1 and 2, slowly brushing the inside of the well (day 1 - 0-42m, Day 2 - 42-65m)
- Day 2 – airlifting the well using the compressor on the drill rig, slowly moving down and up in short intervals (<3m), and back down again within the well
- Day 3 – continued airlifting up and down and up the well

Of note the following was recorded:

- A short open drain (not connected to any other BnM drain) leading to an enclosed (no outfall) vegetated area was used for disposal of flush water during the rehabilitation works.
- Initial airlifting had a lower flow, and comprised dark orange water for 3-4 minutes following each movement of the drill rods down the well.
- The discoloration reduced, and also the time to clear reduced after each movement reduced, as airlifting progressed.
- The apparent yield of the well increased as the well rehabilitation works progressed. The apparent yield almost doubled from Day 1 to Day 3.
- Towards the end of the airlifting the flush water discoloration was minor at the beginning of each airlifting cycle.
- Surging airlifting of the well at that point made no difference in flush water colour or apparent yield.

On the morning of the day 4 a downhole camera survey of PW1 was completed to confirm:

1. The well screen and internal lining of the well were suitably clean; and,
2. No internal damage to the well lining and screen had occurred during the well rehabilitation works.

A section of photographs of the Rehabilitation Works are included in **Figure E**.

Figure E: Well Rehabilitation Works

4. PUMPING TEST METHODOLOGY

4.1 PUMPING TEST SETUP AND CALIBRATION TEST

Dempseys Drilling installed a 6" 15HP Franklin multistage submersible pump in PW1 to a depth of 31mbgl.

The pump section was placed 0.5m above the top of the screen, at a depth of 31mbgl. 4" rising main was installed, and an in-line flow meter, flow control valve, pressure gauge and a sample tap were all installed at ground level along the discharge line. The flow meter was connected to a digital display, and flow was also recorded continuously during the pumping tests.

A 5" discharge line was laid out over the bog surface, and a suitable discharge location was agreed with BnM, ~150m east of PW1. The discharge was routed to a peat drain within the cutover bog to the east.

2 no. 25mm dipping tubes were installed in the pumping well. One dipping tube housed a 50m range Diver datalogger and its direct read cable to ground level. The second dipping tube was used for manual measurement of water levels during the pumping tests.

The pumping rate was varied using a VSD drive. The VSD drive and display for the flow meter were housed in a trailer that was parked beside PW1.

A diesel generator was used to power the submersible pump. Dempsey Drilling was responsible for running and refuelling the generator.

Setup pictures of the pumping test are included in **Figure F**.

HES and Dempsy Drilling performed pre-test monitoring prior to the commencement of pumping works. A period of pump calibration was carried out prior to the pumping test. This was undertaken by Dempsey Drilling and supervised by HES.

A calibration test (set of pumping rates) was undertaken on PW1. During the calibration test the following was recorded:

- 4 L/s, 21.2 hertz, 19meters of water above pump.
- 6 L/s, 23.4 hertz, 18.2 meters of water above pump.
- 8.5 L/s, 25.8 hertz, 17.25 meters of water above the pump.
- 10 L/s, 29.4 hertz, 15.87 meter of water above pump
- 12 L/s, 33.9 hertz, 13.4 meters of water above pump.
- 19.64 L/s, 50 hertz, 9.75 meters of water above the pump.

Figure F: Pumping Test – Site Setup

Diver ® water level dataloggers were installed in the following monitoring wells (refer to **Figure B**):

- BH103 (could not be accessed initially as the gate to the tractor compound was locked)
- BH104
- BH105
- BH106
- BH109
- BH111A
- BH112
- BH113
- BH116C
- BH116R
- BH118
- Hostel Well
- BHSS07
- OB1/BH4 (old monitoring well from 2008))
- PW1

All loggers were set to record water levels at 2 minute interval during the pumping tests. Manual dips in all monitoring wells were recorded to calibrate and validate the logger data.

4.2 STEP TEST METHODOLOGY

Based on the calibration test data the following step test pumping rates were proposed:

- 4 L/sec
- 8 L/sec
- 12 L/sec, and
- 16 L/sec.

The VSD drive was used to change the flow rates at the end of each step. The Step test was completed in 4 no. stages, each 100 minutes long. Each step will be 100 minutes in length. The step test was completed on 28th July 2023, and the well was allowed to recovery over the weekend, with the constant rate pumping test commencing on Tuesday 1st August 2023.

Manual dips during the step test were repeated at the following intervals for each step:

Time Interval	Monitoring Frequency
0-5 mins	Every 30 seconds
5-10 mins	Every 1 minute
10-20 mins	Every 2 minutes
20-60 mins	Every 5 minutes
60-100 mins	Every 10 minutes

4.3 CONSTANT RATE PUMPING TEST METHODOLOGY

The constant rate pumping test had the same setup as described above. A flow rate of 12 L/s was chosen based on review of the step test data.

5. PUMPING TEST DATA

5.1 STEP PUMPING TEST

5.1.1 ST – 28/07/2023

The step test in PW1 began at 09:20am on 28th July 2023. Each step was 100 minutes long. Summary data is presented in **Table A**, and a plot of the step test data is shown in **Figure G**.

Overall, the total drawdown for the 4 no. steps was 11.77m. After the pump was switched off it took the well 40 minutes to recovery to 8.92mbREF, from 19.27 mbRef. Full recovery to ~7.60mRef occurred after ~10 hours (note the well did not recovery past 7.60mbRef). [Please note the data logger in the pumping well was not installed until after the initial recovery of the Step test), as at that time we only had one dipping tube, and we needed that for manual dip measurements. A second dipping tube was installed for the CRT.]

Step test data are attached in **Appendix II**. An excel file with these data has been uploaded to sharefile.

Table A. Step Test Summary Results

Location	Step No	Pumping Rate (L/s)	Duration (mins)	Start time	End time	Drawdown per step (m)	Total Drawdown (m)
PW1	Step 1	4	100	09:20	11:00	2.01	2.01
PW1	Step 2	8	100	11:00	14:40	2.82	4.83
PW1	Step 3	12	100	12:40	14:20	3.36	8.19
PW1	Step 4	16	100	14:20	16:00	3.58	11.77

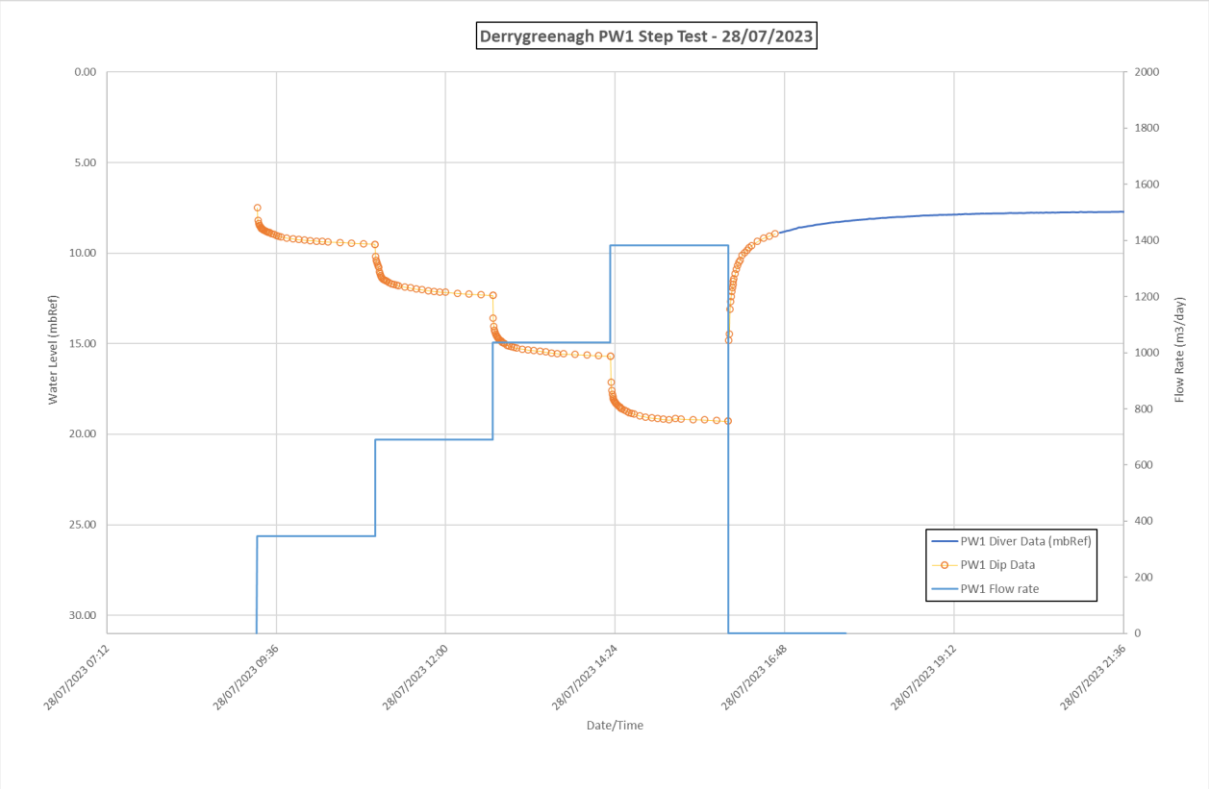

Figure G: Derrygreenagh PW1 Step Test

5.1.2 ST – Field Hydrochemistry

Field hydrochemistry was also monitored during the step test in the borehole. The results of this monitoring are shown below in **Table B**.

Table B. Field Hydrochemistry Measurements During Step Test

Location	Time (mins)	Total Time (mins)	Temp (°C)	EC (µS/cm)	pH [H+]	DO %	NTU
Step 1	20	20	10.6	645	7.05	22.4	2.16
Step 1	30	30	10.7	644	7.03	13.7	1.59
Step 1	50	50	11	644	7.03	9.1	1.13
Step 1	60	60	11	644	7.02	8.5	0.91
Step 1	70	70	10.8	641	7.02	7.9	0.88
Step 1	80	80	10.8	641	7.02	7.7	0.71
Step 1	90	90	10.8	640	7.02	7.3	0.38
Step 1	98	98	10.7	640	7.02	7.2	-
Step 2	5	103	10.5	636	7.01	6.4	-
Step 2	15	113	10.6	637	7.01	5.8	4.96
Step 2	30	128	10.7	638	7.03	5.6	4.21
Step 2	45	143	10.6	638	7.03	5.5	2.10
Step 2	60	158	10.8	639	7.05	5.4	1.47
Step 2	70	168	10.8	640	7.03	5.4	1.6
Step 2	80	178	10.8	639	7.03	5.4	1.18
Step 2	90	188	10.9	642	7.02	5.3	1.09
Step 3	20	198	10.5	635	7.05	5.3	7.10
Step 3	30	208	10.5	636	7.04	5.0	17.3
Step 3	45	213	10.6	637	7.04	4.9	5.26
Step 3	50	218	10.7	637	7.04	4.7	3.7
Step 3	60	228	10.6	636	7.04	4.6	3.63
Step 3	70	238	10.6	637	7.04	4.5	3.48
Step 3	80	248	10.6	637	7.04	4.5	3.01
Step 4	90	258	10.6	639	7.03	8.3	3.57
Step 4	10	268	10.5	636	7.06	4.9	24.6
Step 4	15	273	10.6	635	7.05	4.5	32.6
Step 4	30	288	10.6	636	7.05	4.1	23.2
Step 4	40	298	10.7	636	7.05	4.0	20.8
Step 4	50	308	10.6	635	7.05	3.9	17.2
Step 4	60	318	10.6	635	7.05	3.9	16.1
Step 4	70	328	10.6	635	7.05	3.9	12.4
Step 4	80	338	10.6	635	7.06	3.8	13.9
Step 4	90	348	10.6	634	7.06	3.8	11.7
Step 4	96	358	10.6	634	7.06	3.8	10.4

5.1.3 ST – Water Sampling

A water sample was taken for laboratory analysis at the end of Step 1, and at the end of Step 3 (both samples were taken on 28th July 2023). Original laboratory reports are attached in **Appendix III**, and the data is tabulated in **Table E.**

5.2 CONSTANT RATE PUMPING TEST

5.2.1 CRT – 01/08/2023 to 08/08/2023

A constant rate pumping test (CRT) was performed on PW1 between 01st August and 8th August 2023. The pumping test setup was as described in Section 4.

The static water level in PW1 recorded at the beginning of the CRT was 7.47mbRef, and the final water level recorded 7 days later prior to pump turn-off was 16.25mbRef. The pumping rate varied slightly over the 7 days, but the average pumping rate was 42.1 m^3/hr (1,010.4 m^3/day).

Overall, the total drawdown in PW1 recorded during the CRT was 8.78m. After the pump was switched off it took the well 40 minutes to recovery to 9.12mbREF.

Summary drawdown data is presented in **Table A**, and a plot of the CRT data for PW1 is shown in **Figure H**Figure G.

Water level monitoring data recorded in all other observation wells during the CRT are provided in plot format in **Appendix IV**. Data for PW1,and 8 no. monitoring wells are provided (BH104, OB1/BH4, BH105, BH109, BH111A, BH112, BHSS07, and Hostel Well). Excel files with these data has been uploaded to sharefile.

[Note: continuous water level monitoring was attempted in shallow monitoring wells, i.e. BH118 and BH116C. Both wells were generally dry, other than after heavy rainfall].

Table C. Drawdown Constant Rate Pumping Test

Name	Location (ITM)		Distance to PW1 (m)	Total Drawdown @ end of CRT (m)
PW1	649589.68	738371.53	0	8.78
BH104	649609.48	738361.9	19.4	4.80
OB1/BH4	649613.78	738360.58	26	4.63
BH105	649562.57	738294.96	80	1.48
BH109	649687.45	738383.53	97.5	0.46
BH111A	649518.7	738203.24	183	1.19
BH112	649358.593	738261.141	256	0.05
BHSS07	649210.383	738021.446	516	None apparent
Hostel Well	649503.3	738043.65	340	None apparent

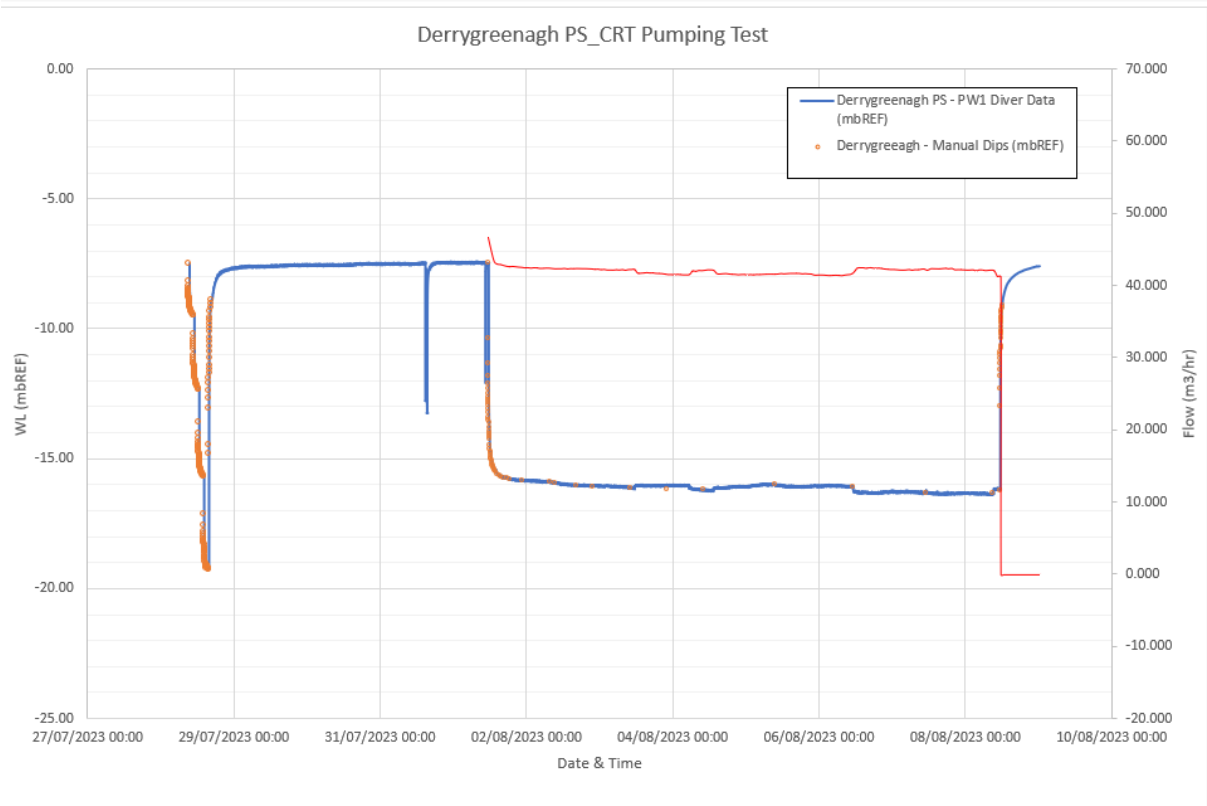

Figure H: Derrygreenagh PW1 CRT Pumping Test

5.2.2 CRT – Field Hydrochemistry

Field hydrochemistry was also monitored during the CRT in PW1. The results of this monitoring are shown below in
Table B.

Table D. Field Hydrochemistry Measurements During the CRT

Date	Time (hr:mins)	Total Time (mins)	Temp (°C)	EC (µS/cm)	pH [H+]	DO %	NTU
01/08/2023	11:15	0	11.1	653	7.08	12.5	11.8
01/08/2023	12:05	35	10.6	637	7.08	7.3	8.46
01/08/2023	12:30	60	10.7	638	7.08	4.8	6.95
01/08/2023	13:30	120	10.6	636	7.11	4.2	5.55
01/08/2023	14:30	180	10.7	637	7.06	4.0	3.99
01/08/2023	15:30	240	10.6	635	7.06	3.8	4.56
01/08/2023	16:30	300	10.5	634	7.06	3.7	1.83
01/08/2023	17:30	360	10.6	634	7.06	3.6	1.90
01/08/2023	18:30	420	10.6	633	7.07	3.6	1.02
02/08/2023	07:15	1,185	10.4	630	7.1	5.0	0.26
02/08/2023	09:30	1,320	10.4	629	7.08	3.3	0.35
02/08/2023	16:25	1,735	10.6	631	7.07	3.3	0.23
03/08/2023	10:00	2,790	10.5	628	7.1	4.1	0.61
04/08/2023	10:00	4,230	10.4	627	7.12	3.9	0.62
05/08/2023	09:30	5,640	10.4	625	7.09	3.6	0.65
06/08/2023	11:00	7,170	10.5	625	7.11	4.5	0.64
07/08/2023	11:00	8,610	10.5	625	7.09	4.9	0.71
08/08/2023	09:00	9,930	10.4	624	7.1	5.2	0.9
08/08/2023	11:35	10,085	10.4	623	7.09	3.6	0.61

5.2.3 CRT – Water Sampling

Water samples were taken for laboratory analysis on Day 2 and Day 7 of the CRT. Original laboratory reports are attached in **Appendix III**, and the data is tabulated in **Table E**.

Table E. Groundwater Laboratory Results

Parameter	PW 1 – Step 2	PW 1 – Step 3	PW1 – CRT Day 2	PW 1 – CRT Day 7
Total Coliforms (MPN/100ml)	<10	<10	<10	<10
Faecal Coliforms (MPN/100ml)	-	-	<10	-
pH	7.11	7.10	7.08	7.13
Conductivity (µS/cm @20°C)	633	635	638	625
Redox Potential (m/v)	228	235	214	228
Total Organic Carbon (mg/l)	1.5	1.6	1.7	1.5
Calcium (mg/l)	127.5	125.4	122.2	117.6
Chloride (mg/l)	17	18	18	19
Magnesium (mg/l)	9.1	9.4	9.2	92.4
Potassium (mg/l)	1.6	1.9	1.5	13.8
Sodium (mg/l)	9.8	11.2	9.7	96.4
Alkalinity (mg/l as $CaCO_3$)	355	361	371	372
Hardness Total (mg/l as $CaCO_3$)	379	381	-	366
Bicarbonate (mg/l as $CaCO_3$)	355.4	360.6	370.7	372.4
Sulphate (mg/l as SO_4)	20	19	21	21
Nitrite (mg/l as N)	1.13	<0.01	0.73	<0.01
Nitrate mg/L (as N)	<1	1	1	1
Boron (µg/l)	<16	<16	<16	<16
Dissolved Oxygen (mg/l)	5.8	5.3	7.5	6.6
Ammonia mg/L (as N)	0.44	0.51	0.40	0.35
Iron (mg/L)	1.864	2.014	1.608	1.095

Iron dissolved (mg/L)	0.1347	0.1123	0.0721	0.0121
Manganese (mg/L)	0.09	0.105	0.16	0.211
Manganese dissolved (mg/L)	0.09	0.104	0.160	0.132
TPH (mg/L)	<1	<1	<1	<1
BTEX Total (µg/l)	<1	<1	<1	<1
Polyaromatic Hydrocarbons (µg/l)	<0.1	<0.1	<0.1	<0.1
Arsenic (µg/l)	3	4	3.3	3
Cadmium (µg/l)	<1	<1	<1	<1
Chromium (µg/l)	<2	<2	<2	<2
Copper (µg/l)	1	1	<1	<1
Lead (µg/l)	<1	<1	<1	<1
Mercury (µg/l)	<0.08	0.09	<0.08	<0.08
Nickel (µg/l)	40	36	27	25
Zinc (µg/l)	20	19	21	20
Selenium (µg/l)	2	3	2	1

6. REPORT SUMMARY

- Well rehabilitation works have been undertaken in PW1, and these were successful.
- A step pumping test and a constant rate pumping tests were also completed in well PW1, and an output of 1,010.4 m^3/day was sustained over a 7 day period with 8.78m of drawdown recorded.
- PW1 is a high yielding well.
- Field hydrochemistry and laboratory data for waster samples taken during the pumping tests are also presented in this factual report.

* * * * * * * * * * *

7. REFERENCES

Aecom / Fichtner	04th July 2023	Reconditioning and Test Pumping: Derrygreenagh, Co. Offaly – Specification for Investigation Works, Rev B
BS ISO 14686	2003	Pumping tests for water wells — Considerations and guidelines for design, performance and use.

APPENDIX I
PW1 – WELL LOG

Glover Site Investigations Ltd

Site	Derrygreenagh CCGT, Rochfortbridge
Borehole Number	PW01
Installation Type	Standpipe
Dimensions	Internal Diameter of Tube [A] = 150 mm Diameter of Filter Zone = 200 mm
Client	Bord Na Mona
Job Number	08-0221
Location	249653.762 E 238348.3 N
Ground Level (mOD)	82.79
Engineer	Mott MacDonald Pettit Ltd
Sheet	1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description
			52.79	30.00	Fine Gravel Filter
			17.79	65.00	Well Screen

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	10 min	15 min	20 min	Depth Sealed (m)

Groundwater Observations During Drilling

Date	Start of Shift Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	End of Shift Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
10/05/08							65.00			

Instrument Groundwater Observations

Inst. [A] Type :

Date	Instrument [A] Time	Depth (m)	Level (mOD)	Remarks

Remarks

Figure 3: Log of an existing abstraction borehole on the site.

Glover Site Investigations Ltd

Site	Borehole Number
Derrygreenagh CCGT, Rochfortbridge	PW01

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
DTH Rotary	150mm cased to 65.00m	82.79	Bord Na Mona	08-0221
	Location	**Dates**	**Engineer**	**Sheet**
	249653.762 E 238348.3 N	10/05/2008	Mott MacDonald Pettit Ltd	2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(25.00)	Moderately strong dark grey fine grained CARBONIFEROUS LIMESTONE		
				10/05/2008:	17.79	65.00	Complete at 65.00m		

Remarks

Scale (approx)	Logged By
1:200	DC/HH

Figure No. 08-0221.PW01

Glover Site Investigations Ltd

Site Derrygreenagh CCGT, Rochfortbridge			**Borehole Number** PW01
Boring Method DTH Rotary	**Casing Diameter** 150mm cased to 65.00m	**Ground Level (mOD)** 82.79	**Client** Bord Na Mona	**Job Number** 08-0221
	Location 249653.762 E 238348.3 N	**Dates** 10/05/2008	**Engineer** Mott MacDonald Pettit Ltd	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(26.00)	OVERBURDEN		
					56.79	26.00	Broken and jointed dark grey fine grained CARBONIFEROUS LIMESTONE		
						(7.70)			
					49.09	33.70	Moderately weak grey fine grained CARBONIFEROUS LIMESTONE		
						(5.30)			
					43.79	39.00			
						(1.00)	LIMESTONE (Full description as Sheet 2)		
					42.79				

Remarks
3000mm steel permanent liner installed to 28.00m
250mm steel liner installed from 0.0m - 39.00m.
250mm reinforced steel liner installed from 37.00m - 39.00m
200mm UPVC standpipe installed.

Scale (approx)	Logged By
1:200	DC/HH

Figure No. 08-0221.PW01

APPENDIX II
STEP TEST DATA

Date	Time (min)		PW1 WL (mbRef)	PW1 flow (m^3/hr)	Flow rate (m^3/day)
28/07/2023 09:19	-1	-1	7.5		0
28/07/2023 09:20	0	0.00	7.5	14.4	345.6
28/07/2023 09:20	00:00:30	0.50	8.18		345.6
28/07/2023 09:21	00:01:00	1.00	8.36		
28/07/2023 09:21	00:01:30	1.50	8.46		
28/07/2023 09:22	00:02:00	2.00	8.52		
28/07/2023 09:22	00:02:30	2.50	8.56		
28/07/2023 09:23	00:03:00	3.00	8.6		
28/07/2023 09:23	00:03:30	3.50	8.64		
28/07/2023 09:24	00:04:00	4.00	8.66		
28/07/2023 09:24	00:04:30	4.50	8.69		
28/07/2023 09:25	00:05:00	5.00	8.71		
28/07/2023 09:26	00:06:00	6.00	8.75		
28/07/2023 09:27	00:07:00	7.00	8.79		
28/07/2023 09:28	00:08:00	8.00	8.82		
28/07/2023 09:29	00:09:00	9.00	8.85		
28/07/2023 09:30	00:10:00	10.00	8.87		
28/07/2023 09:32	00:12:00	12.00	8.91		
28/07/2023 09:34	00:14:00	14.00	8.95		
28/07/2023 09:36	00:16:00	16.00	9.02		
28/07/2023 09:38	00:18:00	18.00	9.07		
28/07/2023 09:40	00:20:00	20.00	9.1		
28/07/2023 09:45	00:25:00	25.00	9.16		
28/07/2023 09:50	00:30:00	30.00	9.21		
28/07/2023 09:55	00:35:00	35.00	9.25		
28/07/2023 10:00	00:40:00	40.00	9.28		
28/07/2023 10:05	00:45:00	45.00	9.31		
28/07/2023 10:10	00:50:00	50.00	9.33		
28/07/2023 10:15	00:55:00	55.00	9.36		
28/07/2023 10:20	01:00:00	60.00	9.38		
28/07/2023 10:30	01:10:00	70.00	9.41		
28/07/2023 10:40	01:20:00	80.00	9.44		
28/07/2023 10:50	01:30:00	90.00	9.47		
28/07/2023 11:00	01:40:00	100.00	9.51	14.4	345.6
28/07/2023 11:00	0	100.00	9.51	28.8	691.2
28/07/2023 11:00	00:00:30	100.50	10.2		
28/07/2023 11:01	00:01:00	101.00	10.4		
28/07/2023 11:01	00:01:30	101.50	10.51		
28/07/2023 11:02	00:02:00	102.00	10.62		
28/07/2023 11:02	00:02:30	102.50	10.71		
28/07/2023 11:03	00:03:00	103.00	10.78		
28/07/2023 11:03	00:03:30	103.50	11.02		
28/07/2023 11:04	00:04:00	104.00	11.15		
28/07/2023 11:04	00:04:30	104.50	11.25		
28/07/2023 11:05	00:05:00	105.00	11.31		

28/07/2023 11:06	00:06:00	106.00	11.38		
28/07/2023 11:07	00:07:00	107.00	11.44		
28/07/2023 11:08	00:08:00	108.00	11.48		
28/07/2023 11:09	00:09:00	109.00	11.52		
28/07/2023 11:10	00:10:00	110.00	11.56		
28/07/2023 11:12	00:12:00	112.00	11.62		
28/07/2023 11:14	00:14:00	114.00	11.68		
28/07/2023 11:16	00:16:00	116.00	11.72		
28/07/2023 11:18	00:18:00	118.00	11.76		
28/07/2023 11:20	00:20:00	120.00	11.8		
28/07/2023 11:25	00:25:00	125.00	11.87		
28/07/2023 11:30	00:30:00	130.00	11.92		
28/07/2023 11:35	00:35:00	135.00	11.99		
28/07/2023 11:40	00:40:00	140.00	12.02		
28/07/2023 11:45	00:45:00	145.00	12.07		
28/07/2023 11:50	00:50:00	150.00	12.11		
28/07/2023 11:55	00:55:00	155.00	12.14		
28/07/2023 12:00	01:00:00	160.00	12.16		
28/07/2023 12:10	01:10:00	170.00	12.22		
28/07/2023 12:20	01:20:00	180.00	12.26		
28/07/2023 12:30	01:30:00	190.00	12.3		
28/07/2023 12:40	01:40:00	200.00	12.33	28.8	691.2
28/07/2023 12:40	0	200.00	12.33	43.2	1036.8
28/07/2023 12:40	00:00:30	200.50	13.6		
28/07/2023 12:41	00:01:00	201.00	14.03		
28/07/2023 12:41	00:01:30	201.50	14.24		
28/07/2023 12:42	00:02:00	202.00	14.37		
28/07/2023 12:42	00:02:30	202.50	14.46		
28/07/2023 12:43	00:03:00	203.00	14.54		
28/07/2023 12:43	00:03:30	203.50	14.6		
28/07/2023 12:44	00:04:00	204.00	14.64		
28/07/2023 12:44	00:04:30	204.50	14.71		
28/07/2023 12:45	00:05:00	205.00	14.75		
28/07/2023 12:46	00:06:00	206.00	14.81		
28/07/2023 12:47	00:07:00	207.00	14.85		
28/07/2023 12:48	00:08:00	208.00	14.91		
28/07/2023 12:49	00:09:00	209.00	14.95		
28/07/2023 12:50	00:10:00	210.00	15		
28/07/2023 12:52	00:12:00	212.00	15.08		
28/07/2023 12:54	00:14:00	214.00	15.12		
28/07/2023 12:56	00:16:00	216.00	15.16		
28/07/2023 12:58	00:18:00	218.00	15.21		
28/07/2023 13:00	00:20:00	220.00	15.24		
28/07/2023 13:05	00:25:00	225.00	15.29		
28/07/2023 13:10	00:30:00	230.00	15.34		
28/07/2023 13:15	00:35:00	235.00	15.38		
28/07/2023 13:20	00:40:00	240.00	15.41		

28/07/2023 13:25	00:45:00	245.00	15.46		
28/07/2023 13:30	00:50:00	250.00	15.51		
28/07/2023 13:35	00:55:00	255.00	15.54		
28/07/2023 13:40	01:00:00	260.00	15.56		
28/07/2023 13:50	01:10:00	270.00	15.6		
28/07/2023 14:00	01:20:00	280.00	15.63		
28/07/2023 14:10	01:30:00	290.00	15.66		
28/07/2023 14:20	01:40:00	300.00	15.69	43.2	1036.8
28/07/2023 14:20	0	300.00	15.69	57.6	1382.4
28/07/2023 14:20	00:00:30	300.50	17.13		
28/07/2023 14:21	00:01:00	301.00	17.58		
28/07/2023 14:21	00:01:30	301.50	17.81		
28/07/2023 14:22	00:02:00	302.00	17.92		
28/07/2023 14:22	00:02:30	302.50	18.03		
28/07/2023 14:23	00:03:00	303.00	18.1		
28/07/2023 14:23	00:03:30	303.50	18.18		
28/07/2023 14:24	00:04:00	304.00	18.22		
28/07/2023 14:24	00:04:30	304.50	18.27		
28/07/2023 14:25	00:05:00	305.00	18.32		
28/07/2023 14:26	00:06:00	306.00	18.4		
28/07/2023 14:27	00:07:00	307.00	18.46		
28/07/2023 14:28	00:08:00	308.00	18.51		
28/07/2023 14:29	00:09:00	309.00	18.56		
28/07/2023 14:30	00:10:00	310.00	18.6		
28/07/2023 14:32	00:12:00	312.00	18.66		
28/07/2023 14:34	00:14:00	314.00	18.74		
28/07/2023 14:36	00:16:00	316.00	18.8		
28/07/2023 14:38	00:18:00	318.00	18.84		
28/07/2023 14:40	00:20:00	320.00	18.88		
28/07/2023 14:45	00:25:00	325.00	18.98		
28/07/2023 14:50	00:30:00	330.00	19.04		
28/07/2023 14:55	00:35:00	335.00	19.1		
28/07/2023 15:00	00:40:00	340.00	19.13		
28/07/2023 15:05	00:45:00	345.00	19.17		
28/07/2023 15:10	00:50:00	350.00	19.21		
28/07/2023 15:15	00:55:00	355.00	19.13		
28/07/2023 15:20	01:00:00	360.00	19.15		
28/07/2023 15:30	01:10:00	370.00	19.18		
28/07/2023 15:40	01:20:00	380.00	19.21		
28/07/2023 15:50	01:30:00	390.00	19.25		
28/07/2023 16:00	01:40:00	400.00	19.27	57.6	1382.4
28/07/2023 16:00	0	400.00	19.27	0	0
28/07/2023 16:00	00:00:30	400.50	14.82		
28/07/2023 16:01	00:01:00	401.00	14.48		
28/07/2023 16:01	00:01:30	401.50	13.1		
28/07/2023 16:02	00:02:00	402.00	12.68		

28/07/2023 16:02	00:02:30	402.50	12.38		
28/07/2023 16:03	00:03:00	403.00	12.12		
28/07/2023 16:03	00:03:30	403.50	11.9		
28/07/2023 16:04	00:04:00	404.00	11.74		
28/07/2023 16:04	00:04:30	404.50	11.56		
28/07/2023 16:05	00:05:00	405.00	11.42		
28/07/2023 16:06	00:06:00	406.00	11.13		
28/07/2023 16:07	00:07:00	407.00	10.88		
28/07/2023 16:08	00:08:00	408.00	10.68		
28/07/2023 16:09	00:09:00	409.00	10.5		
28/07/2023 16:10	00:10:00	410.00	10.38		
28/07/2023 16:12	00:12:00	412.00	10.12		
28/07/2023 16:14	00:14:00	414.00	9.96		
28/07/2023 16:16	00:16:00	416.00	9.83		
28/07/2023 16:18	00:18:00	418.00	9.69		
28/07/2023 16:20	00:20:00	420.00	9.58		
28/07/2023 16:25	00:25:00	425.00	9.36		
28/07/2023 16:30	00:30:00	430.00	9.18		
28/07/2023 16:35	00:35:00	435.00	9.05		
28/07/2023 16:40	00:40:00	440.00	8.92		0
28/07/2023 16:45	00:45:00				
28/07/2023 16:50	00:50:00				
28/07/2023 16:55	00:55:00				
28/07/2023 17:00	01:00:00				
28/07/2023 17:10	01:10:00				
28/07/2023 17:20	01:20:00				
28/07/2023 17:30	01:30:00				
28/07/2023 17:40	01:40:00			0	0

APPENDIX III
ORIGINAL GROUNDWATER LABORATORY REPORTS

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A copy of this certificate is available on www.fitzsci.ie.

Customer supplied information appear in italics.

Customer	*Adam Keegan*	Lab Report Ref. No.	7820/042/02
	Hydro-Environmental Services	Date of Receipt	28/07/2023
	22 Lower Main Street	*Sampled On*	*28/07/2023*
	Dungarvan	Date Testing Commenced	28/07/2023
		Received or Collected	By Fitz: Pick up Ross
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	*P1655*	Date of Report	17/08/2023
Customer Ref	*Derrygreenagh PW1 step2*	*Sample Type*	*Ground Water*
Ref 2			
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Alkalinity (Ground Water)	102	Colorimetry	355	mg/L CaCO3	INAB
Ammonia (Ground Water)	114	Colorimetry	0.44	mg/L as N	INAB
Arsenic (Ground Water)	177	ICPMS	3	ug/L	INAB
Bicarbonate (CaCO3)	102	Colorimetry	355.4	mg/L CaCO3	
Boron (Ground Water)	177	ICPMS	<16	ug/L	INAB
BTEX Total (Ground Water)	154	GCMS	<1	ug/L	
Cadmium (Ground Water)	177	ICPMS	<1	ug/L	INAB
Calcium (Ground Water)	184	ICPMS	127.5	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	17	mg/L	INAB
Chromium (Ground Water)	177	ICPMS	<2	ug/L	INAB
Coliforms (Total)	157	Filtration / Incubation	<10	cfu/100ml	
Conductivity (Ground Water at 20C)	112	Electrometry	633.0	µscm -1@20C	INAB
Copper (Ground Water)	177	ICPMS	1	ug/L	INAB
Dissolved oxygen (mg/l)	715	DO Meter	5.8	mg/L	
Hardness Total (Ground Water)	111	Colorimetry	379.0	mg/L CaCO3	INAB
Iron (Dissolved)	177	ICPMS	134.7	ug/L	
Iron (Ground Water)	177	ICPMS	1864	ug/L	INAB
Lead (Ground Water)	177	ICPMS	<1	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	9.1	mg/L	INAB
Manganese (Dissolved)	177	ICPMS	90	ug/L	

Signed: A Harmon **Date: 17/08/2023**

Aoife Harmon - Laboratory Supervisor

Acc. : Accredited Parameters by ISO/IEC 17025:2017

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** : The test result for this parameter may be invalid as it has exceeded the recommended holding time (BS EN ISO 5667-3:2018)
* Subcontracted *

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Customer supplied information appear in italics.

Customer	*Adam Keegan*	Lab Report Ref. No.	7820/042/02
	Hydro-Environmental Services	Date of Receipt	28/07/2023
	22 Lower Main Street	*Sampled On*	*28/07/2023*
	Dungarvan	Date Testing Commenced	28/07/2023
		Received or Collected	By Fitz: Pick up Ross
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	*P1655*	Date of Report	17/08/2023
Customer Ref	*Derrygreenagh PW1 step2*	*Sample Type*	*Ground Water*
Ref 2			
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Manganese (Ground Water)	177	ICPMS	90	ug/L	INAB
Mercury (Ground water)	178	ICPMS	<0.08	ug/L	INAB
Nickel (Ground Water)	177	ICPMS	40	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	<1	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	1.13	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.11	pH Units	INAB
Polyaromatic Hydrocarbons (GCMS)	200	GCMS	<0.1	ug/L	
Potassium (Ground Water)	184	ICPMS	1.6	mg/L	INAB
Redox Potential	232	Electrometry	228	m/v	
Selenium (Ground Water)	177	ICPMS	2	ug/L	
Sodium (Ground water)	184	ICPMS	9.8	mg/L	INAB
Sulphate (Ground Water)	119	Colorimetry	20	mg/L as SO4	INAB
Temperature (On site)	0	By Subcontractor	10.9	degree C	
Total Organic Carbon	316	TOC analyser (NPOC)	1.5	mg/L	
TPH (>C10-12)	188	GC-FID	<1	ug/L	
TPH (>C10-40)	188	GC-FID	<1	ug/L	
TPH (>C12-14)	188	GC-FID	<1	ug/L	
TPH (>C14-16)	188	GC-FID	<1	ug/L	
TPH (>C16-18)	188	GC-FID	<1	ug/L	
TPH (>C18-20)	188	GC-FID	<1	ug/L	

Signed: A Harmon **Date: 17/08/2023**

Aoife Harmon - Laboratory Supervisor

Acc. : Accredited Parameters by ISO/IEC 17025:2017

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* Subcontracted *

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Customer supplied information appear in italics.

Customer	*Adam Keegan*	Lab Report Ref. No.	7820/042/02
	Hydro-Environmental Services	Date of Receipt	28/07/2023
	22 Lower Main Street	*Sampled On*	*28/07/2023*
	Dungarvan	Date Testing Commenced	28/07/2023
		Received or Collected	By Fitz: Pick up Ross
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	*P1655*	Date of Report	17/08/2023
Customer Ref	*Derrygreenagh PW1 step2*	*Sample Type*	*Ground Water*
Ref 2			
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
TPH (>C20-22)	188	GC-FID	<1	ug/L	
TPH (>C22-24)	188	GC-FID	<1	ug/L	
TPH (>C24-26)	188	GC-FID	<1	ug/L	
TPH (>C26-28)	188	GC-FID	<1	ug/L	
TPH (>C28-30)	188	GC-FID	<1	ug/L	
TPH (>C30-32)	188	GC-FID	<1	ug/L	
TPH (>C32-34)	188	GC-FID	<1	ug/L	
TPH (>C34-36)	188	GC-FID	<1	ug/L	
TPH (>C36-38)	188	GC-FID	<1	ug/L	
TPH (>C38-40)	188	GC-FID	<1	ug/L	
Zinc (Ground Water)	177	ICPMS	20	ug/L	INAB

Signed: A Harmon **Date: 17/08/2023**

Aoife Harmon - Laboratory Supervisor

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	Hydro-Environmental Services	Date of Receipt	28/07/2023
	22 Lower Main Street	*Sampled On*	*28/07/2023*
	Dungarvan	Date Testing Commenced	28/07/2023
		Received or Collected	By Fitz: Pick up Ross
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	*P1655*	Date of Report	17/08/2023
Customer Ref	*Derrygreenagh PW1 step3*	*Sample Type*	*Groundwater*
Ref 2			
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Alkalinity (Ground Water)	102	Colorimetry	361	mg/L CaCO3	INAB
Ammonia (Ground Water)	114	Colorimetry	0.51	mg/L as N	INAB
Arsenic (Ground Water)	177	ICPMS	4	ug/L	INAB
Bicarbonate (CaCO3)	102	Colorimetry	360.6	mg/L CaCO3	
Boron (Ground Water)	177	ICPMS	<16	ug/L	INAB
BTEX Total (Ground Water)	154	GCMS	<1	ug/L	
Cadmium (Ground Water)	177	ICPMS	<1	ug/L	INAB
Calcium (Ground Water)	184	ICPMS	125.4	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	18	mg/L	INAB
Chromium (Ground Water)	177	ICPMS	<2	ug/L	INAB
Coliforms (Total)	157	Filtration / Incubation	<10	cfu/100ml	
Conductivity (Ground Water at 20C)	112	Electrometry	635.0	µscm -1@20C	INAB
Copper (Ground Water)	177	ICPMS	1	ug/L	INAB
Dissolved oxygen (mg/l)	715	DO Meter	5.3	mg/L	
Hardness Total (Ground Water)	111	Colorimetry	381.0	mg/L CaCO3	INAB
Iron (Dissolved)	177	ICPMS	112.3	ug/L	
Iron (Ground Water)	177	ICPMS	2014	ug/L	INAB
Lead (Ground Water)	177	ICPMS	<1	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	9.4	mg/L	INAB
Manganese (Dissolved)	177	ICPMS	104	ug/L	

Signed: A Harmon **Date: 17/08/2023**

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	Hydro-Environmental Services	Date of Receipt	28/07/2023
	22 Lower Main Street	*Sampled On*	*28/07/2023*
	Dungarvan	Date Testing Commenced	28/07/2023
		Received or Collected	By Fitz: Pick up Ross
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	*P1655*	Date of Report	17/08/2023
Customer Ref	*Derrygreenagh PW1 step3*	*Sample Type*	*Groundwater*
Ref 2			
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Manganese (Ground Water)	177	ICPMS	105	ug/L	INAB
Mercury (Ground water)	178	ICPMS	0.09	ug/L	INAB
Nickel (Ground Water)	177	ICPMS	36	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	1	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	<0.01	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.10	pH Units	INAB
Polyaromatic Hydrocarbons (GCMS)	200	GCMS	<0.1	ug/L	
Potassium (Ground Water)	184	ICPMS	1.9	mg/L	INAB
Redox Potential	232	Electrometry	235	m/v	
Selenium (Ground Water)	177	ICPMS	3	ug/L	
Sodium (Ground water)	184	ICPMS	11.2	mg/L	INAB
Sulphate (Ground Water)	119	Colorimetry	19	mg/L as SO4	INAB
Temperature (On site)	0	By Subcontractor	10.6	degree C	
Total Organic Carbon	316	TOC analyser (NPOC)	1.6	mg/L	
TPH (>C10-12)	188	GC-FID	<1	ug/L	
TPH (>C10-40)	188	GC-FID	<1	ug/L	
TPH (>C12-14)	188	GC-FID	<1	ug/L	
TPH (>C14-16)	188	GC-FID	<1	ug/L	
TPH (>C16-18)	188	GC-FID	<1	ug/L	
TPH (>C18-20)	188	GC-FID	<1	ug/L	

Signed: A Harmon **Date: 17/08/2023**

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Email: info@fitzsci.ie

A copy of this certificate is available on www.fitzsci.ie.

Customer supplied information appear in italics.

Customer	*Adam Keegan*	Lab Report Ref. No.	7820/042/01
	Hydro-Environmental Services	Date of Receipt	28/07/2023
	22 Lower Main Street	*Sampled On*	*28/07/2023*
	Dungarvan	Date Testing Commenced	28/07/2023
		Received or Collected	By Fitz: Pick up Ross
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	*P1655*	Date of Report	17/08/2023
Customer Ref	*Derrygreenagh PW1 step3*	*Sample Type*	*Groundwater*
Ref 2			
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
TPH (>C20-22)	188	GC-FID	<1	ug/L	
TPH (>C22-24)	188	GC-FID	<1	ug/L	
TPH (>C24-26)	188	GC-FID	<1	ug/L	
TPH (>C26-28)	188	GC-FID	<1	ug/L	
TPH (>C28-30)	188	GC-FID	<1	ug/L	
TPH (>C30-32)	188	GC-FID	<1	ug/L	
TPH (>C32-34)	188	GC-FID	<1	ug/L	
TPH (>C34-36)	188	GC-FID	<1	ug/L	
TPH (>C36-38)	188	GC-FID	<1	ug/L	
TPH (>C38-40)	188	GC-FID	<1	ug/L	
Zinc (Ground Water)	177	ICPMS	19	ug/L	INAB

Signed: A Harmon **Date: 17/08/2023**

Aoife Harmon - Laboratory Supervisor

Acc. : Accredited Parameters by ISO/IEC 17025:2017

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Customer supplied information appear in italics.

Customer	*Adam Keegan*	Lab Report Ref. No.	7820/043/01
	Hydro-Environmental Services	Date of Receipt	02/08/2023
	22 Lower Main Street	*Sampled On*	*02/08/2023*
	Dungarvan	Date Testing Commenced	02/08/2023
		Received or Collected	By Fitz: Pick up Derek
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	*P1655-0/002*	Date of Report	28/08/2023
Customer Ref	*PW1-CRT Day 2*	*Sample Type*	*Ground Water*
Ref 2			
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Alkalinity (Ground Water)	102	Colorimetry	371	mg/L CaCO3	INAB
Ammonia (Ground Water)	114	Colorimetry	0.40	mg/L as N	INAB
Arsenic (Dissolved)	177	ICPMS	3.3	ug/L	
Arsenic (Ground Water)	177	ICPMS	3	ug/L	INAB
Bicarbonate (CaCO3)	102	Colorimetry	370.7	mg/L CaCO3	
Boron (Ground Water)	177	ICPMS	<16	ug/L	INAB
BTEX Total (Ground Water)	154	GCMS	<1	ug/L	
Cadmium (Dissolved)	177	ICPMS	<0.5	ug/L	
Cadmium (Ground Water)	177	ICPMS	<1	ug/L	INAB
Calcium (Ground Water)	184	ICPMS	122.2	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	18	mg/L	INAB
Chromium (Ground Water)	177	ICPMS	<2	ug/L	INAB
Coliforms (Faecal)	140	Filtration / Incubation	<10	cfu/100ml	
Coliforms (Total)	157	Filtration / Incubation	<10	cfu/100ml	
Conductivity (Ground Water at 20C)	112	Electrometry	638.0	µscm -1@20C	INAB
Copper (Dissolved)	177	ICPMS	0.1	ug/L	
Copper (Ground Water)	177	ICPMS	<1	ug/L	INAB
Dissolved oxygen (mg/l)	715	DO Meter	7.5	mg/L	
Iron (Dissolved)	177	ICPMS	72.1	ug/L	
Iron (Ground Water)	177	ICPMS	1608	ug/L	INAB

Signed: A Harmon **Date: 28/08/2023**

Aoife Harmon - Laboratory Supervisor

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Customer supplied information appear in italics.

Customer	*Adam Keegan*	Lab Report Ref. No.	7820/043/01
	Hydro-Environmental Services	Date of Receipt	02/08/2023
	22 Lower Main Street	*Sampled On*	*02/08/2023*
	Dungarvan	Date Testing Commenced	02/08/2023
		Received or Collected	By Fitz: Pick up Derek
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	*P1655-0/002*	Date of Report	28/08/2023
Customer Ref	*PW1-CRT Day 2*	*Sample Type*	*Ground Water*
Ref 2			
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Lead (Dissolved)	177	ICPMS	<0.2	ug/L	
Lead (Ground Water)	177	ICPMS	<1	ug/L	INAB
Magnesium (Dissolved)	184	ICPMS	9.1	mg/L	
Magnesium (Ground Water)	184	ICPMS	9.2	mg/L	INAB
Manganese (Dissolved)	177	ICPMS	159	ug/L	
Manganese (Ground Water)	177	ICPMS	160	ug/L	INAB
Mercury (Ground water)	178	ICPMS	<0.08	ug/L	INAB
Nickel (Dissolved)	177	ICPMS	15.7	ug/L	
Nickel (Ground Water)	177	ICPMS	27	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	1	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	0.73	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.08	pH Units	INAB
Polyaromatic Hydrocarbons (GCMS)	200	GCMS	<0.1	ug/L	
Potassium (Ground Water)	184	ICPMS	1.5	mg/L	INAB
Redox Potential	232	Electrometry	214	m/v	
Selenium (Ground Water)	177	ICPMS	2	ug/L	
Sodium (Ground water)	184	ICPMS	9.7	mg/L	INAB
Sulphate (Ground Water)	119	Colorimetry	21	mg/L as SO4	INAB
Temperature (On site)	0	By Subcontractor	10.4	degree C	
Total Organic Carbon	316	TOC analyser (NPOC)	1.7	mg/L	

Signed: A Harmon **Date: 28/08/2023**

Aoife Harmon - Laboratory Supervisor

Acc. : Accredited Parameters by ISO/IEC 17025:2017

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Customer	*Adam Keegan*	Lab Report Ref. No.	7820/043/01
	Hydro-Environmental Services	Date of Receipt	02/08/2023
	22 Lower Main Street	*Sampled On*	*02/08/2023*
	Dungarvan	Date Testing Commenced	02/08/2023
		Received or Collected	By Fitz: Pick up Derek
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	*P1655-0/002*	Date of Report	28/08/2023
Customer Ref	*PW1-CRT Day 2*	*Sample Type*	*Ground Water*
Ref 2			
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
TPH (>C10-12)	188	GC-FID	<1	ug/L	
TPH (>C10-40)	188	GC-FID	<1	ug/L	
TPH (>C12-14)	188	GC-FID	<1	ug/L	
TPH (>C14-16)	188	GC-FID	<1	ug/L	
TPH (>C16-18)	188	GC-FID	<1	ug/L	
TPH (>C18-20)	188	GC-FID	<1	ug/L	
TPH (>C20-22)	188	GC-FID	<1	ug/L	
TPH (>C22-24)	188	GC-FID	<1	ug/L	
TPH (>C24-26)	188	GC-FID	<1	ug/L	
TPH (>C26-28)	188	GC-FID	<1	ug/L	
TPH (>C28-30)	188	GC-FID	<1	ug/L	
TPH (>C30-32)	188	GC-FID	<1	ug/L	
TPH (>C32-34)	188	GC-FID	<1	ug/L	
TPH (>C34-36)	188	GC-FID	<1	ug/L	
TPH (>C36-38)	188	GC-FID	<1	ug/L	
TPH (>C38-40)	188	GC-FID	<1	ug/L	
Zinc (Dissolved)	177	ICPMS	11.6	ug/L	
Zinc (Ground Water)	177	ICPMS	21	ug/L	INAB

Signed: A Harmon **Date: 28/08/2023**

Aoife Harmon - Laboratory Supervisor

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Customer supplied information appear in italics.

Customer	*Adam Keegan* *Hydro-Environmental Services* *22 Lower Main Street* *Dungarvan* *Co Waterford*	Lab Report Ref. No.	7820/044/01
		Date of Receipt	08/08/2023
		Sampled On	*08/08/2023*
		Date Testing Commenced	08/08/2023
		Received or Collected	By Fitz: Pick up Ross
		Condition on Receipt	Acceptable
Customer PO	*P1655-0*	Date of Report	28/08/2023
Customer Ref	*P1655-PW1_CRT Day 7*	*Sample Type*	*Ground Water*
Ref 2			
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Alkalinity (Ground Water)	102	Colorimetry	372	mg/L CaCO3	INAB
Ammonia (Ground Water)	114	Colorimetry	0.35	mg/L as N	INAB
Arsenic (Ground Water)	177	ICPMS	3	ug/L	INAB
Bicarbonate (CaCO3)	102	Colorimetry	372.4	mg/L CaCO3	
Boron (Ground Water)	177	ICPMS	<16	ug/L	INAB
BTEX Total (Ground Water)	154	GCMS	<1	ug/L	
Cadmium (Ground Water)	177	ICPMS	<1	ug/L	INAB
Calcium (Ground Water)	184	ICPMS	117.6	mg/L	INAB
Chloride (Ground Water)	100	Colorimetry	19	mg/L	INAB
Chromium (Ground Water)	177	ICPMS	<2	ug/L	INAB
Coliforms (Total)	157	Filtration / Incubation	<10	cfu/100ml	
Conductivity (Ground Water at 20C)	112	Electrometry	625.0	µscm -1@20C	INAB
Copper (Ground Water)	177	ICPMS	<1	ug/L	INAB
Dissolved oxygen (mg/l)	715	DO Meter	6.6	mg/L	
Hardness Total (Ground Water)	111	Colorimetry	366.0	mg/L CaCO3	INAB
Iron (Dissolved)	177	ICPMS	12.1	ug/L	
Iron (Ground Water)	177	ICPMS	1095	ug/L	INAB
Lead (Ground Water)	177	ICPMS	<1	ug/L	INAB
Magnesium (Ground Water)	184	ICPMS	92.4	mg/L	INAB
Manganese (Dissolved)	177	ICPMS	132	ug/L	

Signed: A Harmon **Date: 28/08/2023**

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Customer	*Adam Keegan*	Lab Report Ref. No.	7820/044/01
	Hydro-Environmental Services	Date of Receipt	08/08/2023
	22 Lower Main Street	*Sampled On*	*08/08/2023*
	Dungarvan	Date Testing Commenced	08/08/2023
		Received or Collected	By Fitz: Pick up Ross
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	*P1655-0*	Date of Report	28/08/2023
Customer Ref	*P1655-PW1_CRT Day 7*	*Sample Type*	*Ground Water*
Ref 2			
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Manganese (Ground Water)	177	ICPMS	211	ug/L	INAB
Mercury (Ground water)	178	ICPMS	<0.08	ug/L	INAB
Nickel (Ground Water)	177	ICPMS	25	ug/L	INAB
Nitrate (Ground Water)	103	Colorimetry	1	mg/L as N	INAB
Nitrite (Ground Water)	118	Colorimetry	<0.01	mg/L as N	INAB
pH (Ground Water)	110	Electrometry	7.13	pH Units	INAB
Polyaromatic Hydrocarbons (GCMS)	200	GCMS	<0.1	ug/L	
Potassium (Ground Water)	184	ICPMS	13.8	mg/L	INAB
Redox Potential	232	Electrometry	228	m/v	
Selenium (Ground Water)	177	ICPMS	1	ug/L	
Sodium (Ground water)	184	ICPMS	96.4	mg/L	INAB
Sulphate (Ground Water)	119	Colorimetry	21	mg/L as SO4	INAB
Total Organic Carbon	316	TOC analyser (NPOC)	1.5	mg/L	
TPH (>C10-12)	188	GC-FID	<1	ug/L	
TPH (>C10-40)	188	GC-FID	<1	ug/L	
TPH (>C12-14)	188	GC-FID	<1	ug/L	
TPH (>C14-16)	188	GC-FID	<1	ug/L	
TPH (>C16-18)	188	GC-FID	<1	ug/L	
TPH (>C18-20)	188	GC-FID	<1	ug/L	
TPH (>C20-22)	188	GC-FID	<1	ug/L	

Signed: A Harmon **Date: 28/08/2023**

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Customer supplied information appear in italics.

Customer	*Adam Keegan*	Lab Report Ref. No.	7820/044/01
	Hydro-Environmental Services	Date of Receipt	08/08/2023
	22 Lower Main Street	*Sampled On*	*08/08/2023*
	Dungarvan	Date Testing Commenced	08/08/2023
		Received or Collected	By Fitz: Pick up Ross
	Co Waterford	Condition on Receipt	Acceptable
Customer PO	*P1655-0*	Date of Report	28/08/2023
Customer Ref	*P1655-PW1_CRT Day 7*	*Sample Type*	*Ground Water*
Ref 2			
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
TPH (>C22-24)	188	GC-FID	<1	ug/L	
TPH (>C24-26)	188	GC-FID	<1	ug/L	
TPH (>C26-28)	188	GC-FID	<1	ug/L	
TPH (>C28-30)	188	GC-FID	<1	ug/L	
TPH (>C30-32)	188	GC-FID	<1	ug/L	
TPH (>C32-34)	188	GC-FID	<1	ug/L	
TPH (>C34-36)	188	GC-FID	<1	ug/L	
TPH (>C36-38)	188	GC-FID	<1	ug/L	
TPH (>C38-40)	188	GC-FID	<1	ug/L	
Zinc (Ground Water)	177	ICPMS	20	ug/L	INAB

Signed: A Harmon **Date: 28/08/2023**

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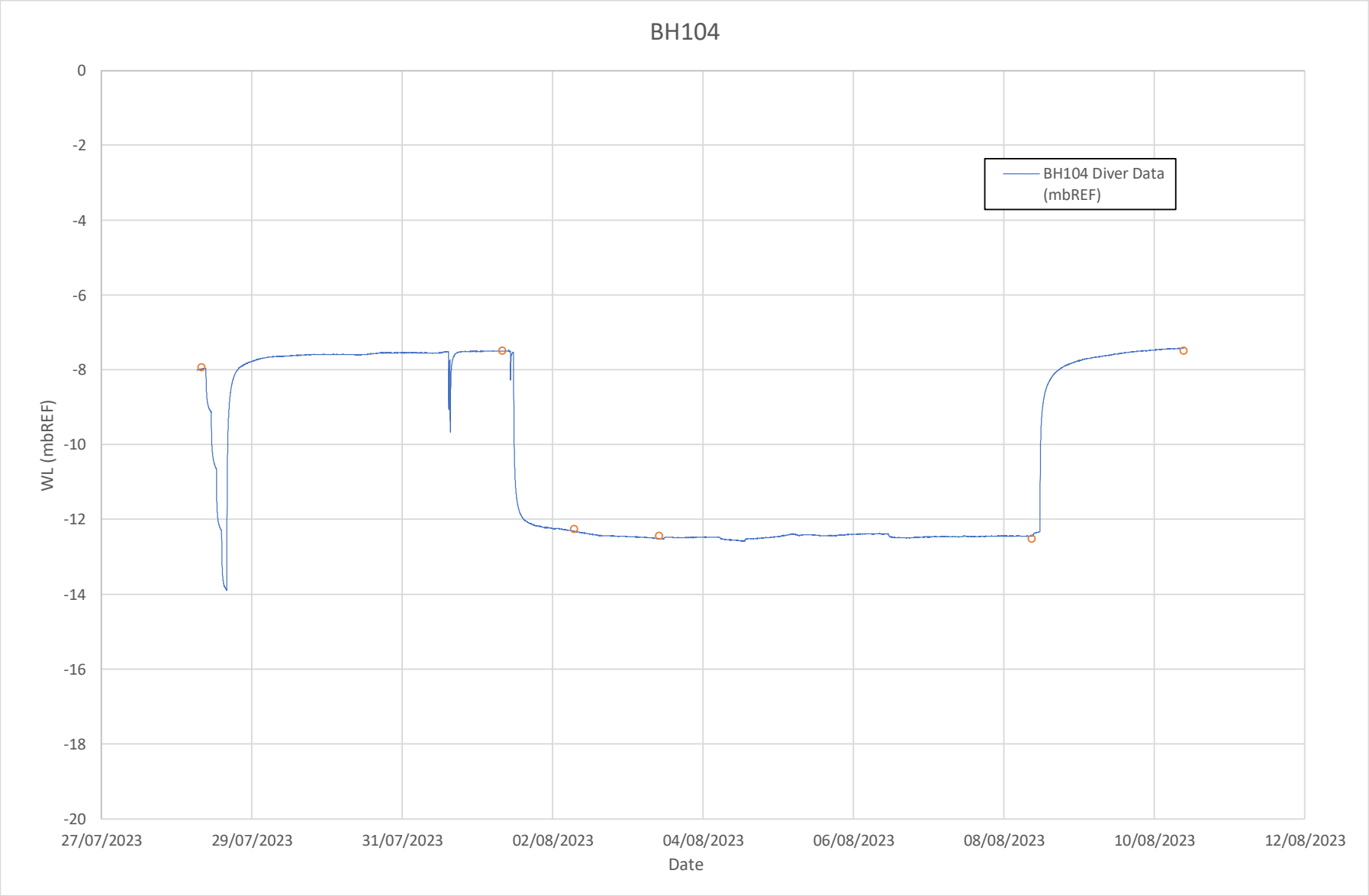
APPENDIX IV
CONSTANT RATE PUMPING TEST DATA PLOTS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WL (mbREF)
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-4
-6
-8
-10
-12
-14
-16
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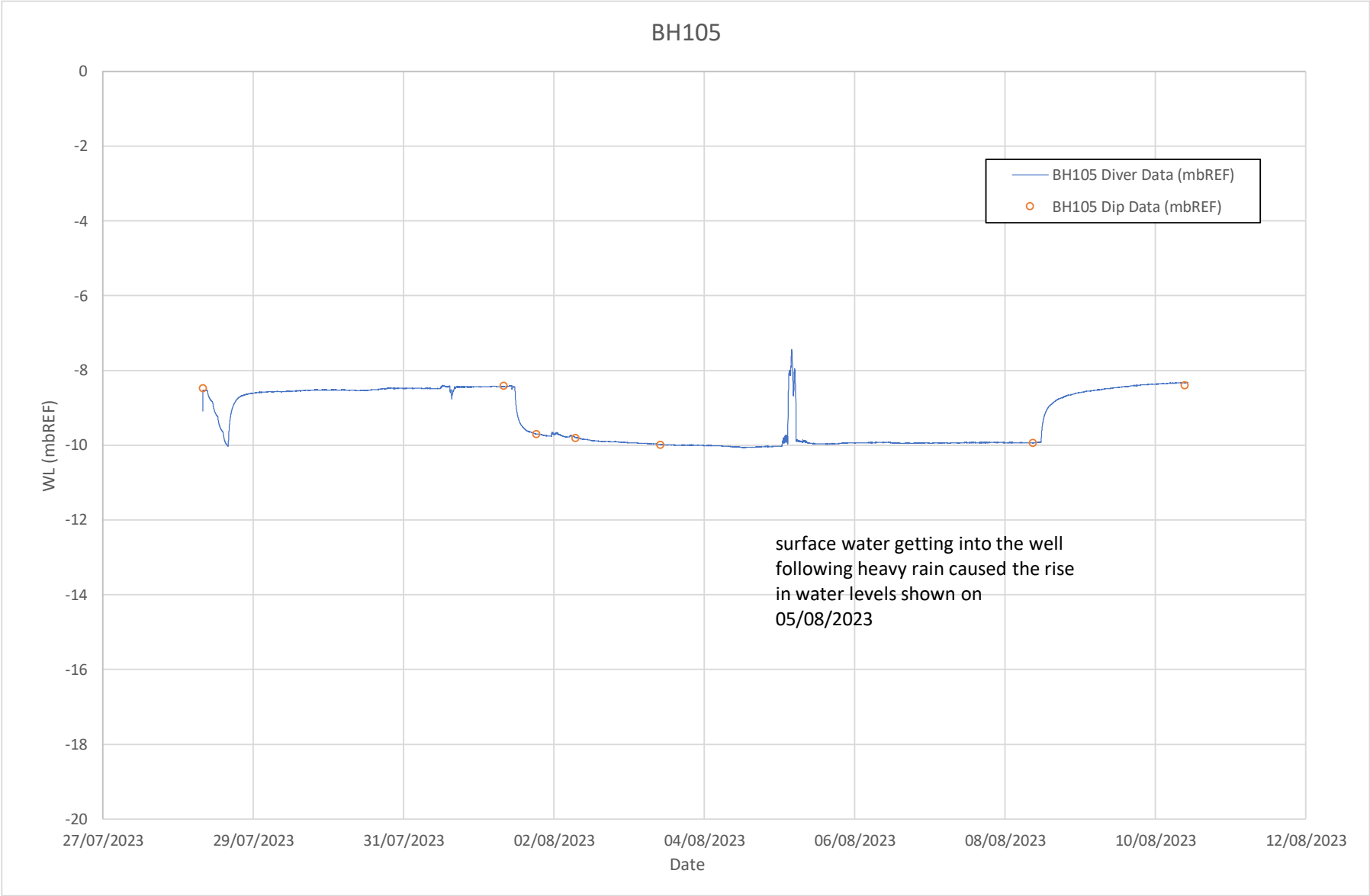
27/07/2023
29/07/2023
31/07/2023
02/08/2023
04/08/2023
06/08/2023
08/08/2023
10/08/2023
12/08/2023
Date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27/07/2023
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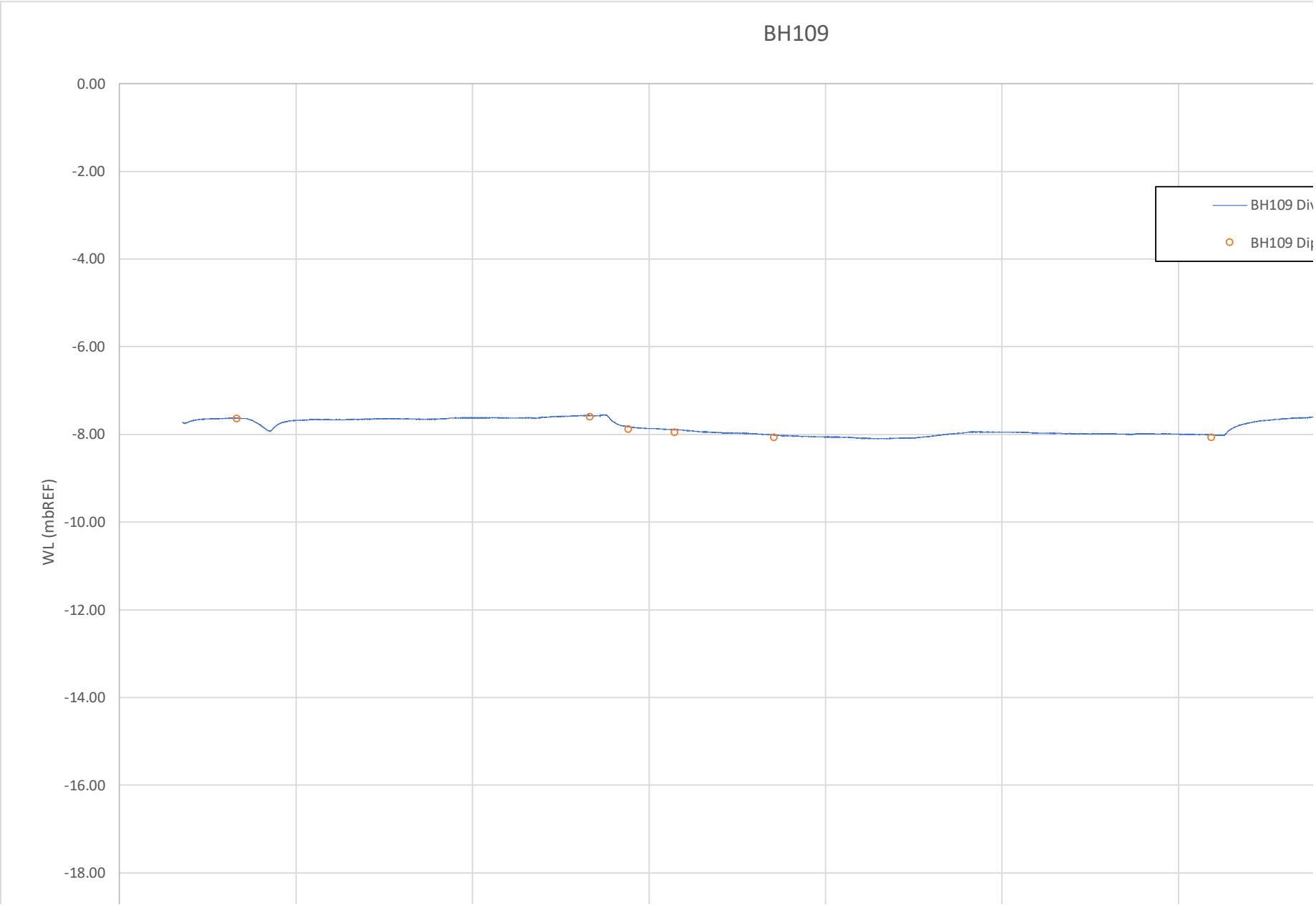
04/08/2023
06/08/2023
08/08/2023
10/08/2023
12/08/2023
Date
BH105 Diver Data (mbREF)
BH105 Dip Data (mbREF)
surface water getting into the well following heavy rain caused the rise in water levels shown on 05/08/2023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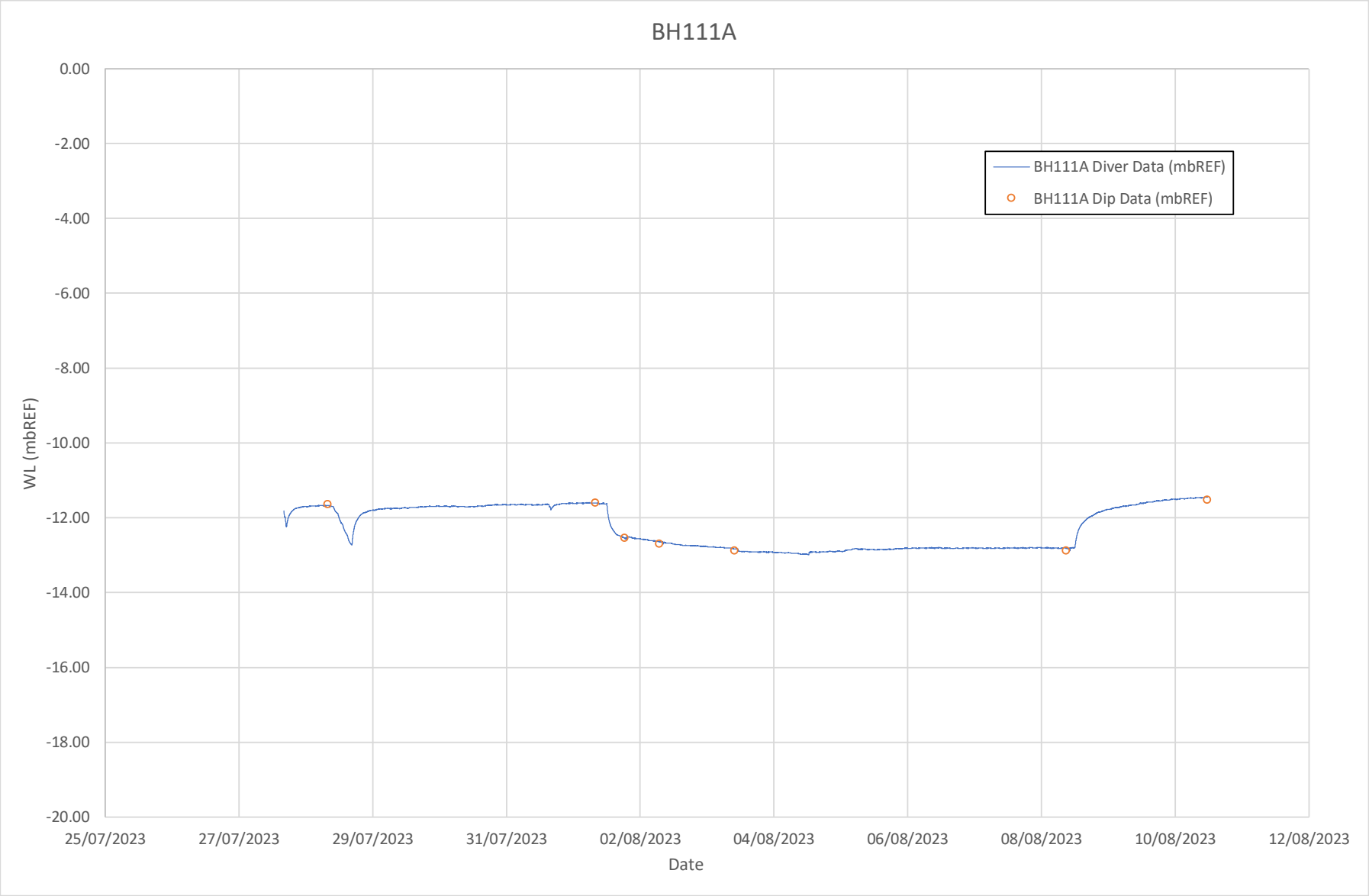
WL (mbREF)
BH109 Div
BH109 Dip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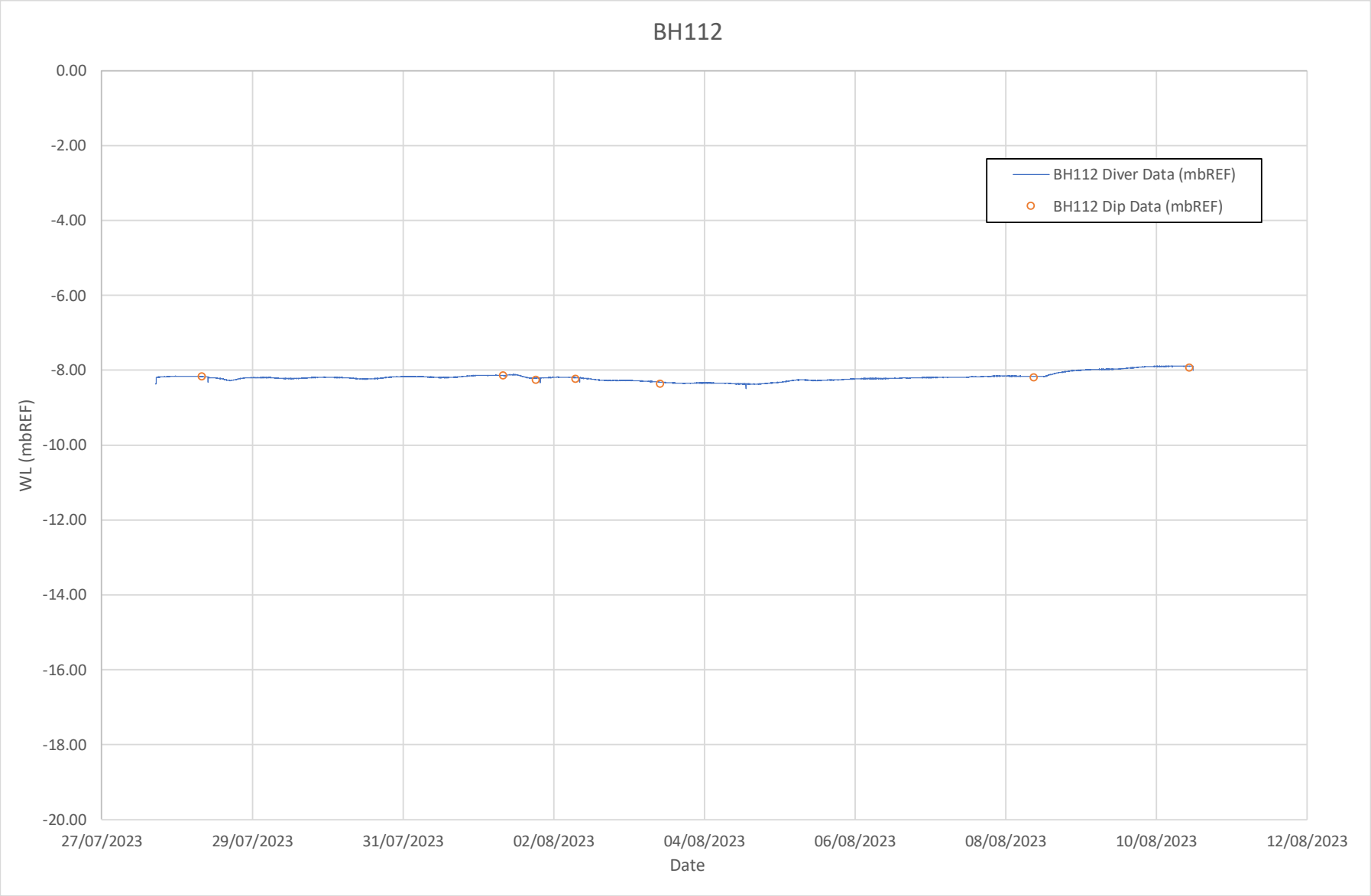
27/07/2023
29/07/2023
31/07/2023
02/08/2023
04/08/2023
06/08/2023
08/08/2023
10/08/2023
12/08/2023
Date
BH111A Diver Data (mbREF)
BH111A Dip Data (mbREF)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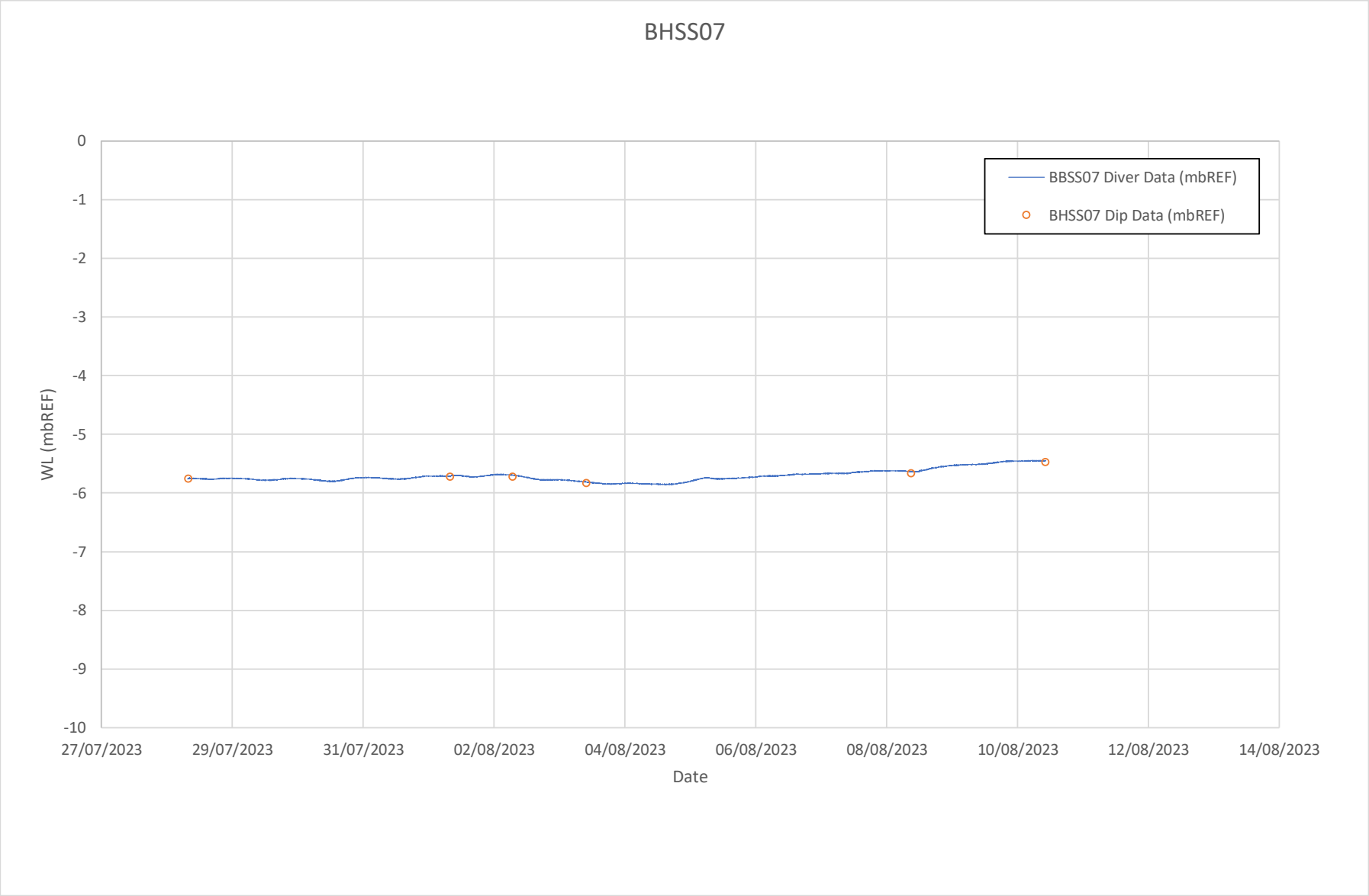
29/07/2023
31/07/2023
02/08/2023
04/08/2023
06/08/2023
08/08/2023
10/08/2023
12/08/2023
Date
BH112 Diver Data (mbREF)
BH112 Dip Data (mbREF)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BHSS07 Dip Data (mbREF)
WL (mbREF)
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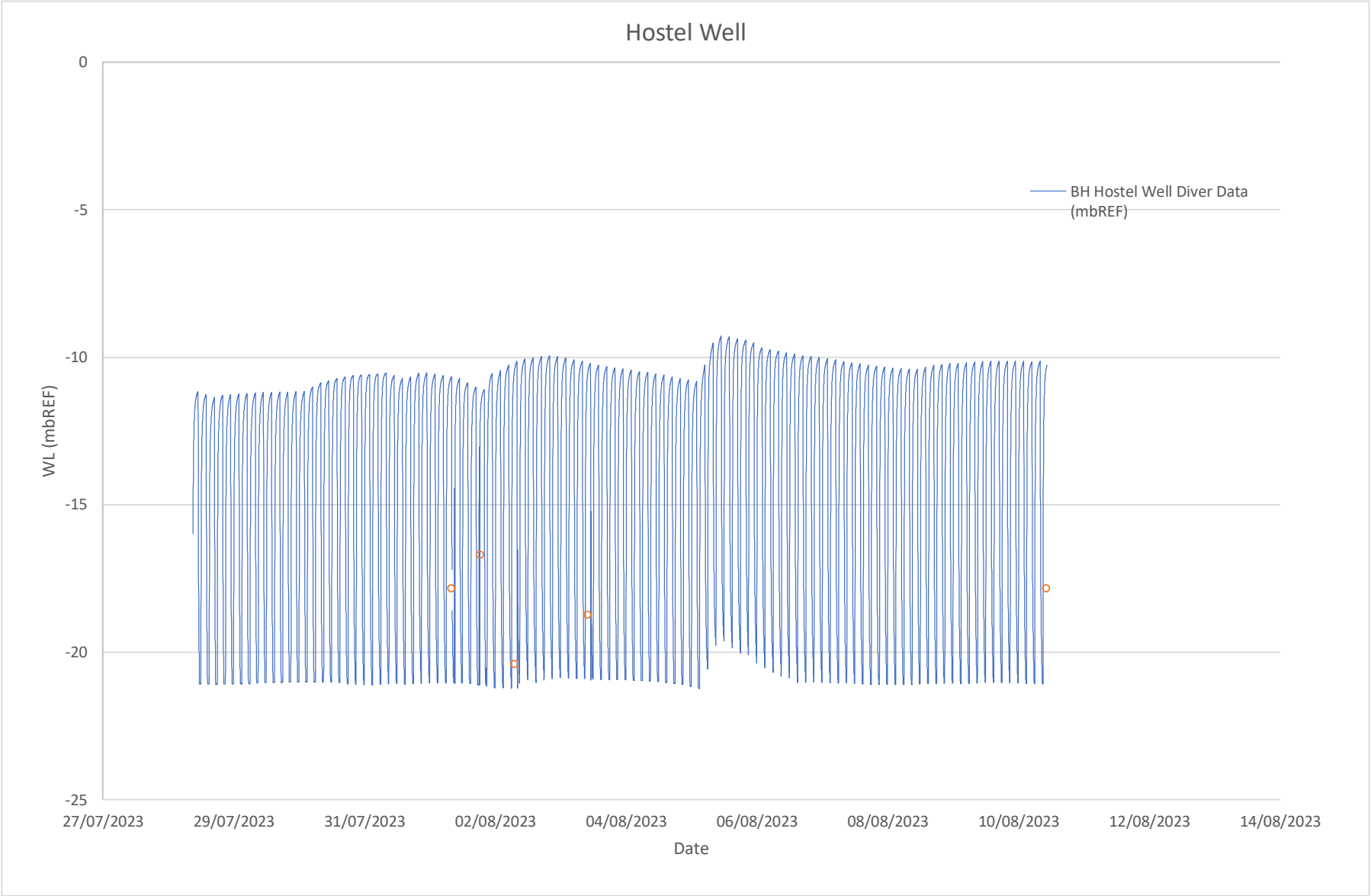
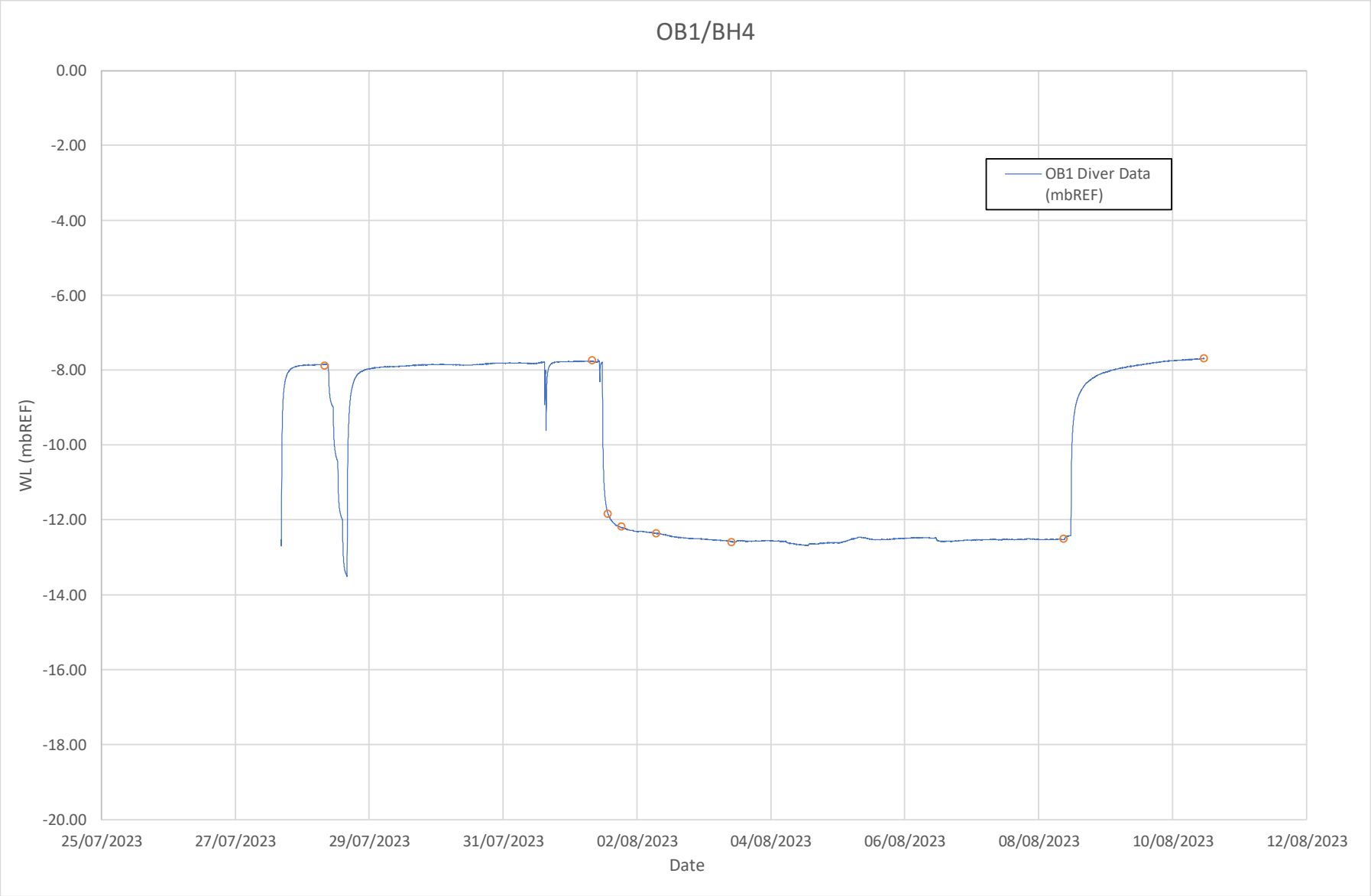
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
27/07/2023
29/07/2023
31/07/2023
02/08/2023
04/08/2023
06/08/2023
08/08/2023
10/08/2023
12/08/2023
14/08/2023
Date


Hostel Well
0
-5
-10
-15
-20
-25
WL (mbREF)
BH Hostel Well Diver Data (mbREF)
27/07/2023
29/07/2023
31/07/2023
02/08/2023
04/08/2023
06/08/2023
08/08/2023
10/08/2023
12/08/2023
14/08/2023
Date


OB1/BH4
0.00
-2.00
-4.00
-6.00
-8.00
-10.00
-12.00
-14.00
-16.00
-18.00
-20.00
WL (mbREF)
25/07/2023
27/07/2023
29/07/2023
31/07/2023
02/08/2023
04/08/2023
06/08/2023
08/08/2023
10/08/2023
12/08/2023
Date
OB1 Diver Data (mbREF)

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Appendix 12
Laboratory Test Results

Project ID 2023OY104

Project Name Derrygreenagh Power

Schedule ID 2023OY104_all All 3 sections.

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Sulphate Total	Chloride Content	pH	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	CBR	Consolidation	Pressures
	Total scheduled						178	151	44		154	99	95	1	24		24		2	51	2	45	10	
	Completed to date						178	151	44		154	98	95	1	24		24		2	39	2	156	10	
BH109	2.00	2.45	U100	6	20.4.23	a.	1	1			1												1	
BH109	6.00	6.50	B	19	21.4.23	a.	1	1			1	1								1				
BH113	4.00	4.50	B	13	24.4.23	a.	1	1			1	1								1				
BH114	2.00	2.50	B	7	24.4.23	a.	1	1			1	1								1				
BHTo5	5		ES		1.6.23	ALS																		
TPSS02	8	ES 1	ES 1		5.5.23	als																		
BH101	1.00	1.50	B	4	13.4.23	AX21	1	1			1	1	1											
BH101	2.00	2.45	U100	5	13.4.23	AX21	1	1			1												1	
BH101	4.00	4.50	B	13	13.4.23	AX21	1	1			1													
BH102	3.00	3.45	U100	9	17.4.23	AX21	1	1			1												1	
BH102	4.00	4.50	B	13	17.4.23	AX21	1	1			1									1		5		
BH103	2.00	2.50	B	7	17.4.23	AX21	1	1			1	1												
BH103	3.00	3.50	B	10	17.4.23	AX21	1	1			1	1								1				
BH105	3.00	3.45	U100	9	18.4.23	AX21	1	1			1												1	
BH105	4.00	4.50	B	12	18.4.23	AX21	1	1			1	1								1				
BH106	2.00	2.50	B	7	20.4.23	AX21	1	0*			1	1								1				
BH112	3.00	3.50	B	10	12.4.23	AX21	1				1									1		5		
BH115	3.00	3.50	B	10	21.4.23	AX21							1									0*		
BH115	3.00	3.50	B	10	21.4.23	AX21	1	1			1	1								1				
BH104	1.00	1.45	U100	3	18.4.23	AX21?/	1	1			1												1	
BH104	2.00	2.50	B	7	18.4.23	AX21?/	1	1			1	0*	1											
BH104	4.00	4.50	B	13	18.4.23	AX21?/	1	1			1	1								1				
BH107	2.00	2.50	B	7	26.4.23	AX24	1	1			1									1		5		
BH107	3.00	3.50	B	10	26.4.23	ax24	1				1													
BH108	3.00	3.50	B	10	25.4.23	ax24	1	1																
BH110	1.00	1.50	B	4	27.4.23	AX24	1	1			1		1							1		5		
BH110	3.00	3.50	B	10	27.4.23	AX24	1	1			1	1								1				
BH111	3.00	3.50	B	10	2.5.23	AX24	1	1																
BH111	3.50		D	11	2.5.23	AX24	1				1													
BH111	4.00	4.50	B	13	2.5.23	AX24	1				1									1		5		
BHSS02	1.00	1.45	U100	3	5.5.23	AX24																	1	
BHSS02	3.00	3.50	B	9	5.5.23	AX24	1	1			1	1	1								1	5		
BHSS04	1.00	1.45	U100	3	4.5.23	AX24																		
BHSS05	1.00	1.45	U100	3	3.5.23	AX24	1	1			1												1	
BHSS05	3.00	3.50	B	10	3.5.23	AX24	1	1			1	1	1											
TP201	2.80	3.00	B	2	2.5.23	AX25	1	1			1	1	1											
TP201	3.40	3.60	B	4	2.5.23	AX25	1	1																
TP202	3.00	3.20	B	2	2.5.23	AX25	1	1			0*	0*	1											
TP203	2.80	3.00	B	2	3.5.23	AX25	1	0*			0*	0*	1											
TP204	2.50	2.70	B	5	2.5.23	AX25	1	1			1	1								1				
TP204	2.50	2.70	D	6	2.5.23	AX25							1											
TP205	2.50	2.70	B	2	3.5.23	AX25	1	1			1	1	1											
TP207	1.40	1.60	B	3	3.5.23	AX25	1	1			1	1	1											
TP209	1.30	1.50	B	2	3.5.23	AX25	1	1			1	1	1							1		5		
TP217	1.60	1.80	B	4	5.5.23	AX25	1	1			1	1	1							1		5		
TP220	2.40	2.60	B	4	4.5.23	AX25	1	1			1									1		4		
TP206A	0.50	0.70	B	1	8.5.23	AX26	1	1			1	1	1							1		5		
TP210	0.50	0.70	B	1	8.5.23	AX26	1	1			1	1	1							1		5		
TP211	1.00	1.20	B	3	9.5.23	AX26	1	1			1	1	1							1		5		
TP212	1.10	1.30	B	3	9.5.23	AX26	1	1			1	1								1		5		
TP216	0.50	0.70	B	1	5.5.23	AX26	1	1			1	1	1							1		5		
TP218	0.60	0.80	B	1	4.5.23	AX26	1	1			1	1	1							1		5		
TP219	0.60	0.80	B	1	4.5.23	AX26	1	1			1	1	1											

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Sulphate Total	Chloride Content	ph	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	CBR	Consolidation	Pressures
TP214	1.70	1.90	B	2	10.5.23	AX26?	1	1			1	1	1											
TP215	1.60	1.80	B	3	10.5.23	AX26?	1	1			1	1	1											
TP302	0.90	1.00	B	3	16.5.23	ax27	1	1			1	1	1											
TP303	2.20	2.30	B	3	16.5.23	ax27	1	1			1	1	1											
TP305	0.80	0.80	B	1	17.5.23	ax27	1	1			1	1	1											
TPSS02	1.90	2.10	B	1	10.5.23	AX27	1	1			1	1	1											
TPSS04	2.10	2.20	B	1	11.5.23	AX27	1	1			1	1	1											
TPSS06	2.00	2.20	B	2	11.5.23	AX27	1	1			1	1	1											
TPT14	1.50	1.60	B	4	16.5.23	AX27	1	1			1	0*	1											
TPT16	0.80	0.90	B	3	15.5.23	AX27	1	1			1	1	1											
TPT18	1.30	1.40	B	3	15.5.23	AX27	1	1			1	1	1											
TP308	1.30	1.40	B	3	22.5.23	ax43	1	1			1	1	1											
TPBP01	1.40	1.50	B	3	23.5.23	ax43	1	1			1	1	1											
TPBP03	1.40	1.50	B	3	23.5.23	ax43	1													0		0		
TPBP05	1.50	1.60	B	4	23.5.23	ax43	1													0		0		
TPBP06	1.20	1.30	B	4	24.5.23	ax43	1	1			1	1	1											
TPBP08	0.40	0.50	B	1	24.5.23	ax43	1	1			1	1	1											
TPC01	0.50	0.60	B	1	29.5.23	ax44	1	0*					1											
TPC02	0.50	0.60	B	1	29.5.23	ax44																		
TPC02	2.50	3.00	B	5	29.5.23	ax44	1	1			1	1	1											
TPC03	0.70	0.80	B	1	29.5.23	ax44																		
TPC04	0.80	0.90	B	1	30.5.23	ax44																		
TPC04	1.60	1.70	B	3	30.5.23	ax44	1	1			1	1	1											
TPC05	0.50	0.60	B	1	30.5.23	ax44																		
TPCC01	0.50	0.60	B	1	29.5.23	ax44																		
TPCC01	2.90	3.00	B	5	29.5.23	ax44	1	1			1	1	1											
TPT01	3.40	3.50	B	6	26.5.23	AX44	1				1									1		5		
TPT03	1.50	1.60	B	3	26.5.23	AX44	1				1									1		5		
TPT04	2.10	2.20	B	5	26.5.23	AX44	1	1			1									0*		1		
TPT05	1.00	1.10	B	3	25.5.23	AX44	1	1			1	1	1											
TPT09	0.50	0.60	B	1	25.5.23	AX44	1	1			1	1	1											
BH113	2.00	2.45	U100	6	24.4.23	ax47	1	1			1												1	
BH113	3.00	3.50	B	10	24.4.23	ax47	1	1			1	1												
BH116	1.00	1.45	U100	3	11.5.23	AX47																		
BH116	3.00	3.50	B	9	11.5.23	AX47	1				1	1												
BH117	1.00	1.45	U100	3	10.5.23	AX47																		
BH117	2.00	2.50	B	6	10.5.23	AX47	1				1	1	1							1		5		
BHPW301	2.00	2.45	U100	6	19.4.23	ax47	1	1			1												1	
BHPW301	3.00	3.50	B	9	19.4.23	ax47	1	1			0*	0*	1											
BHPW301	4.00	4.45	U100	11	19.4.23	ax47	1	1			1												1	
BHPW301	7.00	7.50	B	20	20.4.23	ax47	1	1																
BHPW301	8.00	8.50	B	23	20.4.23	ax47	1		1		1													
BHSS01	1.00	1.45	U100	3	16.5.23	AX47																		
BHSS01	3.00	3.45	U100	8	16.5.23	AX47																		
BHSS01	4.00	4.50	B	11	16.5.23	AX47	1	1			1	1	1								1	5		
BHSS03	1.00	1.45	U100	3	8.5.23	ax47																		
BHSS03	1.00	1.50	B	4	8.5.23	ax47	1	1			1	1	1											
BHT14	2.00	2.50	B	7	22.5.23	ax47	1				1													
BHT17	1.00	1.45	U100	3	17.5.23	ax47																		
BHT17	3.00	3.50	B	9	17.5.23	ax47	1				1													
BH118	1.00	1.45	U100	3	12.5.23	AX47?																		
BHT05	1.00	1.45	U100	3	31.5.23	ax48																		
BHT05	2.00	2.50	B	6	31.5.23	ax48	1				1									1		5		
BHT06	1.00	1.50	B	4	1.6.23	ax48	1	1			1									1		5		
BHT07	1.00	1.50	B	4	30.5.23	ax48	1				1									1		5		
BHT09	2.00	2.50	B	7	26.5.23	ax48	1				1									0*		0*		
BHT10	2.00	2.50	B	7	25.5.23	ax48	1				1													
BHT11	2.00	2.50	B	7	24.5.23	ax48	1				1													
BHT12	1.00	1.50	B	4	23.5.23	ax48	1				1													
BHCC01	0.00	1.00	B	1	14.6.23	AX49	1	0*					1											

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Sulphate Total	Chloride Content	ph	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	CBR	Consolidation	Pressures
BHCC01	1.00	1.45	U100	3	14.6.23	AX49																		
BHCC01	4.00	4.50	B	12	15.6.23	AX49	1	1			1	0*								0*		0*		
BHCC01	5.00	5.50	B	15	15.6.23	AX49	1	1	0*		1	0*												
BHCC01	9.50	10.00	B	24	15.6.23	AX49	1	1	1		1													
BHCC02	0.00	1.00	B	1	13.6.23	AX49	1	1			0*	0*												
BHCC02	1.00	1.45	U100	3	13.6.23	AX49																		
BHCC02	4.00	4.50	B	12	14.6.23	AX49	1	1	1		1										0*	0*		
BHCC02	8.00	8.50	B	21	14.6.23	AX49	1	1	1		1													
BHSS06	0.00	1.00	B	1	13.6.23	AX49	1	1			0*	0*	1											
BHSS06	2.00	2.45	U100	6	14.6.23	AX49																		
BHSS06	3.00	3.50	B	9	14.6.23	AX49	1	1	1		1	1	1											
BHT01	1.00	1.45	U100	3	9.6.23	AX49																		
BHT01	3.00	3.50	B	9	13.6.23	AX49	1	1	1		1	0*	1		1		1							
BHT01	5.00	5.50	B	15	13.6.23	AX49	1	1			1	1								0		0		
BHT02	0.00	1.00	B	1	8.6.23	AX49	1	1							1		1							
BHT02	3.00	3.50	B	10	8.6.23	AX49	1	1	1		1	1	1							0		0		
BHT02	5.00	5.50	B	16	8.6.23	AX49	1	1			1													
BHT03	1.00	1.45	U100	3	7.6.23	ax49																		
BHT03	2.00	2.50	B	6	7.6.23	ax49	1	1			1	0*	1											
BHT03	4.50		PISTON	13	7.6.23	ax49																		
BHT04	1.00	1.50	B	4	6.6.23	ax49	1	1			1	1	1							1		5		
BHT08	0.00	1.00	B	1	16.6.23	AX49	1	1	1		1	0	1		1		1							
BHT08	1.00	1.50	B	4	16.6.23	AX49	1	1	1		1	1												
BHT08	2.00	2.50	B	7	19.6.23	AX49	1	0*	1		1	0*	1		1		1							
BHT08	3.00	3.50	B	10	19.6.23	AX49	1												1	0		0		
BHT16	0.00	1.00	B	1	22.6.23	AX49	1	1	1		1	0*	1		1		1							
BHT16	1.00	1.50	B	4	22.6.23	AX49	1	1	1		1	0*												
BHT16	2.00	2.50	B	7	22.6.23	AX49													1	0		0		
BHT16	4.00	4.50	B	13	22.6.23	AX49	1	1	1		1	0*												
BHT16	8.00	8.50	B	22	23.6.23	AX49	1	1	1		1													
TP208	0.50	0.60	B	1	29.6.23	AX59	1	1					1											
TP208	2.00	2.10	B	3	29.6.23	AX59	1	1	1		1	1	1		1		1							
TP208	2.50	2.60	B	6	29.6.23	AX59	1	1			1	1								1		5		
TP221	3.00	3.20	B	1	14.6.23	ax59	1	1			1	1	1											
TP222	2.70	3.00	B	2	14.6.23	ax59	1				1									1		5		
TP224	2.30	2.50	B	2	14.6.23	ax59	1				1									0*		1		
TP312	1.20	1.30	B	2	31.5.23	ax59	1	1			1	1												
TPC06	0.90	1.00	B	1	30.5.23	ax59																		
TPC06	2.50	2.60	B	3	30.5.23	ax59	1	1			1	1	1											
TPC07	0.40	0.50	B	1	30.5.23	ax59																		
TPC08	0.80	0.90	B	3	28.6.23	AX59	1	1	1		1	1	1		1		1							
TPC08	2.30	2.60	B	6	28.6.23	AX59	1	1			1	1								0		0		
TPC09	0.40	0.50	B	1	28.6.23	AX59	1	1					1											
TPC09	1.30	1.40	B	3	28.6.23	AX59	1	1	1		1	1	1		1		1							
TPC09	2.70	2.80	B	6	28.6.23	AX59														1		5		
TPSS101	0.40	0.50	B	1	27.6.23	AX59	1	1	1		1	1	1											
TPSS101	1.40	1.50	B	4	27.6.23	AX59	1	1	1		1	1	1		1		1							
TPSS101	2.40	2.50	B	6	27.6.23	AX59	1	1			1	1	1											
TPSS102	0.40	0.50	B	1	27.6.23	AX59	1	1	1		1	1	1											
TPSS102	1.40	1.50	B	4	27.6.23	AX59	1	1	1		1	1	1											
TPSS102	2.40	2.50	B	6	27.6.23	AX59														0		0		
TPSS103	0.40	0.50	B	1	27.6.23	AX59	1	1	1		1	1	1		1		1							
TPSS103	1.40	1.50	B	4	27.6.23	AX59	1	1			1	1	1											
TPSS104	0.30	0.40	B	1	28.6.23	AX59	1	1					1											
TPSS104	0.70	0.80	B	3	28.6.23	AX59	1	1	1		1	1	1		1		1							
TPSS104	2.00	2.10	B	6	28.6.23	AX59														0		0		
TPSS105	0.40	0.50	B	1	27.6.23	AX59	1	1	1		1	1	1		1		1							
TPSS105	1.40	1.50	B	4	27.6.23	AX59	1	1			1	1												
TPSS105	2.40	2.50	B	6	27.6.23	AX59	1	1			1	1												
TPSS106	0.40	0.50	B	1	27.6.23	AX59	1	1	1		1	1	1											

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Sulphate Total	Chloride Content Water	Chloride Content Acid	ph	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	CBR	Consolidation	Pressures
TPSS106	1.40	1.50	B	4	27.6.23	AX59	1	1																	
TPSS106	2.40	2.50	B	6	27.6.23	AX59	1	1					1												
TPSS107	0.40	0.50	B	1	28.6.23	AX59	1	1	1		1	1	1												
TPSS107	1.80	1.90	B	4	28.6.23	AX59	1	1			1										1		5		
BHSS101	0.00	1.00	B	1	17.7.23	AX62	1	1	1		1	1	1		1			1							
BHSS101	2.00	2.50	B	7	17.7.23	AX62	1	1	1		1	1	1		1			1							
BHSS101	3.00	3.50	B	10	18.7.23	AX62															1		5		
BHSS101	5.00	5.40	B	16	18.7.23	AX62	1	1			1	1													
BHSS102	0.00	1.00	B	1	18.7.23	AX62	1	1						1											
BHSS102	1.00	1.50	B	4	18.7.23	AX62	1	1	1		1	1	1		1			1							
BHSS102	2.00	2.50	B	7	18.7.23	AX62															0		0		
BHSS102	3.00	3.50	B	10	18.7.23	AX62	1	1	1		1	1													
BHSS103	0.00	1.00	B	1	17.7.23	AX62	1	1	1		1	1	1												
BHSS103	1.00	1.50	B	4	17.7.23	AX62	1	1			1	1	1		1			1							
BHSS103	2.00	2.50	B	7	17.7.23	AX62															1		5		
BHSS103	4.00	4.50	B	13	17.7.23	AX62	1	1			1														
BHSS104	1.00	1.50	B	4	19.7.23	AX62	1	1	1		1	1	1												
BHSS104	2.00	2.50	B	7	19.7.23	AX62	1	1	1		1														
BHSS104	3.00	3.50	B	10	19.7.23	AX62	1	1	1		1	1	1		1			1							
BHSS105	0.00	1.00	B	1	14.7.23	AX62	1	1	1		1	1	1												
BHSS105	1.00	1.50	B	4	14.7.23	AX62	1	1	1		1	1	1		1			1							
BHSS106	0.00	1.00	B	1	20.7.23	AX62	1	1					1												
BHSS106	1.00	1.50	B	4	20.7.23	AX62	1	1	1		1	1	1		1			1							
BHSS106	2.00	2.50	B	7	20.7.23	AX62															1		5		
BHSS106	3.00	3.50	B	10	20.7.23	AX62	1	1			1	1													
BHSS106	4.00	4.50	B	13	20.7.23	AX62	1	1			1	0*													
BHSS107	0.00	1.00	B	1	20.7.23	AX62	1	1	1		1	1	1												
BHSS107	1.00	1.50	B	4	20.7.23	AX62	1	1			1	1			1			1							
BHSS107	2.00	2.50	B	7	20.7.23	AX62	1	1			1														
BHSS1M08	0.00	1.00	B	1	19.7.23	AX62	1	1	1		1	1	1												
BHSS1M08	1.00	1.50	B	4	19.7.23	AX62	1	1			1	1			1			1							
BHSS1M08	2.00	2.50	B	7	19.7.23	AX62															0		0		
BHSS1M08	3.00	3.40	B	10	19.7.23	AX62	1	1			1	1													
BHT16A	0.00	1.00	B	1	1.8.23	AX62	1	1			1	1	1												
BHT16A	1.00	1.50	B	4	1.8.23	AX62	1	1	1		1	0*	1		1			1							
BHT17A	0.00	1.00	B	1	31.7.23	AX62	1	1			0*	0*	1												
BHT17A	2.00	2.50	B	7	31.7.23	AX62	1	1	1		1	1	1												
BHT17A	3.00	3.50	B	10	31.7.23	AX62	1	1	1		1				1			1							
BHT17A	4.00	4.50	B	13	31.7.23	AX62															1		5		
BHT18A	0.00	1.00	B	1	2.8.23	AX62	1	1			0*	0*	1												
BHT18A	3.00	3.50	B	10	3.8.23	AX62	1	1	1		1	1	1		1			1							
BHT18A	4.00	4.50	B	13	3.8.23	AX62															0		0		
BHT18A	5.00	5.50	B	16	3.8.23	AX62	1	1	1		1	1	1												

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Schedule ID 2023OY104_all

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Derrygreenagh Power
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Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
	Total scheduled						4				5	11	8	14	87	152	155	33	41	10		
	Completed to date						4				4	10	2	14	87	152	155	33	41	10		
BH109	2.00	2.45	U100	6	20.4.23	a.	*				*	1										
BH109	6.00	6.50	B	19	21.4.23	a.																
BH113	4.00	4.50	B	13	24.4.23	a.																
BH114	2.00	2.50	B	7	24.4.23	a.																
BHT05	5		ES		1.6.23	ALS										0*	0*				230605-71 - NDP	not possible
TPSS02	8	ES 1	ES 1		5.5.23	als															230515-35	chem?
BH101	1.00	1.50	B	4	13.4.23	AX21															ALS 230915-61	
BH101	2.00	2.45	U100	5	13.4.23	AX21	1				*	1										
BH101	4.00	4.50	B	13	13.4.23	AX21																
BH102	3.00	3.45	U100	9	17.4.23	AX21	1				*	1										
BH102	4.00	4.50	B	13	17.4.23	AX21																
BH103	2.00	2.50	B	7	17.4.23	AX21																
BH103	3.00	3.50	B	10	17.4.23	AX21																
BH105	3.00	3.45	U100	9	18.4.23	AX21	1				*	1										
BH105	4.00	4.50	B	12	18.4.23	AX21																
BH106	2.00	2.50	B	7	20.4.23	AX21																* rotten
BH112	3.00	3.50	B	10	12.4.23	AX21																
BH115	3.00	3.50	B	10	21.4.23	AX21															ALS 230915-61	*cbr not done
BH115	3.00	3.50	B	10	21.4.23	AX21																
BH104	1.00	1.45	U100	3	18.4.23	AX21?/	1				*	1										
BH104	2.00	2.50	B	7	18.4.23	AX21?/															230915-61	peat
BH104	4.00	4.50	B	13	18.4.23	AX21?/																
BH107	2.00	2.50	B	7	26.4.23	AX24																
BH107	3.00	3.50	B	10	26.4.23	ax24																
BH108	3.00	3.50	B	10	25.4.23	ax24																
BH110	1.00	1.50	B	4	27.4.23	AX24															230915-61	
BH110	3.00	3.50	B	10	27.4.23	AX24																
BH111	3.00	3.50	B	10	2.5.23	AX24																
BH111	3.50		D	11	2.5.23	AX24																
BH111	4.00	4.50	B	13	2.5.23	AX24																
BHSS02	1.00	1.45	U100	3	5.5.23	AX24																
BHSS02	3.00	3.50	B	9	5.5.23	AX24															231005-93	
BHSS04	1.00	1.45	U100	3	4.5.23	AX24							1									
BHSS05	1.00	1.45	U100	3	3.5.23	AX24	*				*	1										
BHSS05	3.00	3.50	B	10	3.5.23	AX24															ALS 230915-61	
TP201	2.80	3.00	B	2	2.5.23	AX25													1		230915-61	
TP201	3.40	3.60	B	4	2.5.23	AX25																
TP202	3.00	3.20	B	2	2.5.23	AX25													1		230915-61	* not suitable, PEAT
TP203	2.80	3.00	B	2	3.5.23	AX25													1		230915-61	* not suitable, PEAT
TP204	2.50	2.70	B	5	2.5.23	AX25																
TP204	2.50	2.70	D	6	2.5.23	AX25													1		230915-61	
TP205	2.50	2.70	B	2	3.5.23	AX25													1		230915-61	
TP207	1.40	1.60	B	3	3.5.23	AX25													1		ALS 230915-61	
TP209	1.30	1.50	B	2	3.5.23	AX25													1		ALS 230915-61	
TP217	1.60	1.80	B	4	5.5.23	AX25													1		230915-61	
TP220	2.40	2.60	B	4	4.5.23	AX25																
TP206A	0.50	0.70	B	1	8.5.23	AX26													1		ALS 230915-61	
TP210	0.50	0.70	B	1	8.5.23	AX26															230915-61	
TP211	1.00	1.20	B	3	9.5.23	AX26													1		230915-61	
TP212	1.10	1.30	B	3	9.5.23	AX26																
TP216	0.50	0.70	B	1	5.5.23	AX26													1		230915-61	
TP218	0.60	0.80	B	1	4.5.23	AX26													1		230915-61	
TP219	0.60	0.80	B	1	4.5.23	AX26													1		230915-61	

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
TP214	1.70	1.90	B	2	10.5.23	AX26?													1		231005-93	
TP215	1.60	1.80	B	3	10.5.23	AX26?													1		231005-93	
TP302	0.90	1.00	B	3	16.5.23	ax27													1		231005-93	
TP303	2.20	2.30	B	3	16.5.23	ax27													1		231005-93	
TP305	0.80	0.80	B	1	17.5.23	ax27													1		231005-93	
TPSS02	1.90	2.10	B	1	10.5.23	AX27													1		231005-93	
TPSS04	2.10	2.20	B	1	11.5.23	AX27													1		231005-93	
TPSS06	2.00	2.20	B	2	11.5.23	AX27													1		231005-93	
TPT14	1.50	1.60	B	4	16.5.23	AX27													1		231005-93	* not enough fines
TPT16	0.80	0.90	B	3	15.5.23	AX27													1		231005-93	
TPT18	1.30	1.40	B	3	15.5.23	AX27													1		231005-93	
TP308	1.30	1.40	B	3	22.5.23	ax43													1		231005-93	
TPBP01	1.40	1.50	B	3	23.5.23	ax43													1		231005-93	
TPBP03	1.40	1.50	B	3	23.5.23	ax43																
TPBP05	1.50	1.60	B	4	23.5.23	ax43																
TPBP06	1.20	1.30	B	4	24.5.23	ax43													1		231005-93	
TPBP08	0.40	0.50	B	1	24.5.23	ax43													1		231005-93	
TPC01	0.50	0.60	B	1	29.5.23	ax44													0*	1	230925-27	Too fibrous for LL
TPC02	0.50	0.60	B	1	29.5.23	ax44														1		
TPC02	2.50	3.00	B	5	29.5.23	ax44													1		230925-27	
TPC03	0.70	0.80	B	1	29.5.23	ax44														1		
TPC04	0.80	0.90	B	1	30.5.23	ax44														1		
TPC04	1.60	1.70	B	3	30.5.23	ax44													1		230925-27	
TPC05	0.50	0.60	B	1	30.5.23	ax44														1		
TPCC01	0.50	0.60	B	1	29.5.23	ax44														1		
TPCC01	2.90	3.00	B	5	29.5.23	ax44													1		230925-27	
TPT01	3.40	3.50	B	6	26.5.23	AX44													1		230925-27	
TPT03	1.50	1.60	B	3	26.5.23	AX44													1		230925-27	
TPT04	2.10	2.20	B	5	26.5.23	AX44													1		230925-27	Not suitable for 5 Point test.
TPT05	1.00	1.10	B	3	25.5.23	AX44													1		231005-93	
TPT09	0.50	0.60	B	1	25.5.23	AX44													1		230925-27	
BH113	2.00	2.45	U100	6	24.4.23	ax47	*				*	1										
BH113	3.00	3.50	B	10	24.4.23	ax47																
BH116	1.00	1.45	U100	3	11.5.23	AX47					1											
BH116	3.00	3.50	B	9	11.5.23	AX47																
BH117	1.00	1.45	U100	3	10.5.23	AX47					1											
BH117	2.00	2.50	B	6	10.5.23	AX47															231005-93	
BHPW301	2.00	2.45	U100	6	19.4.23	ax47	*				*	1										
BHPW301	3.00	3.50	B	9	19.4.23	ax47															230915-61	* Peat
BHPW301	4.00	4.45	U100	11	19.4.23	ax47	*				*	1										
BHPW301	7.00	7.50	B	20	20.4.23	ax47																
BHPW301	8.00	8.50	B	23	20.4.23	ax47																
BHSS01	1.00	1.45	U100	3	16.5.23	AX47					1											
BHSS01	3.00	3.45	U100	8	16.5.23	AX47					1											
BHSS01	4.00	4.50	B	11	16.5.23	AX47															231005-93	
BHSS03	1.00	1.45	U100	3	8.5.23	ax47							0									
BHSS03	1.00	1.50	B	4	8.5.23	ax47															231005-93	
BHT14	2.00	2.50	B	7	22.5.23	ax47																
BHT17	1.00	1.45	U100	3	17.5.23	ax47							0									
BHT17	3.00	3.50	B	9	17.5.23	ax47																
BH118	1.00	1.45	U100	3	12.5.23	AX47?					0											
BHT05	1.00	1.45	U100	3	31.5.23	ax48							1									
BHT05	2.00	2.50	B	6	31.5.23	ax48																
BHT06	1.00	1.50	B	4	1.6.23	ax48																
BHT07	1.00	1.50	B	4	30.5.23	ax48																
BHT09	2.00	2.50	B	7	26.5.23	ax48																* too gravelly
BHT10	2.00	2.50	B	7	25.5.23	ax48																
BHT11	2.00	2.50	B	7	24.5.23	ax48																
BHT12	1.00	1.50	B	4	23.5.23	ax48																
BHCC01	0.00	1.00	B	1	14.6.23	AX49															ALS 231017-51	* not enough fines

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
BHCC01	1.00	1.45	U100	3	14.6.23	AX49							0									
BHCC01	4.00	4.50	B	12	15.6.23	AX49																* too gravelly
BHCC01	5.00	5.50	B	15	15.6.23	AX49																* too gravelly
BHCC01	9.50	10.00	B	24	15.6.23	AX49																
BHCC02	0.00	1.00	B	1	13.6.23	AX49																* PEAT too fibrous
BHCC02	1.00	1.45	U100	3	13.6.23	AX49							0									
BHCC02	4.00	4.50	B	12	14.6.23	AX49																* too gravelly
BHCC02	8.00	8.50	B	21	14.6.23	AX49																
BHSS06	0.00	1.00	B	1	13.6.23	AX49															ALS 231017-51	* Peat too fibrous
BHSS06	2.00	2.45	U100	6	14.6.23	AX49							0									
BHSS06	3.00	3.50	B	9	14.6.23	AX49															ALS 231017-51	
BHT01	1.00	1.45	U100	3	9.6.23	AX49							0									
BHT01	3.00	3.50	B	9	13.6.23	AX49															ALS 231017-51	
BHT01	5.00	5.50	B	15	13.6.23	AX49																
BHT02	0.00	1.00	B	1	8.6.23	AX49															ALS 231017-51	
BHT02	3.00	3.50	B	10	8.6.23	AX49															ALS 231017-51	
BHT02	5.00	5.50	B	16	8.6.23	AX49																
BHT03	1.00	1.45	U100	3	7.6.23	ax49						1										
BHT03	2.00	2.50	B	6	7.6.23	ax49															ALS 230915-61	*Not enough fines
BHT03	4.50		PISTON	13	7.6.23	ax49						0										
BHT04	1.00	1.50	B	4	6.6.23	ax49															230915-61	
BHT08	0.00	1.00	B	1	16.6.23	AX49															ALS 231017-51	
BHT08	1.00	1.50	B	4	16.6.23	AX49																
BHT08	2.00	2.50	B	7	19.6.23	AX49															ALS 231017-51	* not enough fines
BHT08	3.00	3.50	B	10	19.6.23	AX49															ALS 231017-51	should be 5Comp?
BHT16	0.00	1.00	B	1	22.6.23	AX49															ALS 231017-51	
BHT16	1.00	1.50	B	4	22.6.23	AX49																
BHT16	2.00	2.50	B	7	22.6.23	AX49															ALS 231017-51	should be 5Comp?
BHT16	4.00	4.50	B	13	22.6.23	AX49																
BHT16	8.00	8.50	B	22	23.6.23	AX49																
TP208	0.50	0.60	B	1	29.6.23	AX59															ALS 231017-51	
TP208	2.00	2.10	B	3	29.6.23	AX59															ALS 231017-51	
TP208	2.50	2.60	B	6	29.6.23	AX59																
TP221	3.00	3.20	B	1	14.6.23	ax59													1		ALS 230915-61	
TP222	2.70	3.00	B	2	14.6.23	ax59													1		ALS 230915-61	
TP224	2.30	2.50	B	2	14.6.23	ax59													1		ALS 230915-61	Not suitable for 5 point Compaction
TP312	1.20	1.30	B	2	31.5.23	ax59													1		231005-93	
TPC06	0.90	1.00	B	1	30.5.23	ax59														1		
TPC06	2.50	2.60	B	3	30.5.23	ax59													1		231005-93	
TPC07	0.40	0.50	B	1	30.5.23	ax59														1		
TPC08	0.80	0.90	B	3	28.6.23	AX59														1	ALS 231017-51	
TPC08	2.30	2.60	B	6	28.6.23	AX59																
TPC09	0.40	0.50	B	1	28.6.23	AX59															ALS 231017-51	
TPC09	1.30	1.40	B	3	28.6.23	AX59														1	ALS 231017-51	
TPC09	2.70	2.80	B	6	28.6.23	AX59																
TPSS101	0.40	0.50	B	1	27.6.23	AX59															ALS 231017-51	
TPSS101	1.40	1.50	B	4	27.6.23	AX59															ALS 231017-51	
TPSS101	2.40	2.50	B	6	27.6.23	AX59															ALS 231017-51	
TPSS102	0.40	0.50	B	1	27.6.23	AX59															ALS 231017-51	
TPSS102	1.40	1.50	B	4	27.6.23	AX59															ALS 231017-51	
TPSS102	2.40	2.50	B	6	27.6.23	AX59																
TPSS103	0.40	0.50	B	1	27.6.23	AX59															ALS 231017-51	
TPSS103	1.40	1.50	B	4	27.6.23	AX59															ALS 231017-51	
TPSS104	0.30	0.40	B	1	28.6.23	AX59															ALS 231017-51	
TPSS104	0.70	0.80	B	3	28.6.23	AX59															ALS 231017-51	
TPSS104	2.00	2.10	B	6	28.6.23	AX59																
TPSS105	0.40	0.50	B	1	27.6.23	AX59															ALS 231017-51	
TPSS105	1.40	1.50	B	4	27.6.23	AX59																
TPSS105	2.40	2.50	B	6	27.6.23	AX59																
TPSS106	0.40	0.50	B	1	27.6.23	AX59															ALS 231017-51	

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
TPSS106	1.40	1.50	B	4	27.6.23	AX59																
TPSS106	2.40	2.50	B	6	27.6.23	AX59															ALS 231017-51	
TPSS107	0.40	0.50	B	1	28.6.23	AX59															ALS 231017-51	
TPSS107	1.80	1.90	B	4	28.6.23	AX59																
BHSS101	0.00	1.00	B	1	17.7.23	AX62															ALS 231017-51	
BHSS101	2.00	2.50	B	7	17.7.23	AX62															ALS 231017-51	
BHSS101	3.00	3.50	B	10	18.7.23	AX62																
BHSS101	5.00	5.40	B	16	18.7.23	AX62																
BHSS102	0.00	1.00	B	1	18.7.23	AX62															ALS 231017-51	
BHSS102	1.00	1.50	B	4	18.7.23	AX62															ALS 231017-51	
BHSS102	2.00	2.50	B	7	18.7.23	AX62																
BHSS102	3.00	3.50	B	10	18.7.23	AX62																
BHSS103	0.00	1.00	B	1	17.7.23	AX62															ALS 231017-51	
BHSS103	1.00	1.50	B	4	17.7.23	AX62															ALS 231017-51	
BHSS103	2.00	2.50	B	7	17.7.23	AX62																
BHSS103	4.00	4.50	B	13	17.7.23	AX62																
BHSS104	1.00	1.50	B	4	19.7.23	AX62															ALS 231017-51	
BHSS104	2.00	2.50	B	7	19.7.23	AX62																
BHSS104	3.00	3.50	B	10	19.7.23	AX62															ALS 231017-51	
BHSS105	0.00	1.00	B	1	14.7.23	AX62															ALS 231017-51	
BHSS105	1.00	1.50	B	4	14.7.23	AX62															ALS 231017-51	
BHSS106	0.00	1.00	B	1	20.7.23	AX62															ALS 231017-51	
BHSS106	1.00	1.50	B	4	20.7.23	AX62															ALS 231017-51	
BHSS106	2.00	2.50	B	7	20.7.23	AX62																
BHSS106	3.00	3.50	B	10	20.7.23	AX62																
BHSS106	4.00	4.50	B	13	20.7.23	AX62																
BHSS107	0.00	1.00	B	1	20.7.23	AX62															ALS 231017-51	
BHSS107	1.00	1.50	B	4	20.7.23	AX62															ALS 231017-51	
BHSS107	2.00	2.50	B	7	20.7.23	AX62																
BHSS1M08	0.00	1.00	B	1	19.7.23	AX62															ALS 231017-51	
BHSS1M08	1.00	1.50	B	4	19.7.23	AX62															ALS 231017-51	
BHSS1M08	2.00	2.50	B	7	19.7.23	AX62																
BHSS1M08	3.00	3.40	B	10	19.7.23	AX62																
BHT16A	0.00	1.00	B	1	1.8.23	AX62															ALS 231017-51	
BHT16A	1.00	1.50	B	4	1.8.23	AX62															ALS 231017-51	
BHT17A	0.00	1.00	B	1	31.7.23	AX62															ALS 231017-51	*too fibrous
BHT17A	2.00	2.50	B	7	31.7.23	AX62															ALS 231017-51	
BHT17A	3.00	3.50	B	10	31.7.23	AX62															ALS 231017-51	
BHT17A	4.00	4.50	B	13	31.7.23	AX62																
BHT18A	0.00	1.00	B	1	2.8.23	AX62															ALS 231017-51	* too fibrous
BHT18A	3.00	3.50	B	10	3.8.23	AX62															ALS 231017-51	
BHT18A	4.00	4.50	B	13	3.8.23	AX62																
BHT18A	5.00	5.50	B	16	3.8.23	AX62															ALS 231017-51	

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
BHT08	22.10	23.60	C		5.7.23	core								1	1							
BHT08	23.60	25.10	C		5.7.23	core									1							
BHT08	25.10	26.30	C		5.7.23	core									1							
BHT08	26.30	27.40	C		5.7.23	core								1	1							
BH102	17.00	18.50	C		25.4.23	core	0*															* not suitable
BH102	24.50	26.00	C		25.4.23	core	0*															* not suitable
BH102	38.00	40.00	C		25.4.23	core									1							
BH102	40.00	41.30	C		26.4.23	core									1							
BH102	41.30	42.50	C		26.4.23	core									1							
BH102	42.50	43.50	C		26.4.23	core									1							
BH102	43.50	45.00	C		26.4.23	core									1							
BH103	20.00	21.50	C		27.4.23	core	0*															* not suitable
BH103	24.50	26.00	C		28.4.23	core	0*															* not suitable
BH103	39.20	40.70	C		2.5.23	core									1							
BH103	40.70	41.00	C		2.5.23	core									1							
BH103	41.00	42.60	C		2.5.23	core									1							
BH103	42.60	43.90	C		2.5.23	core									1							
BH104	37.30	38.40	C		4.5.23	core									1							
BH104	38.40	40.00	C		4.5.23	core									1							
BH104	40.00	41.00	C		5.5.23	core									1							
BH104	41.00	41.80	C		5.5.23	core									1							
BH104	41.80	42.80	C		5.5.23	core									1							
BH104	42.80	44.20	C		5.5.23	core									1							
BH104	44.20	45.50	C		5.5.23	core									1							
BH104	45.50	46.80	C		5.5.23	core									1							
BH104	46.80	48.30	C		5.5.23	core									1							
BH104	48.30	49.40	C		5.5.23	core									1							
BH104	49.40	50.90	C		5.5.23	core									1							
BH105	37.20	38.70	C		9.5.23	core									1							
BH105	38.70	40.20	C		9.5.23	core									1							
BH105	40.20	41.30	C		9.5.23	core									1							
BH105	41.30	42.00	C		9.5.23	core									1							
BH105	42.00	43.50	C		9.5.23	core									1							
BH105	43.50	45.00	C		9.5.23	core									1							
BH106	23.70	25.00	C		11.5.23	core	0*															* not suitable
BH108	11.90	13.40	C		17.5.23	core									1							
BH108	13.40	14.90	C		17.5.23	core									1							
BH108	14.90	16.30	C		17.5.23	core									1							
BH108	16.30	17.20	C		17.5.23	core									1							
BH110	14.70	16.20	C		15.5.23	core									1							
BH110	16.20	17.70	C		15.5.23	core									1							
BH110	17.70	18.70	C		15.5.23	core									1							
BH110	18.70	19.70	C		15.5.23	core									1							
BH110	19.70	20.70	C		15.5.23	core									1							
BH111	5.90	6.90	C		11.5.23	core									1							
BH111	6.90	8.40	C		11.5.23	core									1							
BH111	8.40	9.40	C		11.5.23	core									1							
BH111	9.40	11.00	C		11.5.23	core									1							
BH118	12.30	13.60	C		19.6.23	core								0*	1							* not suitable
BH118	13.60	14.60	C		19.6.23	core									1							
BH118	14.60	15.90	C		19.6.23	core									1							
BH118	16.50	17.60	C		19.6.23	core								0*	1							* not suitable
BH118	17.60	18.70	C		19.6.23	core									1							
BH118	18.70	20.30	C		19.6.23	core									1							
BHSS03	23.70	25.20	C		12.6.23	core									1							
BHSS03	25.20	26.80	C		12.6.23	core									1							
BHSS03	26.80	28.40	C		12.6.23	core									1							
BHSS03	28.40	30.00	C		12.6.23	core									1							
BHT09	16.30	17.80	C		3.7.23	core								0*	1							* not suitable
BHT09	17.80	19.30	C		3.7.23	core									1							
BHT09	19.30	20.80	C		3.7.23	core								1	1							

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
BHT09	20.80	22.30	C		3.7.23	core									1							
BHT10	13.00	14.00	C		3.7.23	core									1							
BHT10	14.00	15.60	C		3.7.23	core								1	1							
BHT10	15.60	16.20	C		3.7.23	core									1							
BHT10	16.20	17.60	C		3.7.23	core								1	1							
BHT10	17.60	19.10	C		4.7.23	core									1							
BHT10	19.10	20.60	C		4.7.23	core									1							
BHT111A	7.00	8.00	C		15.6.23	core								1	1							
BHT111A	8.00	8.60	C		15.6.23	core									1							
BHT111A	8.60	10.20	C		15.6.23	core								1	1							
BHT111A	10.20	11.40	C		15.6.23	core									1							
BHT111A	11.40	13.00	C		15.6.23	core									1							
BHT111A	13.00	14.00	C		15.6.23	core								*	1							
BHT111A	14.00	15.60	C		15.6.23	core								1	1							
BHT111A	15.60	16.40	C		16.6.23	core									1							
BHT111A	16.40	17.70	C		16.6.23	core								0*	1							* not suitable
BHT111A	17.70	19.30	C		16.6.23	core									1							
BHT111A	19.30	20.70	C		16.6.23	core								0*	1							* not suitable
BHT13	17.60	19.10	C		28.6.23	core								1	1							
BHT13	19.10	20.60	C		28.6.23	core								1	1							
BHT15	20.60	22.10	C		23.6.23	core								1	1							
BHT15	22.10	23.10	C		23.6.23	core									1							
BHT15	23.10	23.60	C		23.6.23	core								0*	1							* not suitable
BHT15	23.60	24.60	C		23.6.23	core									1							
BHT15	24.60	25.60	C		23.6.23	core								1	1							
BHT15	25.60	26.60	C		23.6.23	core									1							
BHT15	26.60	27.20	C		23.6.23	core								0*	1							* not suitable
BHT15	27.20	27.70	C		23.6.23	core									0*							not possible
BHT17	15.40	17.00	C		21.6.23	core								1	1							
BHT17	17.00	17.50	C		21.6.23	core									0*							not possible
BHT17	17.50	19.10	C		21.6.23	core									1							
BHT17	19.10	19.50	C		21.6.23	core								1	1							
BHT17	19.50	20.60	C		21.6.23	core									1							

Summary of Classification Test Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
BH101	4	1.00	1.50	B		Black slightly gravelly sandy ORGANIC SILT.			46.0	68	75	58	17		MV
BH101	13	4.00	4.50	B		Orange-brown very sandy very silty fine and medium GRAVEL.			12.0	34	53	43	10		MH
BH102	13	4.00	4.50	B		Brown very silty very sandy fine and medium GRAVEL.			13.0	27	35	26	9		ML
BH103	7	2.00	2.50	B		Greyish-brown slightly gravelly slightly gravelly SILT.			18.0	57	32	24	8		ML
BH103	10	3.00	3.50	B		Greyish-brown slightly sandy gravelly SILT. Gravel is fine.			19.0	52	33	24	9		ML
BH104	7	2.00	2.50	B		Black slighlty gravelly sandy ORGANIC SILT.			288.0	51	486	394	92		MEO
BH104	13	4.00	4.50	B		Yellowish-brown very sandy very gravelly SILT.			22.0	66	29	24	5		ML
BH105	12	4.00	4.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			23.0	66	29	21	8		CL
BH106	7	2.00	2.50	B		Greyish-brown slightly sandy slightly gravelly SILT.			15.0	64					
BH107	7	2.00	2.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			19.0	51	30	23	7		ML
BH107	10	3.00	3.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			24.0	56					
BH108	10	3.00	3.50	B		Grey slightly sandy gravelly SILT.			9.8	60	20	14	6		ML
BH109	19	6.00	6.50	B		Creamy-brown slightly sandy gravelly SILT.			19.0	44	35	22	13		CL
BH110	4	1.00	1.50	B		Light greyish-brown slightly sandy gravelly SILT. Gravel is coarse.			9.6	57	22	16	6		ML
BH110	10	3.00	3.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			22.0	57	33	23	10		CL
BH111	10	3.00	3.50	B		Greenish-grey slightly sandy gravelly SILT.			13.0	69	21	14	7		CL
BH111	11	3.50		D		Greenish-grey slightly gravelly slightly sandy SILT.			12.0	65					
BH111	13	4.00	4.50	B		Greyish-brown slightly gravelly sandy SILT.			12.0	74					
BH112	10	3.00	3.50	B		Brown slightly sandy slightly gravelly SILT.			15.0	59					
BH113	10	3.00	3.50	B		Light brown slightly sandy gravelly SILT.			14.0	50	25	19	6		ML
BH113	13	4.00	4.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			16.0	59	25	18	7		CL
BH114	7	2.00	2.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			19.0	58	31	22	9		CL
BH115	10	3.00	3.50	B		Light brown slightly sandy gravelly SILT.			12.0	50	27	18	9		CL
BH116	9	3.00	3.50	B		Brownish-grey very silty very sandy GRAVEL.			16.0	44					
BH117	6	2.00	2.50	B		Brownish-grey slightly gravelly sandy SILT.			13.0	69					
BHCC01	1	0.00	1.00	B		Black PEAT.			483.0						Not enough fines

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	1pt - single point test	gj - gas jar
wi - immersion in water	NP - Non Plastic	

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Approved By
DCD

Table 1
sheet 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Summary of Classification Test Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
BHCC01	12	4.00	4.50	B		Dark grey slightly silty very sandy GRAVEL.			5.2	16					NP
BHCC01	15	5.00	5.50	B		Dark grey silty very gravelly medium SAND.			10.0	42					NP
BHCC01	24	9.50	10.00	B		Dark grey silty very gravelly medium SAND.			13.0	44				2.72-gj	NP
BHCC02	1	0.00	1.00	B		Black PEAT.			530.0		495	373	122		MEO
BHCC02	12	4.00	4.50	B		Dark bluish-grey silty very sandy GRAVEL.			11.0	27				2.25-gj	Non Plastic
BHCC02	21	8.00	8.50	B		Dark grey silty very gravelly medium and coarse SAND.			12.0	36				2.72-gj	NP
BHPW301	9	3.00	3.50	B		Black PEAT.			477.0		532	425	107		MEO
BHPW301	20	7.00	7.50	B		Cream slightly gravelly slightly sandy SILT.			32.0	73	38	31	7		MI
BHPW301	23	8.00	8.50	B		Cream slightly gravelly slightly sandy SILT.			30.0	72				2.53-gj	
BHSS01	11	4.00	4.50	B		Grey and black slightly sandy gravelly SILT and PEAT.			27.0	55	39	34	5		MI
BHSS02	9	3.00	3.50	B		Light grey slightly gravelly sandy SILT.			10.0	70					NP
BHSS03	4	1.00	1.50	B		Grey and black slightly gravelly sandy PEAT.			121.0	66	124	100	24		MEO
BHSS05	10	3.00	3.50	B		Dark grey slightly gravelly sandy SILT.			19.0	67	25	18	7		CL
BHSS06	1	0.00	1.00	B		Black PEAT.			508.0		617	372	245		MEO
BHSS06	9	3.00	3.50	B		Brownish-black slightly gravelly sandy peaty ORGANIC SILT.			102.0	43	77	56	21	1.51-gj	MV
BHSS101	1	0.00	1.00	B		Greyish-brown slightly gravelly sandy SILT. Sand is medium.			39.0	80	64	40	24	2.42-gj	MH
BHSS101	7	2.00	2.50	B		Light brown slightly gravelly slightly sandy SILT.			11.0	64	22	13	9	2.72-gj	CL
BHSS101	16	5.00	5.40	B		Greyish-brown slighlty sandy SILT.			23.0	100	30	22	8		CL
BHSS102	1	0.00	1.00	B		Black PEAT.			71.0	45	82	58	24		MV
BHSS102	4	1.00	1.50	B		Dark brown very silty SAND and GRAVEL.			25.0	53	41	26	15	2.67-gj	MI
BHSS102	10	3.00	3.50	B		Light grey slightly gravelly slightly sandy SILT.			12.0	64	24	15	9	2.72-gj	CL
BHSS103	1	0.00	1.00	B		Greensih-grey slightly gravelly sandy SILT.			19.0	60	100	69	31	2.67-gj	MEO
BHSS103	4	1.00	1.50	B		Greensih-grey slightly gravelly sandy SILT.			15.0	69	32	18	14		CL
BHSS103	13	4.00	4.50	B		Light greyish-brown slightly gravelly slightly sandy SILT.			14.0	65	24	14	10		CL
BHSS104	4	1.00	1.50	B		Greenish-brown slightly sandy slightly gravelly SILT.			17.0	56	32	18	14	2.69-gj	CL
BHSS104	7	2.00	2.50	B		Light greyish-brown slightly gravelly slightly sandy SILT.			12.0	60	26	17	9	2.67-gj	CL

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test
Linear measurement unless :
wd - water displacement
wi - immersion in water

Liquid Limit
4pt cone unless :
1pt - single point test
NP - Non Plastic

Particle density
sp - small pyknometer
gj - gas jar

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Approved By
DCD

Table 1
sheet 2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Summary of Classification Test Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
BHSS104	10	3.00	3.50	B		Light grey slightly sandy slightly gravelly SILT.			11.0	58	24	15	9	2.25-gj	CL
BHSS105	1	0.00	1.00	B		Brown and greensih-grey gravelly very silty medium and coarse SAND.			35.0	55	97	64	33	2-gj	ME
BHSS105	4	1.00	1.50	B		Greyish-brown slightly gravelly slightly sandy SILT.			15.0	57	32	17	15	2.71-gj	CL
BHSS106	1	0.00	1.00	B		Black slightly sandy PEAT.			138.0	16	93	65	28		MEO
BHSS106	4	1.00	1.50	B		Greenish-grey slightly gravelly sandy SILT.			19.0	59	43	33	10	2.58-gj	MI
BHSS106	10	3.00	3.50	B		Light grey slightly gravelly slightly sandy SILT.			11.0	59	22	13	9		CL
BHSS106	13	4.00	4.50	B		Light grey silty very sandy fine GRAVEL.			10.0	20	26	16	10		CL
BHSS107	1	0.00	1.00	B		Yellowish-brown slightly gravelly slightly sandy SILT.			32.0	82	34	17	17	2.66-gj	CL
BHSS107	4	1.00	1.50	B		Greyish-brown slightly gravelly slightly sandy SILT.			14.0	64	28	15	13		CL
BHSS107	7	2.00	2.50	B		Brownish-grey slightly sandy gravelly SILT. Gravel is coarse.			11.0	51	24	14	10		CL
BHSS1M08	1	0.00	1.00	B		Brown slightly gravelly slightly sandy SILT.			26.0	62	56	32	24	2.65-gj	MH
BHSS1M08	4	1.00	1.50	B		Light brown slightly gravelly slightly sandy SILT.			14.0	67	32	16	16		CL
BHSS1M08	10	3.00	3.40	B		Greyish-brown slightly gravelly slightly sandy SILT.			16.0	61	31	18	13		CL
BHT01	9	3.00	3.50	B		Blackish-grey silty gravelly medium SAND.			45.0	48				2.38-gj	NP
BHT01	15	5.00	5.50	B		Dark grey very sandy very silty coarse GRAVEL.			8.7	42					NP
BHT02	1	0.00	1.00	B		Black PEAT.			388.0	100	607	379	228		MEO
BHT02	10	3.00	3.50	B		Blackish-grey slightly gravelly very silty fine and medium SAND.			38.0	81				2.21-gj	Non Plastic
BHT02	16	5.00	5.50	B		Dark grey slightly gravelly sandy SILT. Sand is fine.			17.0	90					NP
BHT03	6	2.00	2.50	B		Black-grey silty very gravelly medum and coarse SAND.			16.0	28	51	37	14		MH
BHT04	4	1.00	1.50	B		Brownish-grey silty very gravelly medium and coarse SAND.			6.1	34					NP
BHT05	6	2.00	2.50	B		Greyish-brown slightly gravelly sandy SILT. SAND is fine.			13.0	91					
BHT06	4	1.00	1.50	B		Blackish-grey very silty coarse SAND and fine GRAVEL.			19.0	38	54	45	9		MH
BHT07	4	1.00	1.50	B		Black and grey silty SAND and GRAVEL.			37.0	34					
BHT08	1	0.00	1.00	B		Greyish-black very silty SAND and GRAVEL.			61.0	39	119	85	34	2-gj	MEO
BHT08	4	1.00	1.50	B		Greyish-brown slightly gravelly sandy SILT.			31.0	86	52	33	19	2.57-gj	MH
BHT08	7	2.00	2.50	B		Brownish-grey silty coarse SAND and fine-medium GRAVEL.			12.0	20				2.66-gj	Not enough fines

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	1pt - single point test	gj - gas jar
wi - immersion in water	NP - Non Plastic	

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Table 1
sheet 3

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Summary of Classification Test Results

Project No.: 2023OY104

Project Name: Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
BHT08	10	3.00	3.50	B		Brownish-grey silty coarse SAND and fine-medium GRAVEL.			8.0						
BHT09	7	2.00	2.50	B		Dark bluish-grey slighlty silty very sandy fine and medium GRAVEL.			6.8	11					
BHT10	7	2.00	2.50	B		Dark bluish-grey silty very sandy medium and fine GRAVEL.			5.6	12					
BHT11	7	2.00	2.50	B		Dark bluish-grey silty very sandy medium and fine GRAVEL.			5.5	25					
BHT12	4	1.00	1.50	B		Dark brownish-grey silty very sandy coarse GRAVEL.			11.0	23					
BHT14	7	2.00	2.50	B		Dark brownish-grey silty very sandy medium GRAVEL.			6.5	27					
BHT16	1	0.00	1.00	B		Blackish-brown silty (peaty) SAND and GRAVEL.			37.0	29	79	62	17	2.14-gj	MV
BHT16	4	1.00	1.50	B		Dark bluish-grey coarse SAND and GRAVEL.			6.8	7				2.73-gj	NP
BHT16	13	4.00	4.50	B		Bluish-grey slightly silty very sandy coarse GRAVEL. Sand is coarse.			4.2	7				2.71-gj	NP
BHT16	22	8.00	8.50	B		Bluish-grey very gravelly coarse SAND.			6.8	10				2.7-gj	NP
BHT16A	1	0.00	1.00	B		Dark greyish-brown slightly gravelly slightly sandy SILT.			47.0	62	83	57	26		MV
BHT16A	4	1.00	1.50	B		Dark brownish-grey silty very sandy coarse GRAVEL. Sand is coarse.			9.7	15				2.67-gj	Not enough fines
BHT17	9	3.00	3.50	B		Dark bluish-grey gravelly silty medium SAND.			15.0	82					
BHT17A	1	0.00	1.00	B		Black PEAT.			405.0						Not enough fines
BHT17A	7	2.00	2.50	B		Light grey slightly gravelly sandy SILT.			17.0	64	44	26	18	2.58-gj	CI
BHT17A	10	3.00	3.50	B		Brownish-grey slightly gravelly sandy SILT.			15.0	71	24	17	7	2.71-gj	CL
BHT18A	1	0.00	1.00	B		Black PEAT.			548.0		517	374	143		MEO
BHT18A	10	3.00	3.50	B		Grey slightly gravelly very silty fine SAND.			24.0	93				2.59-gj	NP
BHT18A	16	5.00	5.50	B		Dark grey slightly gravelly sandy SILT. Sand is fine.			15.0	75	20	14	6	2.25-gj	ML
TP201	2	2.80	3.00	B		Dark grey slightly gravelly sandy SILT.			37.0	67	46	26	20		CI
TP201	4	3.40	3.60	B		Grey slightly sandy gravelly SILT.			21.0	74	30	19	11		CL
TP202	2	3.00	3.20	B		Black PEAT.			564.0		699	493	206		MEO
TP203	2	2.80	3.00	B		Black PEAT.			423.0						
TP204	5	2.50	2.70	B		Greenish-grey slightly gravelly slightly sandy SILT.			31.0	73	33	20	13		CL
TP205	2	2.50	2.70	B		Blackish-grey slightly gravelly sandy SILT.			32.0	56	32	24	8		ML
TP206A	1	0.50	0.70	B		Brown slightly gravelly slightly sandy SILT.			14.0	65	43	31	12		MI

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key: w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test: Linear measurement unless : wd - water displacement; wi - immersion in water

Liquid Limit: 4pt cone unless : 1pt - single point test; NP - Non Plastic

Particle density: sp - small pyknometer; gj - gas jar

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Table 1 sheet 4

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Summary of Classification Test Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
TP207	3	1.40	1.60	B		Greenish-grey slightly sandy slightly gravelly SILT.			13.0	62	20	14	6		ML
TP208	1	0.50	0.60	B		Black PEAT.			392.0	90	518	363	155		MEO
TP208	3	2.00	2.10	B		Dark brown slightly gravelly sandy SILT. Sand is medium.			29.0	75	40	24	16	2.63-gj	CI
TP208	6	2.50	2.60	B		Light brown slightly gravelly slightly sandy SILT.			12.0	64	21	15	6		CL
TP209	2	1.30	1.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			17.0	61	29	22	7		CL
TP210	1	0.50	0.70	B		Light brown slightly sandy slightly gravelly SILT.			19.0	67	33	26	7		ML
TP211	3	1.00	1.20	B		Brown slightly gravelly slightly sandy SILT.			11.0	70	24	15	9		CL
TP212	3	1.10	1.30	B		Brown slightly gravelly sandy SILT. Sand is fine.			12.0	75					NP
TP214	2	1.70	1.90	B		Light grey slightly gravelly slightly sandy SILT.			9.5	65	20	13	7		CL
TP215	3	1.60	1.80	B		Orange-brown slightly gravelly slightly sandy SILT.			29.0	88	37	33	4		ML
TP216	1	0.50	0.70	B		Brown slightly gravelly sandy SILT.			21.0	83	45	23	22		CI
TP217	4	1.60	1.80	B		Greyish-brown slightly gravelly sandy SILT.			10.0	63	20	14	6		ML
TP218	1	0.60	0.80	B		Brown slightly sandy slightly gravelly SILT.			12.0	54	24	20	4		ML
TP219	1	0.60	0.80	B		Brown slightly gravelly slightly sandy SILT.			14.0	80	31	22	9		CL
TP220	4	2.40	2.60	B		Greyish-brown very silty SAND and GRAVEL.			12.0	45					NP
TP221	1	3.00	3.20	B		Greyish-brown very silty very gravelly coarse SAND.			30.0	37	53	43	10		MH
TP222	2	2.70	3.00	B		Greyish-black very silty very sandy fine GRAVEL.			13.0	24					
TP224	2	2.30	2.50	B		Dark brown sandy very silty fine and medium GRAVEL.			13.0	35					
TP302	3	0.90	1.00	B		Blackish-brown very silty SAND and GRAVEL.			66.0	51	88	54	34		MV
TP303	3	2.20	2.30	B		Black-brown PEAT, with sand sized particles.			116.0	81	131	102	29		MEO
TP305	1	0.80	0.80	B		Greyish-brown slightly gravelly sandy SILT.			31.0	62	56	30	26		MH
TP308	3	1.30	1.40	B		Brownish-grey slightly gravelly sandy SILT.			31.0	53	64	46	18		MH
TP312	2	1.20	1.30	B		Brownish-grey slightly gravelly sandy SILT.			12.0	70	19	13	6		ML
TPBP01	3	1.40	1.50	B		Dark blackish-brown slightly sandy gravelly SILT.			119.0	52	166	116	50		MEO
TPBP03	3	1.40	1.50	B		Dark bluish-grey slightly silty very sandy coarse GRAVEL.			2.7						
TPBP05	4	1.50	1.60	B		Dark bluish-grey slightly silty very sandy coarse GRAVEL.			7.1						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	1pt - single point test	gj - gas jar
wi - immersion in water	NP - Non Plastic	

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DCD

Table 1
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Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Summary of Classification Test Results

Project No. 2023OY104

Project Name: Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
TPBP06	4	1.20	1.30	B		Brownish-grey very silty very sandy GRAVEL.			6.4	40	22	16	6		ML
TPBP08	1	0.40	0.50	B		Brownish-black vey silty very sandy coarse GRAVEL.			34.0	38	94	64	30		MEO
TPC01	1	0.50	0.60	B		Black PEAT.			746.0						Too fibrous to test
TPC02	5	2.50	3.00	B		Dark grey slightly gravelly sandy SILT.			30.0	84	33	22	11		CL
TPC04	3	1.60	1.70	B		Dark greenish-grey gravelly very silty medium SAND.			38.0	66	53	33	20		MH
TPC06	3	2.50	2.60	B		Black and greeenish-grey slightly gravelly slightly sandy SILT.			68.0	94	69	39	30		MH
TPC08	3	0.80	0.90	B		Brownish-grey slightly gravelly sandy SILT.			35.0	61	47	26	21	2.56-gj	CI
TPC08	6	2.30	2.60	B		Brownish-grey slightly gravelly slightly sandy SILT.			10.0	65	23	15	8		CL
TPC09	1	0.40	0.50	B		Black PEAT.			563.0	92	603	389	214		MEO
TPC09	3	1.30	1.40	B		Dark grey slightly gravelly sandy SILT. Sand is fine and medium.			32.0	78	42	30	12	2.2-gj	MI
TPCC01	5	2.90	3.00	B		Black and greeenish-grey gravelly very silty fine and medium SAND.			131.0	73					NP
TPSS02	1	1.90	2.10	B		Greyish-brown slightly gravelly sandy SILT.			38.0	80	41	31	10		MI
TPSS04	1	2.10	2.20	B		Brownish-grey slighlty gravelly sandy SILT.			18.0	80	28	24	4		ML
TPSS06	2	2.00	2.20	B		Greenish-grey slightly gravelly slightly sandy SILT.			22.0	83	28	23	5		ML
TPSS101	1	0.40	0.50	B		Brownish-grey slightly gravelly slightly sandy SILT.			9.2	65	32	21	11	2.68-gj	CL
TPSS101	4	1.40	1.50	B		Light greyish-brown slightly gravelly slightly sandy SILT.			11.0	60	25	15	10	2.71-gj	CL
TPSS101	6	2.40	2.50	B		Light grey slightly gravelly slightly sandy SILT.			12.0	64	23	14	9		CL
TPSS102	1	0.40	0.50	B		Greyish-brown very gravelly very silty medium SAND.			25.0	58	53	29	24	1.99-gj	CH
TPSS102	4	1.40	1.50	B		Greyish-brown slightly gravelly slightly sandy SILT.			14.0	63	28	16	12	2.63-gj	CL
TPSS103	1	0.40	0.50	B		Greenish-brown slightly gravelly sandy SILT.			12.0	63	26	16	10	2.72-gj	CL
TPSS103	4	1.40	1.50	B		Light grey slightly gravelly slightly sandy SILT.			11.0	61	22	13	9		CL
TPSS104	1	0.30	0.40	B		Black PEAT.			469.0	90	561	356	205		MEO
TPSS104	3	0.70	0.80	B		Greyish-brown slightly gravelly sandy SILT. Sand is medium.			38.0	73	46	27	19	1.52-gj	CI
TPSS105	1	0.40	0.50	B		Brownish-grey very silty very gravelly medium SAND.			14.0	52	33	20	13	2.69-gj	CL
TPSS105	4	1.40	1.50	B		Light brownish-grey very sandy very silty GRAVEL.			10.0	51	24	15	9		CL
TPSS105	6	2.40	2.50	B		Light grey slightly gravelly sandy SILT.			11.0	68	22	13	9		CL

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test: Linear measurement unless : wd - water displacement; wi - immersion in water

Liquid Limit: 4pt cone unless : 1pt - single point test; NP - Non Plastic

Particle density: sp - small pyknometer; gj - gas jar

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Table 1 sheet 6

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Summary of Classification Test Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
TPSS106	1	0.40	0.50	B		Greyish-brown slighlty gravelly sandy SILT. Sand is fine.			24.0	79	40	26	14	2.64-gj	MI
TPSS106	4	1.40	1.50	B		Brownish-grey slightly sandy gravelly SILT			12.0	50	27	16	11		CL
TPSS106	6	2.40	2.50	B		Light grey slightly sandy gravelly SILT.			14.0	58	25	16	9		CL
TPSS107	1	0.40	0.50	B		Greyish-brown slightly gravelly sandy SILT. Sand is fine.			30.0	76	47	25	22	2.62-gj	CI
TPSS107	4	1.80	1.90	B		Light grey very silty SAND and GRAVEL.			9.4	50	22	14	8		CL
TPT01	6	3.40	3.50	B		Dark grey slightly silty very gravelly coarse SAND.			15.0	31					
TPT03	3	1.50	1.60	B		Dark grey silty very gravelly medium SAND.			23.0	50					
TPT04	5	2.10	2.20	B		Dark grey silty very gravelly medium SAND.			12.0	41					NP
TPT05	3	1.00	1.10	B		Dark grey very silty fine SAND.			26.0	97					NP
TPT09	1	0.50	0.60	B		Dark grey very silty very silty (peaty) SAND.			28.0	57					NP
TPT14	4	1.50	1.60	B		Bluish-grey slightly silty SAND and GRAVEL.			4.7	14					Not enough Fines
TPT16	3	0.80	0.90	B		Blackish-brown very silty SAND and GRAVEL.			48.0	48	69	55	14		MH
TPT18	3	1.30	1.40	B		Greenish-brown slightly gravelly sandy SILT.			34.0	81	37	21	16		CI

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	1pt - single point test	gj - gas jar
wi - immersion in water	NP - Non Plastic	

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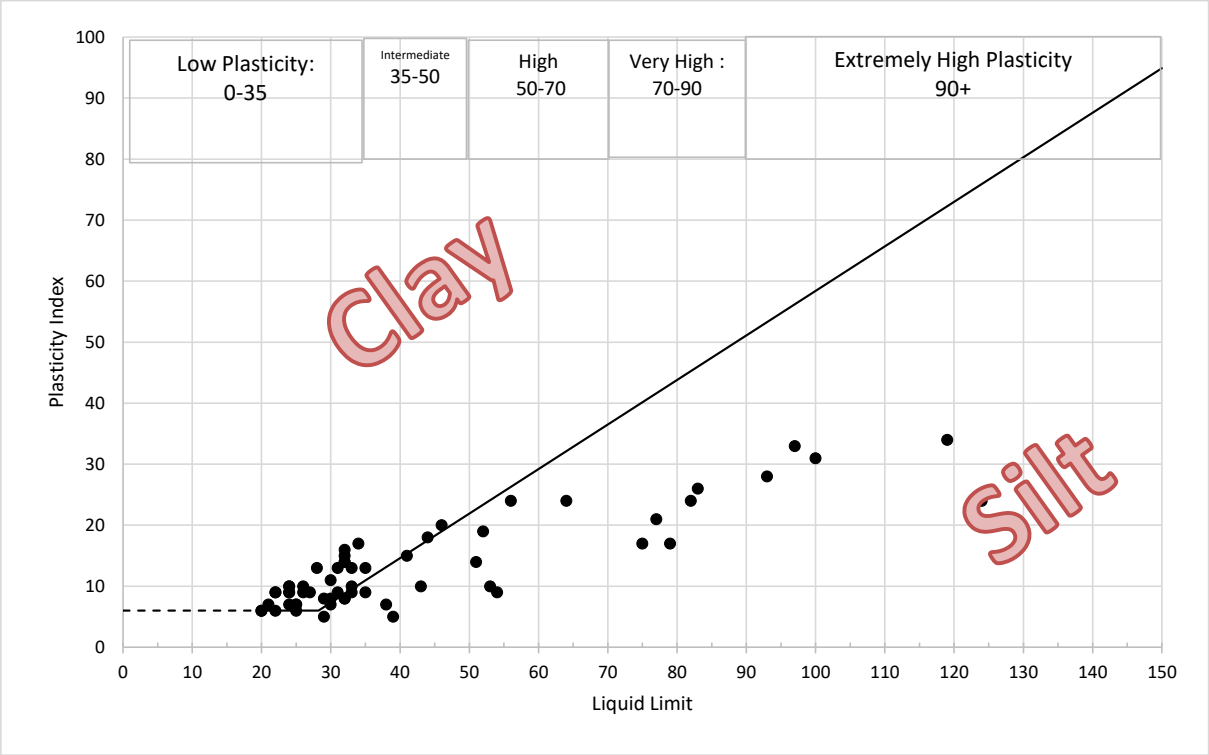
Table 1
sheet 7

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Plasticity (A-Line) Chart		Project Number
	Project Name:	**Derrygreenagh Power**	
	Location:		2023OY104



Abreviations in the remarks column of the Classification Summary Sheet: C = Clay, M = Silt

Plasticity abeviations: L = Low, I = Intermediate = H = High, V = Very High, E = Extremely High.

The letter O is added to the symbol of any material containing a significant proportion of organic material.

Chart taken from BS5930: 2010

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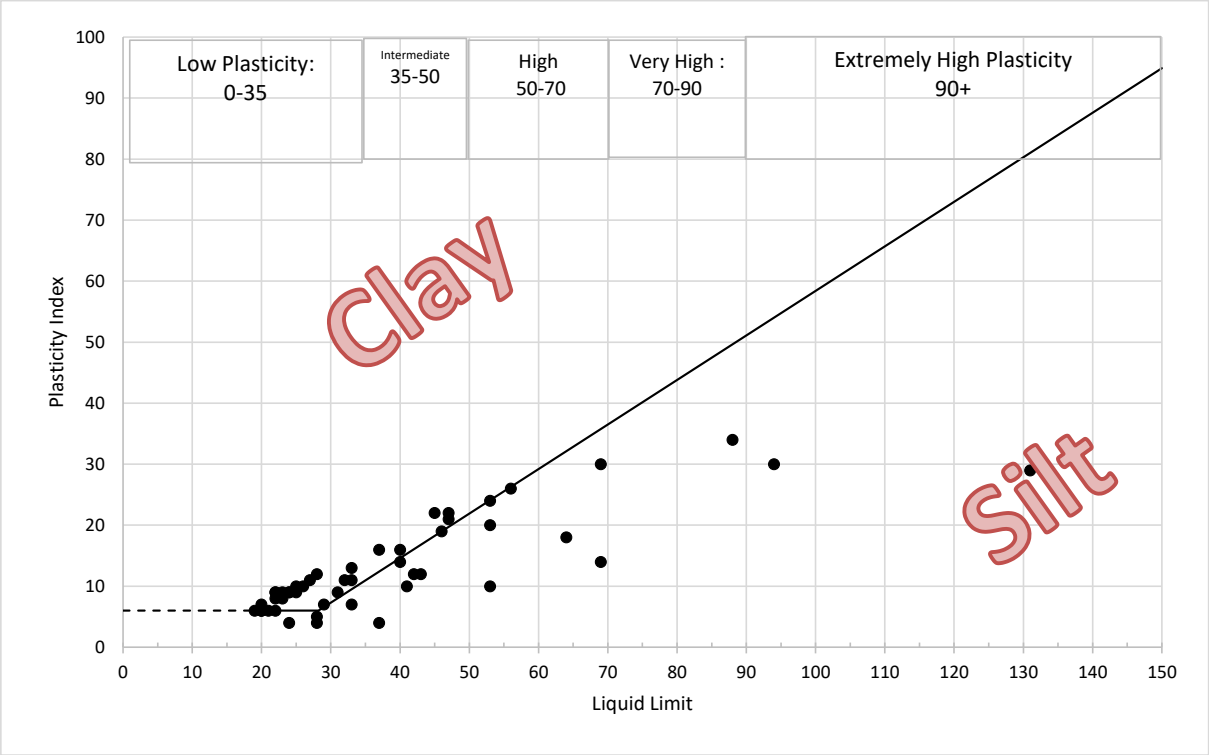
QC Form: R1

	Plasticity (A-Line) Chart		Project Number
	Project Name:	Derrygreenagh Power	
	Location:		2023OY104



Abreviations in the remarks column of the Classification Summary Sheet: C = Clay, M = Silt

Plasticity abeviations: L = Low, I = Intermediate = H = High, V = Very High, E = Extremely High.

The letter O is added to the symbol of any material containing a significant proportion of organic material.

Chart taken from BS5930: 2010

BCD

QC Form: R1

Particle Density by Gas Jar Tests - Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample				Soil Description at test horizon	Particle Density Mg/m3	Remarks
	Ref	Top	Base	Type			
BHCC01	24	9.50	10.00	B	Dark grey silty very gravelly medium SAND.	2.72	
BHCC02	12	4.00	4.50	B	Dark bluish-grey silty very sandy GRAVEL.	2.25	
BHCC02	21	8.00	8.50	B	Dark grey silty very gravelly medium and coarse SAND.	2.72	
BHPW301	23	8.00	8.50	B	Cream slightly gravelly slightly sandy SILT.	2.53	
BHSS06	9	3.00	3.50	B	Brownish-black slightly gravelly sandy peaty ORGANIC SILT.	1.51	
BHSS101	1	0.00	1.00	B	Greyish-brown slightly gravelly sandy SILT. Sand is medium.	2.42	
BHSS101	7	2.00	2.50	B	Light brown slightly gravelly slightly sandy SILT.	2.72	
BHSS102	4	1.00	1.50	B	Dark brown very silty SAND and GRAVEL.	2.67	
BHSS102	10	3.00	3.50	B	Light grey slightly gravelly slightly sandy SILT.	2.72	
BHSS103	1	0.00	1.00	B	Greensih-grey slightly gravelly sandy SILT.	2.67	
BHSS104	4	1.00	1.50	B	Greenish-brown slightly sandy slightly gravelly SILT.	2.69	
BHSS104	7	2.00	2.50	B	Light greyish-brown slightly gravelly slightly sandy SILT.	2.67	
BHSS104	10	3.00	3.50	B	Light grey slightly sandy slightly gravelly SILT.	2.25	
BHSS105	1	0.00	1.00	B	Brown and greensih-grey gravelly very silty medium and coarse SAND.	2.00	
BHSS105	4	1.00	1.50	B	Greyish-brown slightly gravelly slightly sandy SILT.	2.71	
BHSS106	4	1.00	1.50	B	Greenish-grey slightly gravelly sandy SILT.	2.58	
BHSS107	1	0.00	1.00	B	Yellowish-brown slightly gravelly slightly sandy SILT.	2.66	
BHSS1M08	1	0.00	1.00	B	Brown slightly gravelly slightly sandy SILT.	2.65	
BHT01	9	3.00	3.50	B	Blackish-grey silty gravelly medium SAND.	2.38	
BHT02	10	3.00	3.50	B	Blackish-grey slightly gravelly very silty fine and medium SAND.	2.21	
BHT08	1	0.00	1.00	B	Greyish-black very silty SAND and GRAVEL.	2.00	
BHT08	4	1.00	1.50	B	Greyish-brown slightly gravelly sandy SILT.	2.57	
BHT16	1	0.00	1.00	B	Blackish-brown silty (peaty) SAND and GRAVEL.	2.14	
BHT08	7	2.00	2.50	B	Brownish-grey silty coarse SAND and fine-medium GRAVEL.	2.66	
BHT16	4	1.00	1.50	B	Dark bluish-grey coarse SAND and GRAVEL.	2.73	
BHT16	13	4.00	4.50	B	Bluish-grey slightly silty very sandy coarse GRAVEL. Sand is coarse.	2.71	

Notes
Tests performed in accordance with BS 1377 unless annotated otherwise
Gas Jar tests to BS1377: Part 2 : 1990, clause 8.2

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Table
sheet
BCD (01.11.23)

Particle Density by Gas Jar Tests - Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample				Soil Description at test horizon	Particle Density Mg/m3	Remarks
	Ref	Top	Base	Type			
BHT16	22	8.00	8.50	B	Bluish-grey very gravelly coarse SAND.	2.70	
BHT16A	4	1.00	1.50	B	Dark brownish-grey silty very sandy coarse GRAVEL. Sand is coarse.	2.67	
BHT17A	7	2.00	2.50	B	Light grey slightly gravelly sandy SILT.	2.58	
BHT17A	10	3.00	3.50	B	Brownish-grey slightly gravelly sandy SILT.	2.71	
BHT18A	10	3.00	3.50	B	Grey slightly gravelly very silty fine SAND.	2.59	
BHT18A	16	5.00	5.50	B	Dark grey slightly gravelly sandy SILT. Sand is fine.	2.25	
TP208	3	2.00	2.10	B	Dark brown slightly gravelly sandy SILT. Sand is medium.	2.63	
TPC08	3	0.80	0.90	B	Brownish-grey slightly gravelly sandy SILT.	2.56	
TPC09	3	1.30	1.40	B	Dark grey slightly gravelly sandy SILT. Sand is fine and medium.	2.20	
TPSS101	1	0.40	0.50	B	Brownish-grey slightly gravelly slightly sandy SILT.	2.68	
TPSS101	4	1.40	1.50	B	Light greyish-brown slightly gravelly slightly sandy SILT.	2.71	
TPSS102	1	0.40	0.50	B	Greyish-brown very gravelly very silty medium SAND.	1.99	
TPSS102	4	1.40	1.50	B	Greyish-brown slightly gravelly slightly sandy SILT.	2.63	
TPSS103	1	0.40	0.50	B	Greenish-brown slightly gravelly sandy SILT.	2.72	
TPSS104	3	0.70	0.80	B	Greyish-brown slightly gravelly sandy SILT. Sand is medium.	1.52	
TPSS105	1	0.40	0.50	B	Brownish-grey very silty very gravelly medium SAND.	2.69	
TPSS106	1	0.40	0.50	B	Greyish-brown slighlty gravelly sandy SILT. Sand is fine.	2.64	
TPSS107	1	0.40	0.50	B	Greyish-brown slightly gravelly sandy SILT. Sand is fine.	2.62	

Notes
Tests performed in accordance with BS 1377 unless annotated otherwise
Gas Jar tests to BS1377: Part 2 : 1990, clause 8.2

Date Printed
########

Table
BCS (01.11.23)
sheet

Irish Drilling Ltd.	Summary of Thermal Conductivity test results
Project No. 2023OY104	Project Name Derrygreenagh Power

Hole No.	Sample					Date of test	Bulk density Mg/m3	Dry density Mg/m3	Water Content %	Thermal Conductivity W/m.K	Thermal Resistivity m.K/W	Remarks
	Ref	Top	Base	Type	Description							
TPC01	1	0.50	0.60	B	Black PEAT.		0.91	0.16	468.4	0.72	1.40	
TPC02	1	0.50	0.60	B	Black PEAT.		0.90	0.12	635.6	0.65	1.53	
TPC03	1	0.70	0.80	B	Black PEAT.		0.93	0.13	638.9	0.67	1.50	
TPC04	1	0.80	0.90	B	Black PEAT.		0.84	0.15	459.0	0.64	1.56	
TPC05	1	0.50	0.60	B	Black PEAT.		0.94	0.13	618.2	0.74	1.35	
TPC06	1	0.90	1.00	B	Black PEAT.		0.89	0.12	631.2	0.67	1.49	
TPC07	1	0.40	0.50	B	Black PEAT.		0.93	0.17	458.8	0.63	1.59	
TPC08	3	0.80	0.90	B	Brownish-grey slightly gravelly sandy SILT.		0.93	0.16	492.4	0.63	1.58	
TPC09	3	1.30	1.40	B	Dark grey slightly gravelly sandy SILT. Sand is fine and		0.95	0.16	502.5	0.61	1.65	
TPCC01	1	0.50	0.60	B	Black PEAT.		0.87	0.09	845.0	0.68	1.47	

Notes	Date Printed	Approved By	Table
Tests performed in accordance with in house method based on ASTM D5334 using a direct reading system in accordance with the Manufacturer's instructions. System calibrated against reference standard prior to each suite of tests. Calculations performed using intergrated algorithms for non-steady state thermal probe technique.	############ BCD	(01.11.23)	1 sheet 1

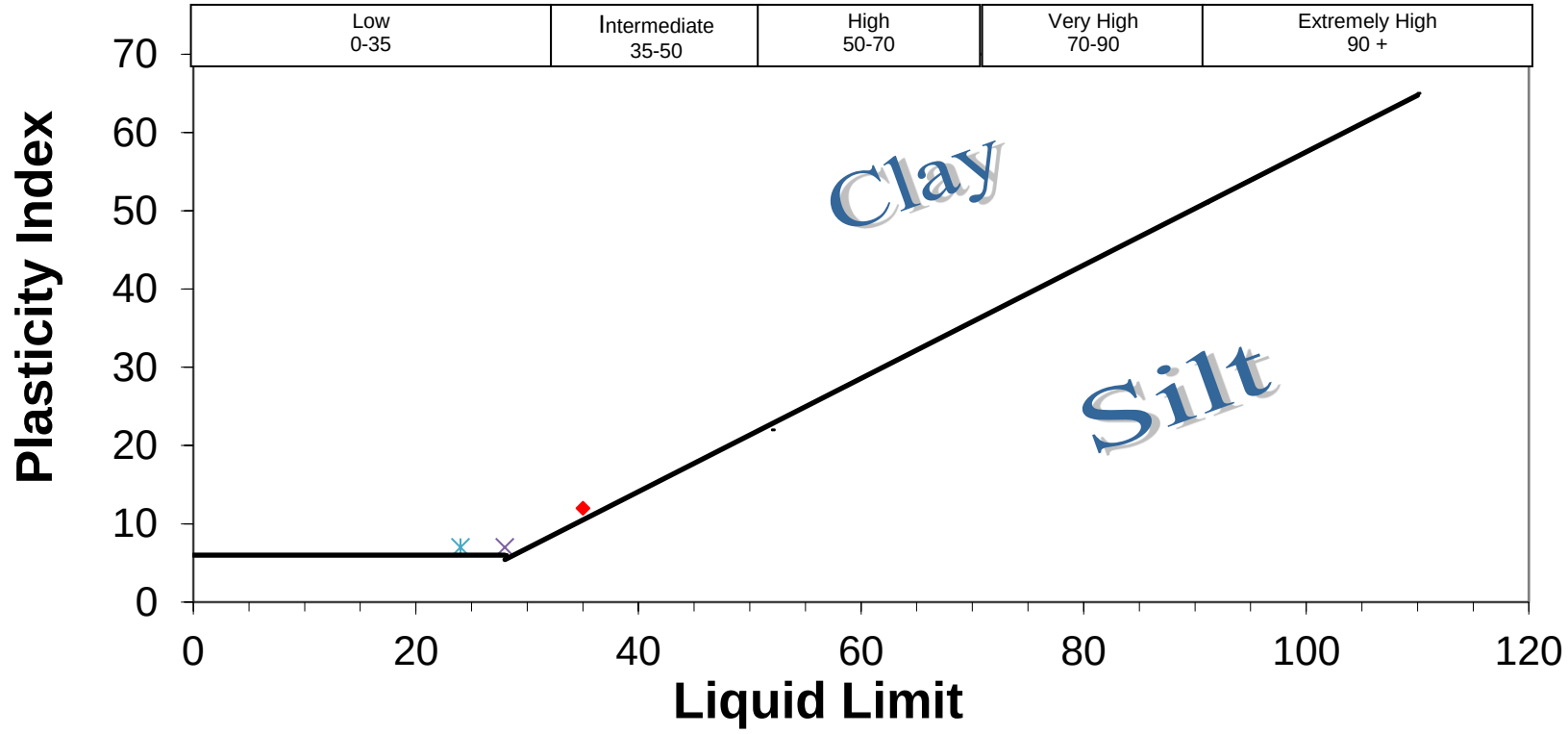
National Materials Testing Laboratory Ltd.

SUMMARY OF TEST RESULTS

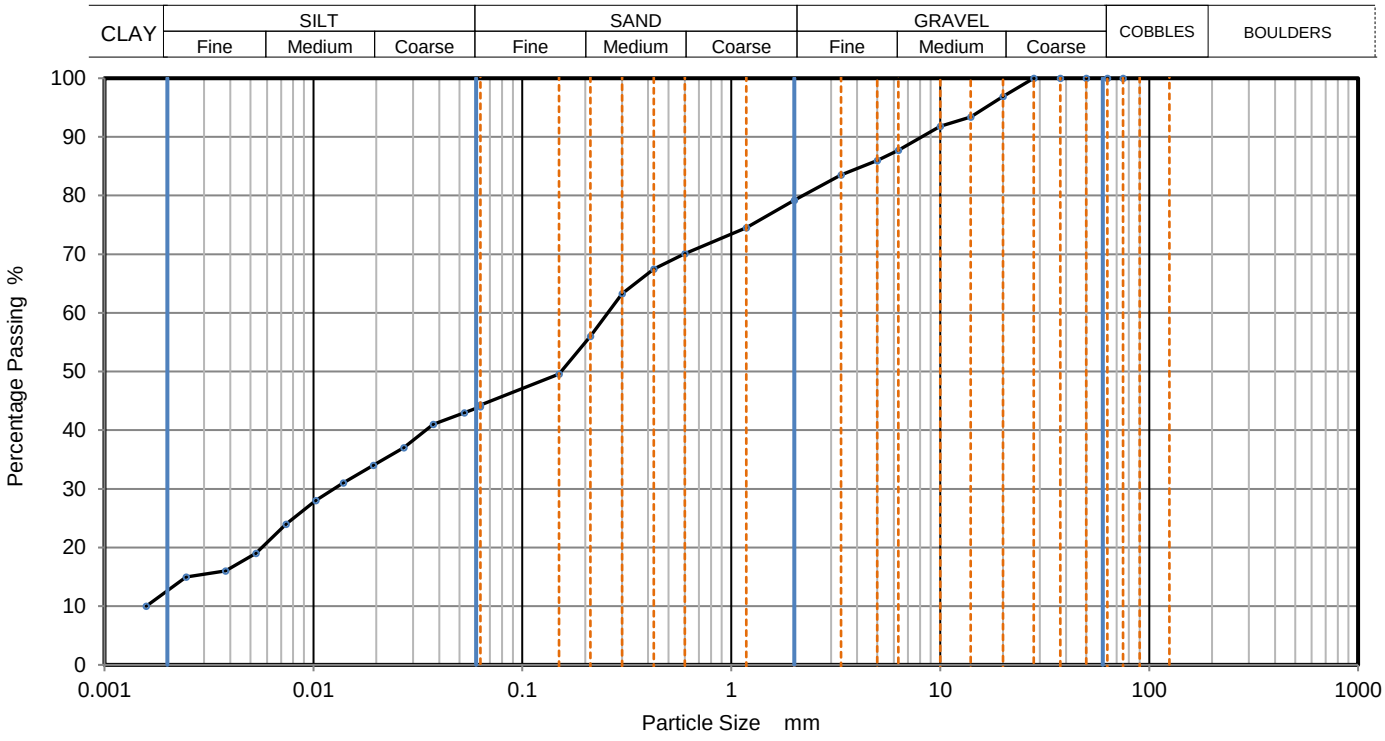
				Particle			Index Properties		Bulk	Cell	Undrained Triaxial Tests		Lab	
BH/TP	Depth	sample	Moisture	Density	<425um	LL	PL	PI	Density	Presssure	Compressive	Strain at	Vane	Remarks
No	m	No.	%	Mg/m3	%	%	%	%	Mg/m3	kPa	Stress kPa	Failure %	kPa	
BH101	2.0-2.45	U5	24.4		48.7	35	23	12						
BH102	3.0-3.45	U9	154.0		62.5	225	130	95						
BH104	1.0-1.45	U3	519.0		68.7	570	377	193						
BH105	3.0-3.45	U9	18.3		62.4	28	21	7						
BH109	2.0-2.45	U6	703		77.3	620	319	301						
BH113	2.0-3.45	U6	10.7		44.4	24	17	7						
BHPW301	2.0-2.45	U6	702.0		81.4	780	429	351						
BHPW301	4.0-4.45	U11	498.0		64.2	585	370	215						
BHSS05	1.0-1.45	U3	553.0		84.7	760	454	306						

NMTL	Notes :	Job ref No.	NMTL 3631	IDL Project ID:	2023OY104
	1. All BS tests carried out using preferred (definitive) method unless otherwise stated.	Location	Derrygreenagh Power		

NMTL LTD	**Contract:**	**Derrygreenagh Power**	
Unit 18c, Tullow Industrial Estate	**Client:**	**Irish Drilling Limited**	
Tullow	**Engineer:**		
County Carlow	**GII Project ID**	**2023OY104**	
Tel: 00353 59 9180822	**Date:**	**29/08/2023**	
Mob: 00353 872575508	**Tested By:**	**Js**	**Checked:** **Bc**
billa@nmtl.ie	**Job ref No.**	**NMTL 3631**	



IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH101
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Black slightly gravelly sandy ORGANIC SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426143



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	44
		0.0527	43
75	100	0.0375	41
63	100	0.0271	37
50	100	0.0194	34
37.5	100	0.0139	31
28	100	0.0103	28
20	97	0.0074	24
14	93	0.0053	19
10	92	0.0038	16
6.3	88	0.0025	15
5	86	0.0016	10
3.35	84		
2	79		
1.18	75		
0.6	70	Particle density	(assumed)
0.425	68	2.65	Mg/m3
0.3	63		
0.212	56		
0.15	50		
0.063	44		

Dry Mass of sample, g: 431

Sample Proportions	% dry mass
Very coarse	0
Gravel	21
Sand	35
Silt	32
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.256
D30	mm	0.0125
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:37	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	96.9
20.000	93.3
14.000	88.6
10.000	83.3
6.300	75.1
5.000	70.9
3.350	66.7
2.000	61.0
1.180	56.2
0.600	51.2
0.425	48.7
0.300	46.1
0.212	43.0
0.150	40.1
0.063	34.9

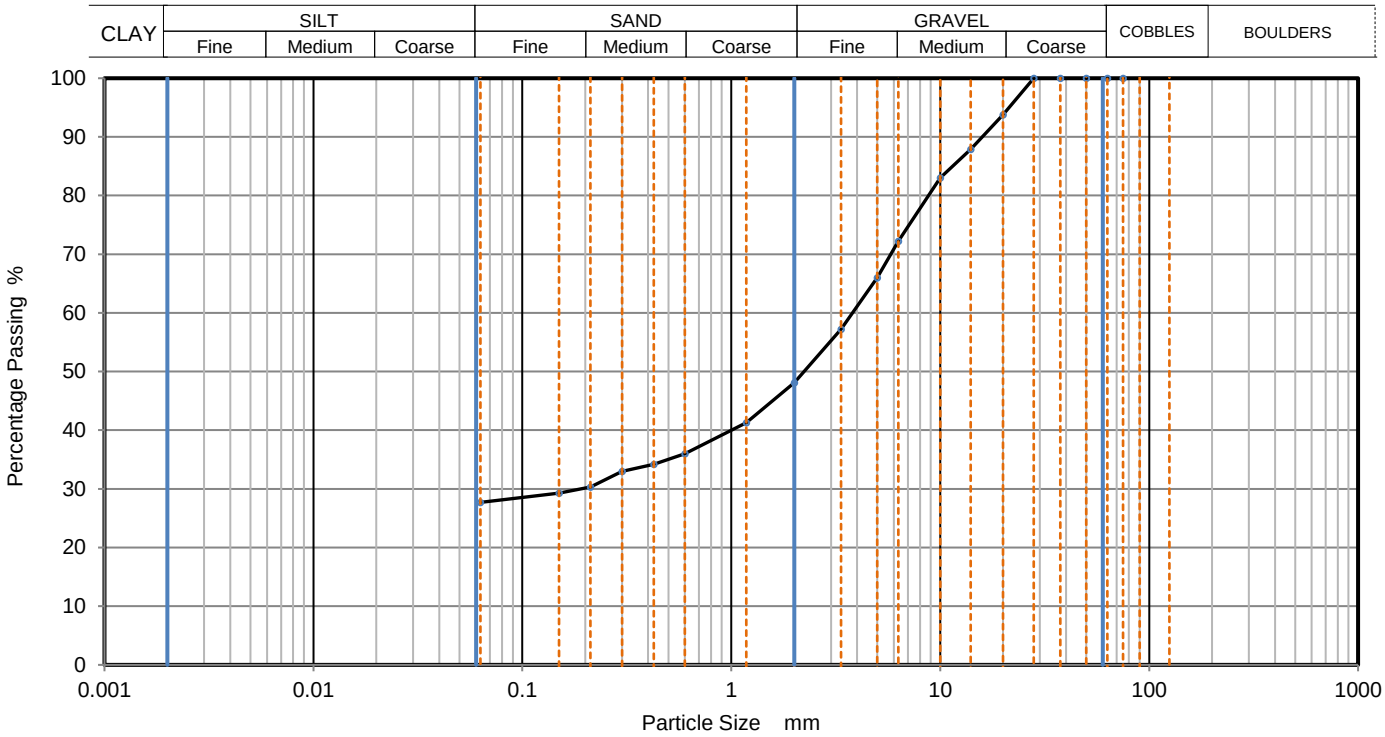
Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		34.9			26.1			39.0		0.0	0.0

Sample Description	Brown/grey slightly sandy gravelly silty CLAY.	Project No.	NMTL 3631
		BH/TP No.	BH101
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U5
Operator Js	Checked Nc / Approved Bc / Date sample tested 10/07/2023	Depth	2.00-2.45m

NM TL Ltd

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH101
Site Name	Derrygreenagh Power	Sample No.	13
Soil Description	Orange-brown very sandy very silty fine and medium GRAVEL.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230426152



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	94		
14	88		
10	83		
6.3	72		
5	66		
3.35	57		
2	48		
1.18	41		
0.6	36		
0.425	34		
0.3	33		
0.212	30		
0.15	29		
0.063	28		

Dry Mass of sample, g: 735

Sample Proportions	% dry mass
Very coarse	0
Gravel	52
Sand	20
Fines <0.063mm	28

Grading Analysis		
D100	mm	
D60	mm	3.81
D30	mm	0.19
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:37	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	96.9
10.000	94.1
6.300	88.8
5.000	86.3
3.350	82.3
2.000	77.1
1.180	71.9
0.600	65.6
0.425	62.5
0.300	59.4
0.212	56.7
0.150	54.5
0.063	51.7

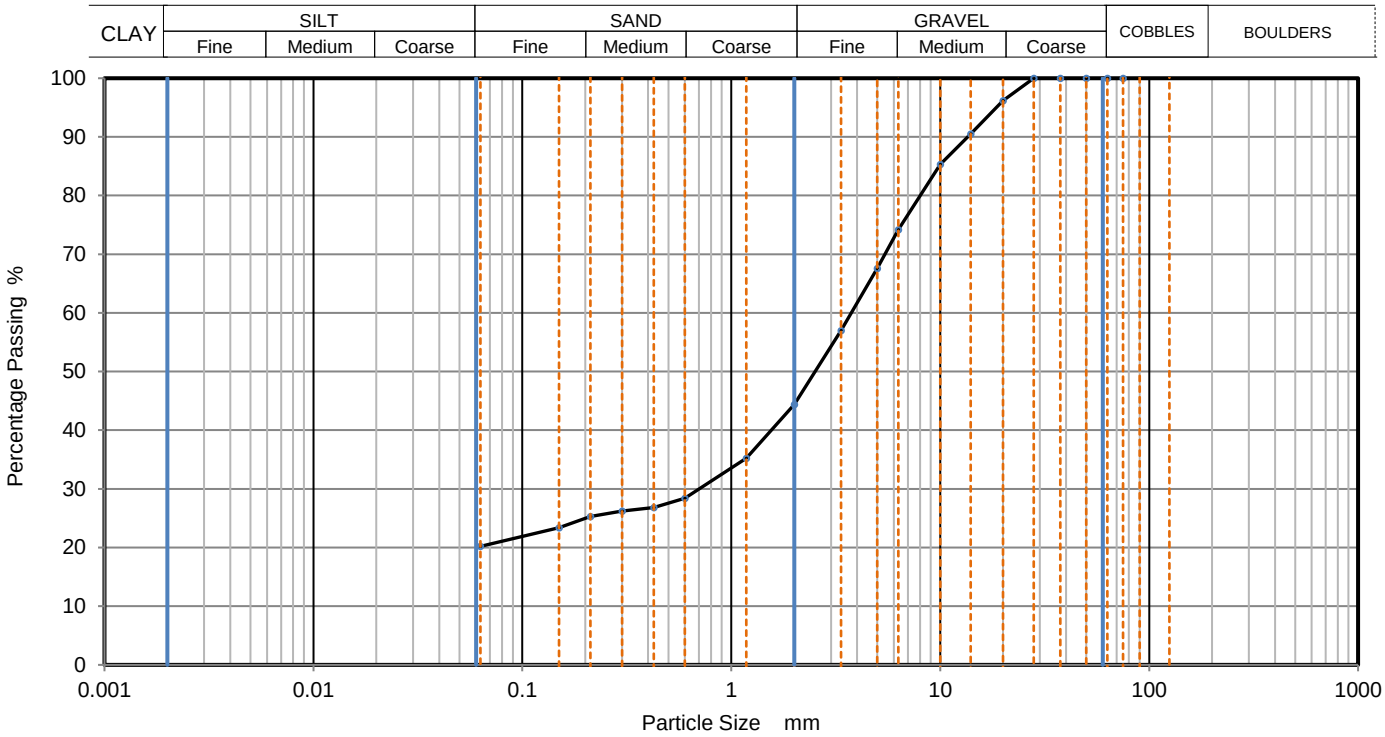
Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		51.7			25.4			22.9		0.0	0.0

Sample Description	Dark brown slightly fiberous PEAT.	Project No.	NMTL 3631
	sands and gravel are root and fibre particles	BH/TP No.	BH102
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U9
Operator Js	Checked Nc / Approved Bc / Date sample tested 10/07/2023	Depth	3.00-3.45m

NM TL Ltd

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	BH102
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description	Brown very silty very sandy fine and medium GRAVEL.			Depth, m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120230426195



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	91		
10	85		
6.3	74		
5	68		
3.35	57		
2	44		
1.18	35		
0.6	28		
0.425	27		
0.3	26		
0.212	25		
0.15	23		
0.063	20		

Dry Mass of sample, g	1057

Sample Proportions	% dry mass
Very coarse	0
Gravel	56
Sand	24
Fines <0.063mm	20

Grading Analysis		
D100	mm	
D60	mm	3.75
D30	mm	0.701
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

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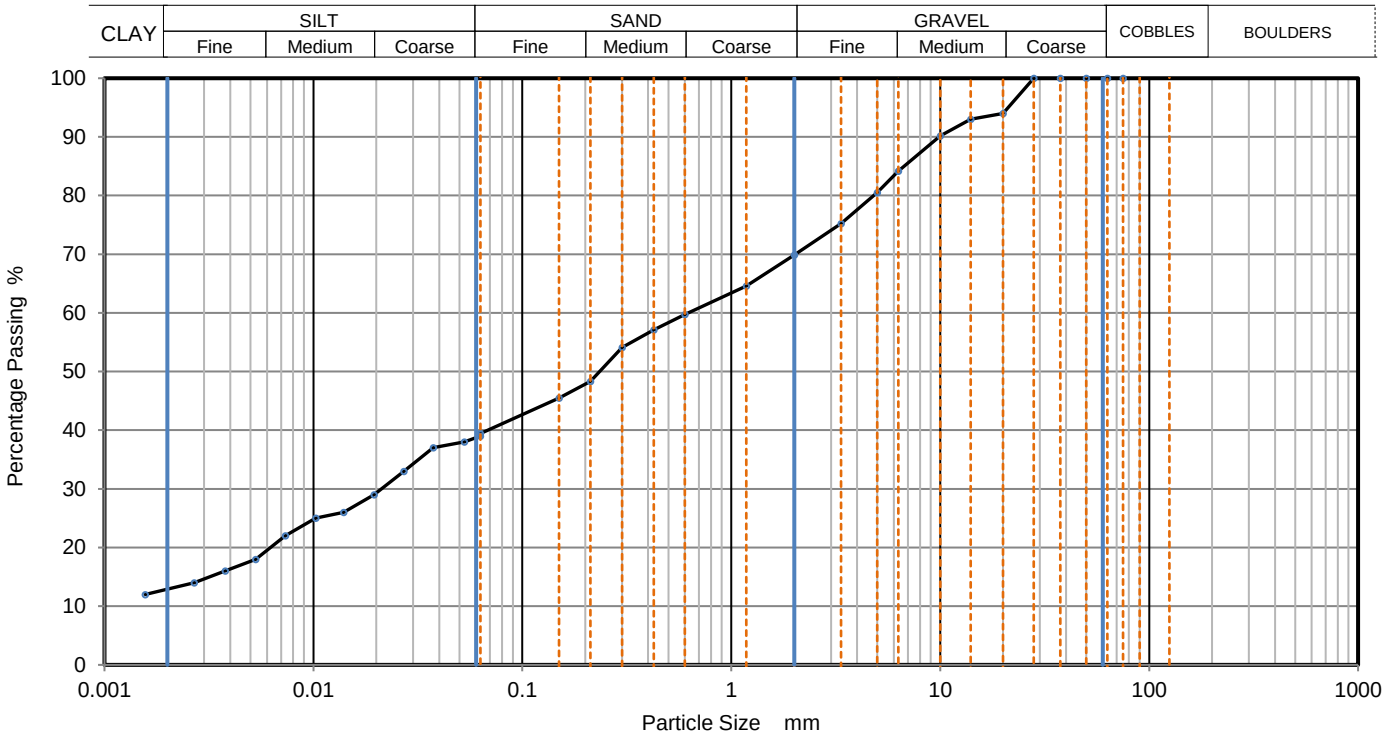
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH103
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Greyish-brown slightly gravelly slightly gravelly SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426204



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	39
		0.0527	38
75	100	0.0375	37
63	100	0.0271	33
50	100	0.0195	29
37.5	100	0.0140	26
28	100	0.0103	25
20	94	0.0073	22
14	93	0.0053	18
10	90	0.0038	16
6.3	84	0.0027	14
5	81	0.0016	12
3.35	75		
2	70		
1.18	65		
0.6	60	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	54		
0.212	48		
0.15	46		
0.063	39		

Dry Mass of sample, g	713

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	31
Silt	26
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.629
D30	mm	0.0214
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

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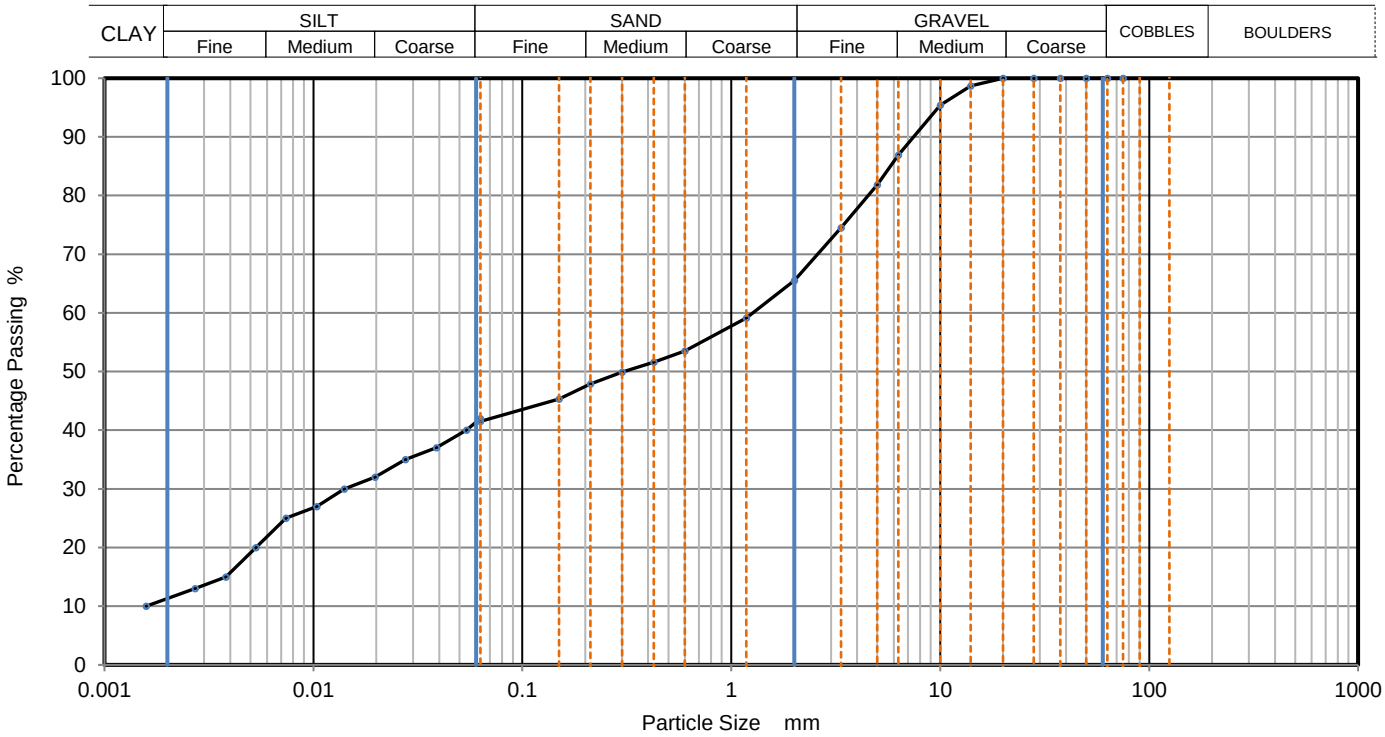
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH103
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Greyish-brown slightly sandy gravelly SILT. Gravel is fine.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426207



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	42
		0.0541	40
75	100	0.0388	37
63	100	0.0276	35
50	100	0.0197	32
37.5	100	0.0140	30
28	100	0.0104	27
20	100	0.0074	25
14	99	0.0053	20
10	95	0.0038	15
6.3	87	0.0027	13
5	82	0.0016	10
3.35	75		
2	66		
1.18	59		
0.6	54	Particle density	(assumed)
0.425	52	2.65	Mg/m3
0.3	50		
0.212	48		
0.15	45		
0.063	42		

Dry Mass of sample, g	735

Sample Proportions	% dry mass
Very coarse	0
Gravel	35
Sand	24
Silt	30
Clay	11

Grading Analysis		
D100	mm	
D60	mm	1.27
D30	mm	0.0144
D10	mm	0.00159
Uniformity Coefficient		800
Curvature Coefficient		0.1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:37	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	99.7
5.000	97.8
3.350	96.2
2.000	92.1
1.180	85.0
0.600	74.7
0.425	68.7
0.300	61.7
0.212	55.9
0.150	51.9
0.063	44.8

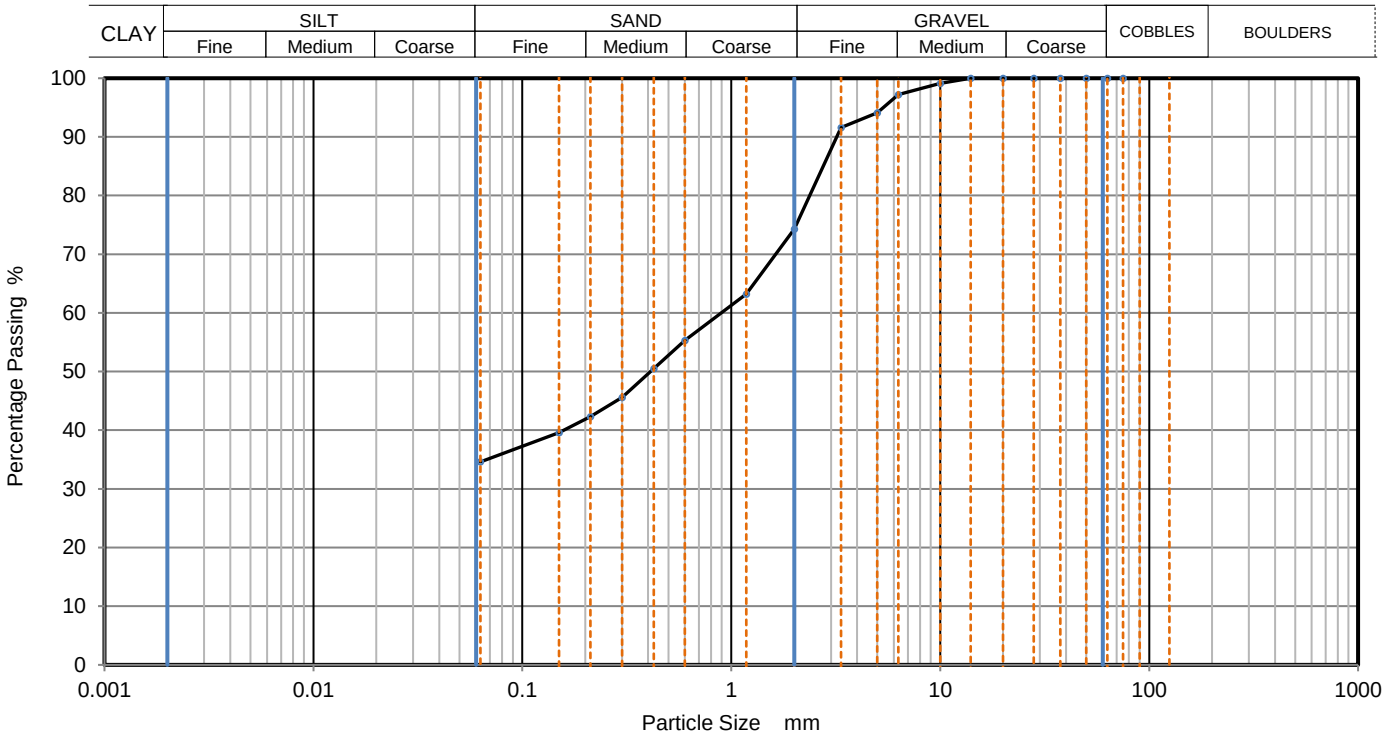
Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		44.8			47.3			7.9		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT.	Project No.	NMTL 3631
	sands and gravel are root and fibre particles	BH/TP No.	BH104
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U3
Operator Js	Checked Nc / Approved Bc / Date sample tested 10/07/2023	Depth	1.00-1.45m

NM TL Ltd

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH104
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Black slighlty gravelly sandy ORGANIC SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230426216



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	97		
5	94		
3.35	92		
2	74		
1.18	63		
0.6	55		
0.425	51		
0.3	46		
0.212	42		
0.15	40		
0.063	35		

Dry Mass of sample, g	78

Sample Proportions	% dry mass
Very coarse	0
Gravel	26
Sand	40
Fines <0.063mm	35

Grading Analysis		
D100	mm	
D60	mm	0.896
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

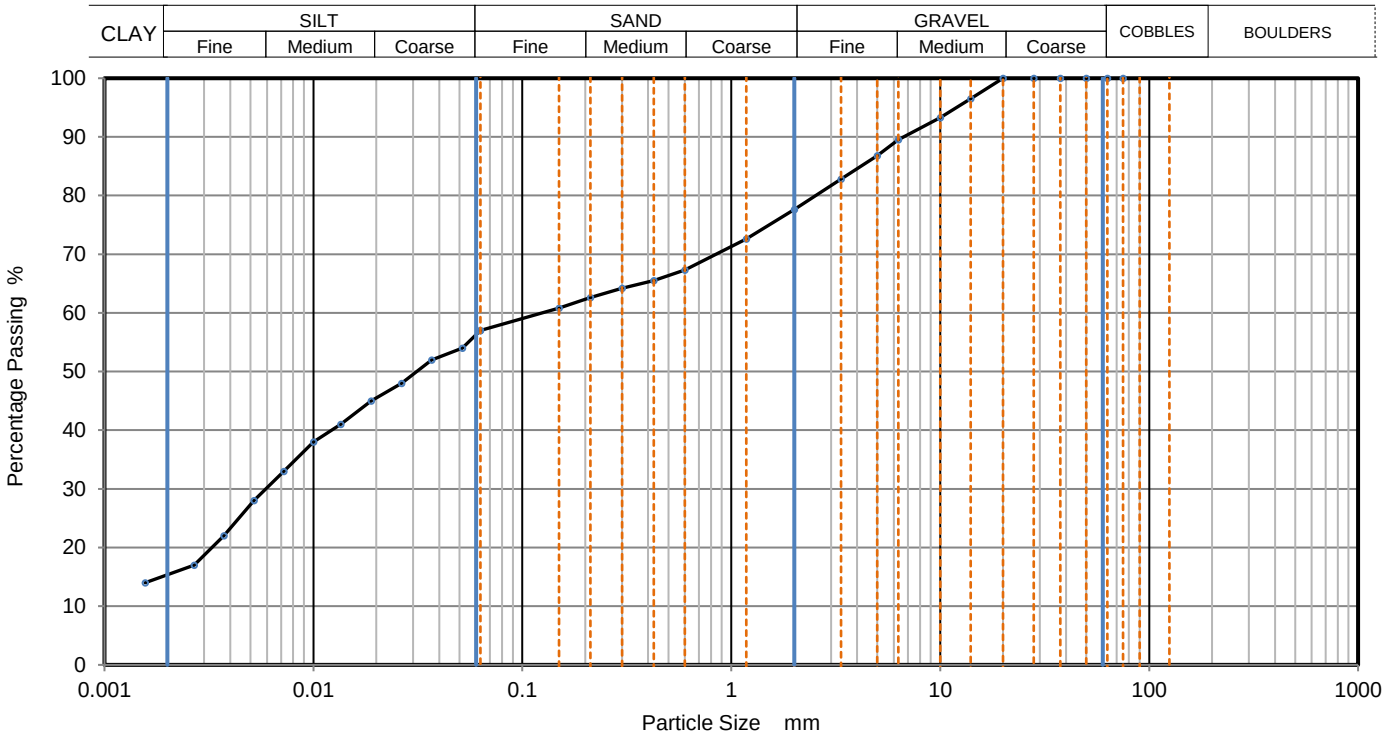
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:37	**1** QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH104
Site Name	Derrygreenagh Power	Sample No.	13
Soil Description	Yellowish-brown very sandy very gravelly SILT.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426222



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	57
		0.0517	54
75	100	0.0368	52
63	100	0.0264	48
50	100	0.0189	45
37.5	100	0.0135	41
28	100	0.0100	38
20	100	0.0072	33
14	97	0.0052	28
10	93	0.0037	22
6.3	90	0.0027	17
5	87	0.0016	14
3.35	83		
2	78		
1.18	73		
0.6	67	Particle density	(assumed)
0.425	66	2.65	Mg/m3
0.3	64		
0.212	63		
0.15	61		
0.063	57		

Dry Mass of sample, g: 650

Sample Proportions	% dry mass
Very coarse	0
Gravel	22
Sand	21
Silt	42
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.124
D30	mm	0.00603
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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Operator	Checked	Approved	Sheet printed	
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Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	97.8
10.000	95.2
6.300	90.7
5.000	85.9
3.350	82.7
2.000	76.2
1.180	70.0
0.600	64.5
0.425	62.4
0.300	60.5
0.212	58.6
0.150	56.7
0.063	52.2

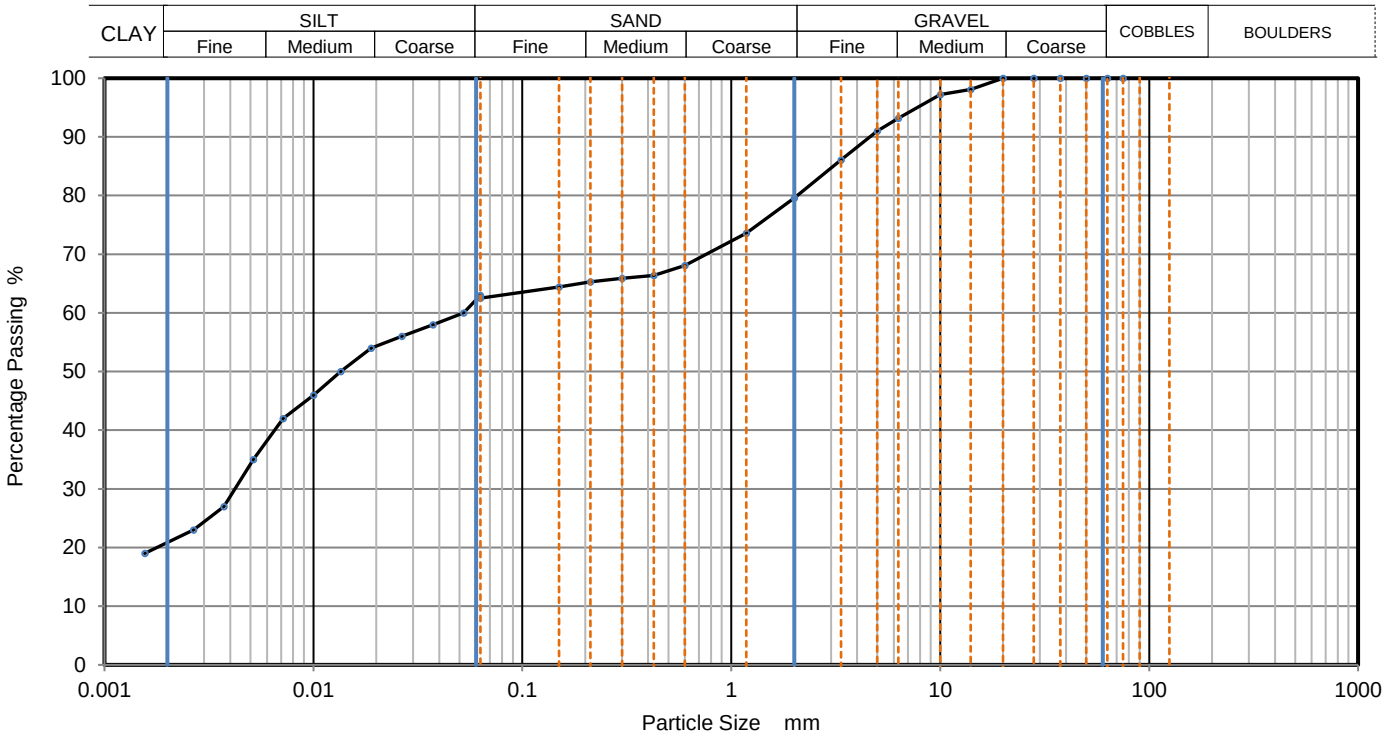
Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		52.2			24.0			23.8		0.0	0.0

Sample Description	Brown/grey slightly sandy slightly gravelly silty CLAY.	Project No.	NMTL 3631
		BH/TP No.	BH105
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U9
Operator Js	Checked Nc / Approved Bc / Date sample tested 09/08/2023	Depth	3.00-3.45m

NM TL Ltd

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH105
Site Name	Derrygreenagh Power	Sample No.	12
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426245



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	63
		0.0524	60
75	100	0.0373	58
63	100	0.0265	56
50	100	0.0189	54
37.5	100	0.0135	50
28	100	0.0100	46
20	100	0.0072	42
14	98	0.0052	35
10	97	0.0037	27
6.3	93	0.0027	23
5	91	0.0016	19
3.35	86		
2	80		
1.18	74		
0.6	68	Particle density (assumed)	
0.425	66	2.65 Mg/m3	
0.3	66		
0.212	65		
0.15	64		
0.063	63		

Dry Mass of sample, g	741

Sample Proportions	% dry mass
Very coarse	0
Gravel	20
Sand	17
Silt	42
Clay	21

Grading Analysis		
D100	mm	
D60	mm	0.0489
D30	mm	0.00418
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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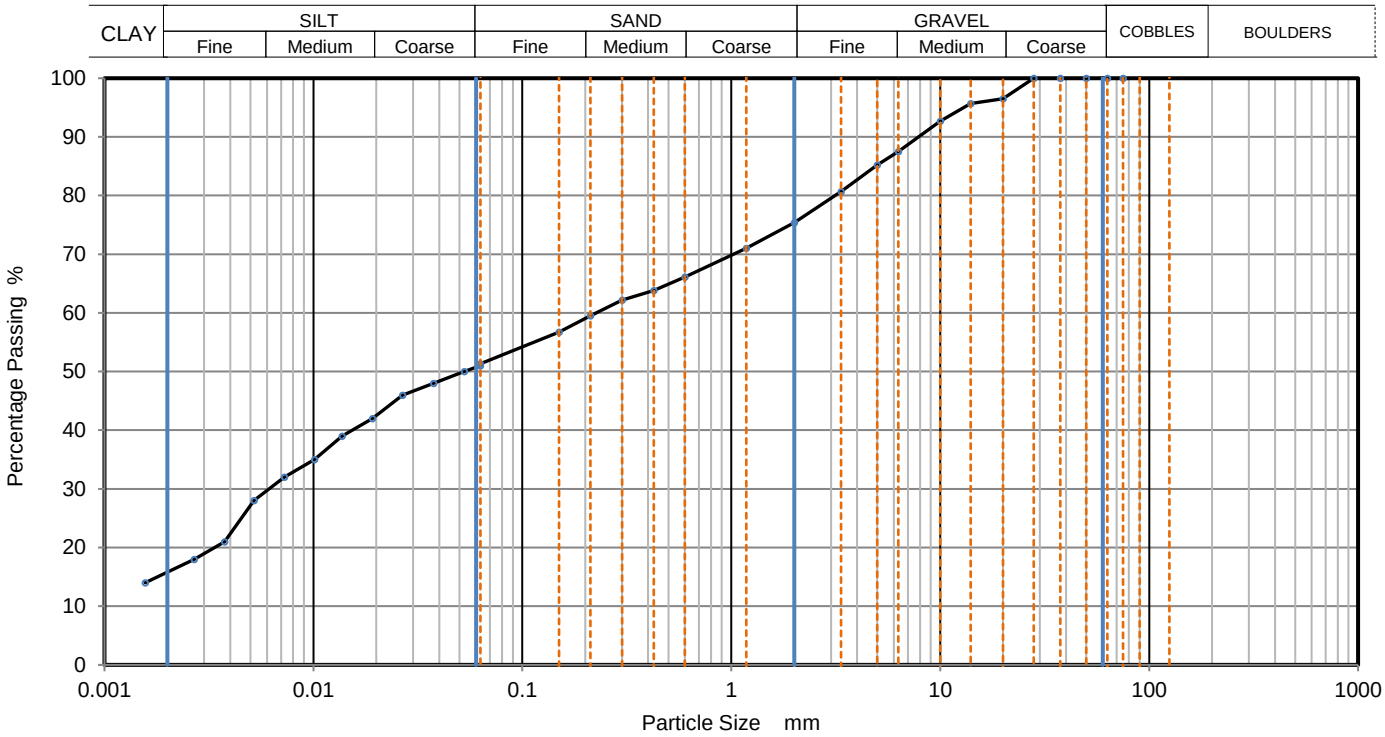
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH106
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Greyish-brown slightly sandy slightly gravelly SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426266



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	51
		0.0527	50
75	100	0.0375	48
63	100	0.0267	46
50	100	0.0191	42
37.5	100	0.0137	39
28	100	0.0101	35
20	97	0.0073	32
14	96	0.0052	28
10	93	0.0038	21
6.3	88	0.0027	18
5	85	0.0016	14
3.35	81		
2	75		
1.18	71		
0.6	66	Particle density (assumed)	
0.425	64	2.65 Mg/m3	
0.3	62		
0.212	60		
0.15	57		
0.063	51		

Dry Mass of sample, g	1021

Sample Proportions	% dry mass
Very coarse	0
Gravel	25
Sand	24
Silt	36
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.227
D30	mm	0.00609
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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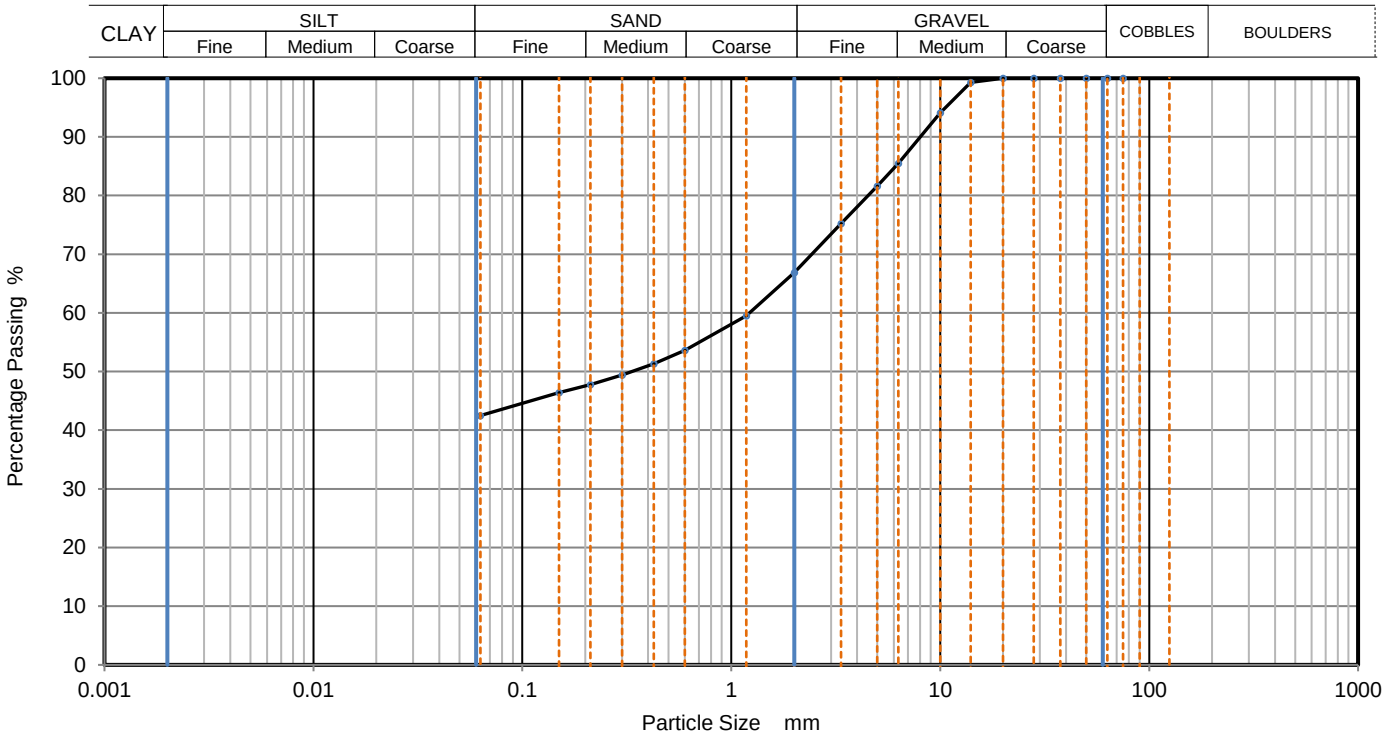
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL1202305057



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	94		
6.3	86		
5	82		
3.35	75		
2	67		
1.18	60		
0.6	54		
0.425	51		
0.3	49		
0.212	48		
0.15	46		
0.063	43		

Dry Mass of sample, g	948

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	24
Fines <0.063mm	43

Grading Analysis		
D100	mm	
D60	mm	1.23
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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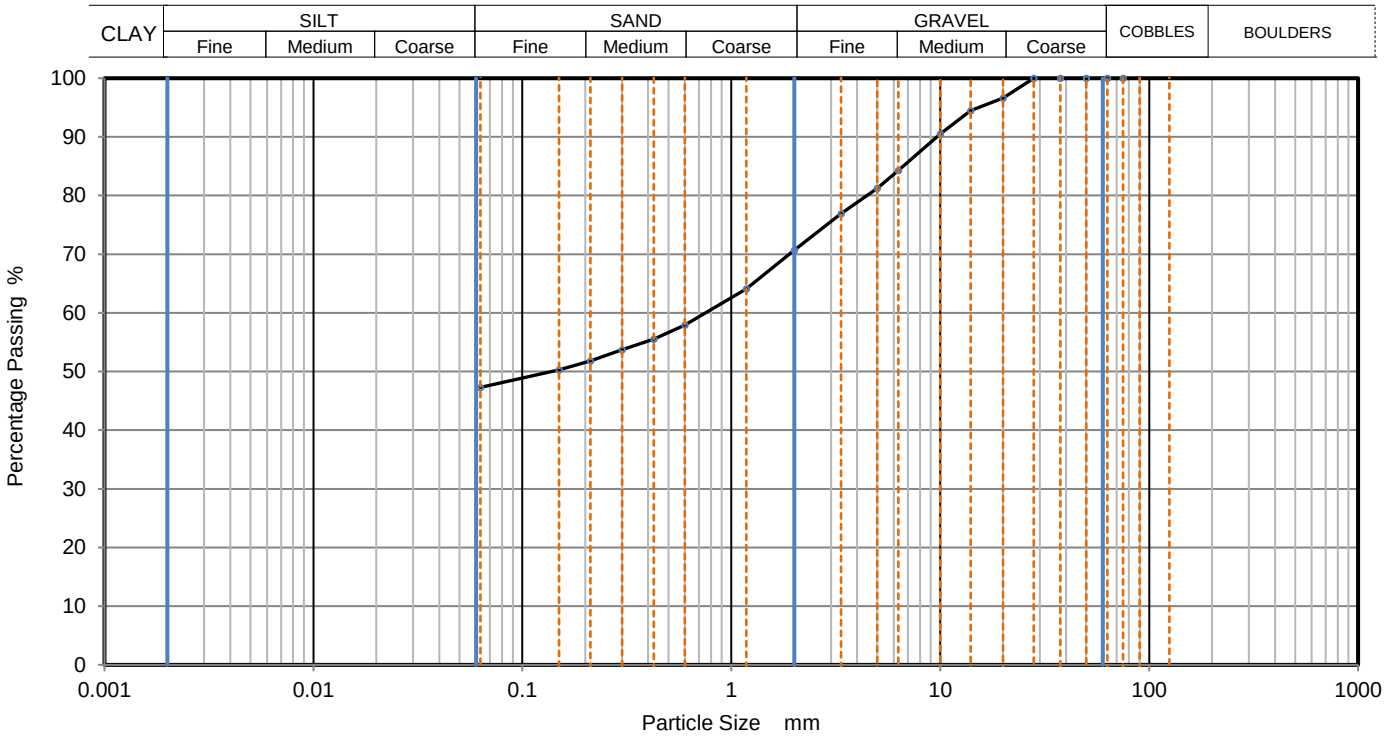
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023050510



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	95		
10	91		
6.3	84		
5	81		
3.35	77		
2	71		
1.18	64		
0.6	58		
0.425	56		
0.3	54		
0.212	52		
0.15	50		
0.063	47		

Dry Mass of sample, g: 756

Sample Proportions	% dry mass
Very coarse	0
Gravel	29
Sand	23
Fines <0.063mm	47

Grading Analysis		
D100	mm	
D60	mm	0.752
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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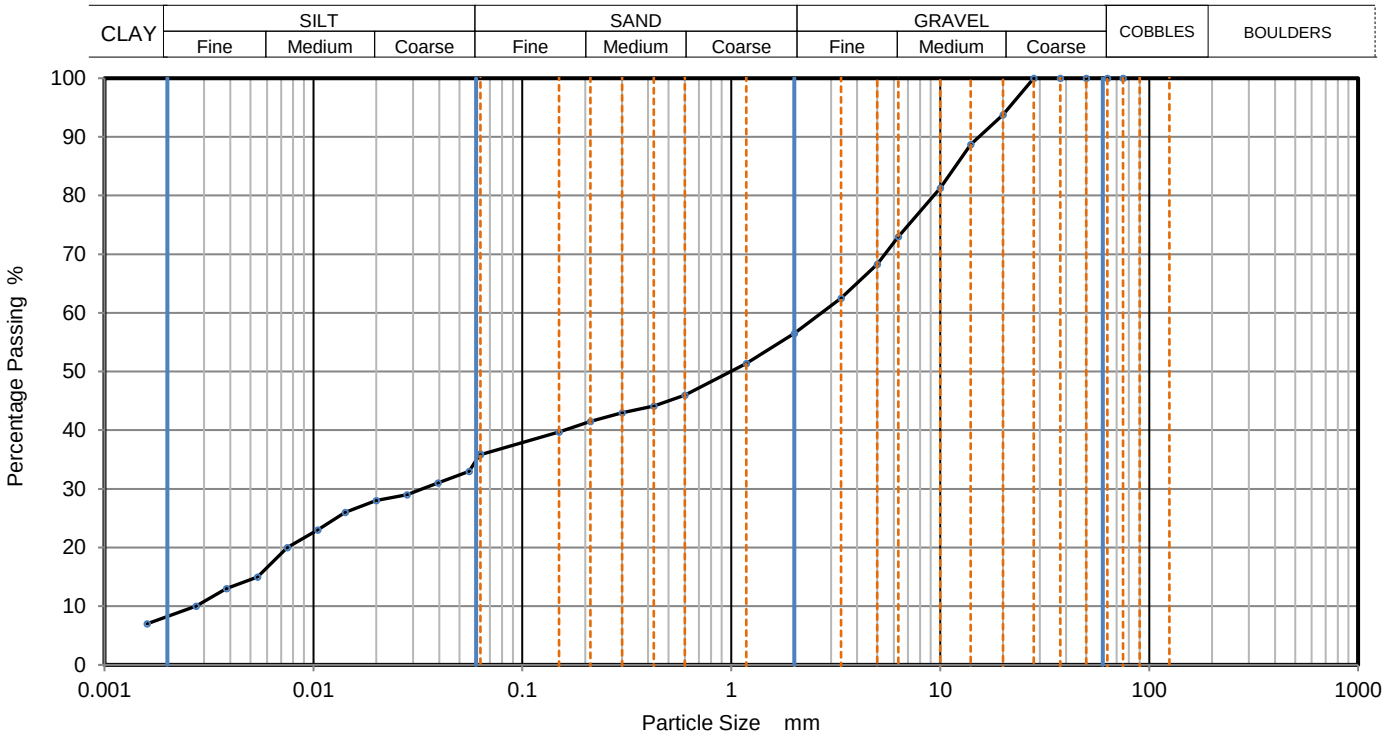
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH109
Site Name	Derrygreenagh Power	Sample No.	19
Soil Description	Creamy-brown slightly sandy gravelly SILT.	Depth, m	6.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426297



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	36
		0.0555	33
75	100	0.0395	31
63	100	0.0281	29
50	100	0.0200	28
37.5	100	0.0142	26
28	100	0.0105	23
20	94	0.0075	20
14	89	0.0054	15
10	81	0.0038	13
6.3	73	0.0027	10
5	68	0.0016	7
3.35	63		
2	57		
1.18	51		
0.6	46	Particle density	(assumed)
0.425	44	2.65	Mg/m3
0.3	43		
0.212	42		
0.15	40		
0.063	36		

Dry Mass of sample, g	864

Sample Proportions	% dry mass
Very coarse	0
Gravel	44
Sand	21
Silt	28
Clay	8

Grading Analysis		
D100	mm	
D60	mm	2.7
D30	mm	0.0326
D10	mm	0.00281
Uniformity Coefficient		960
Curvature Coefficient		0.14

Remarks

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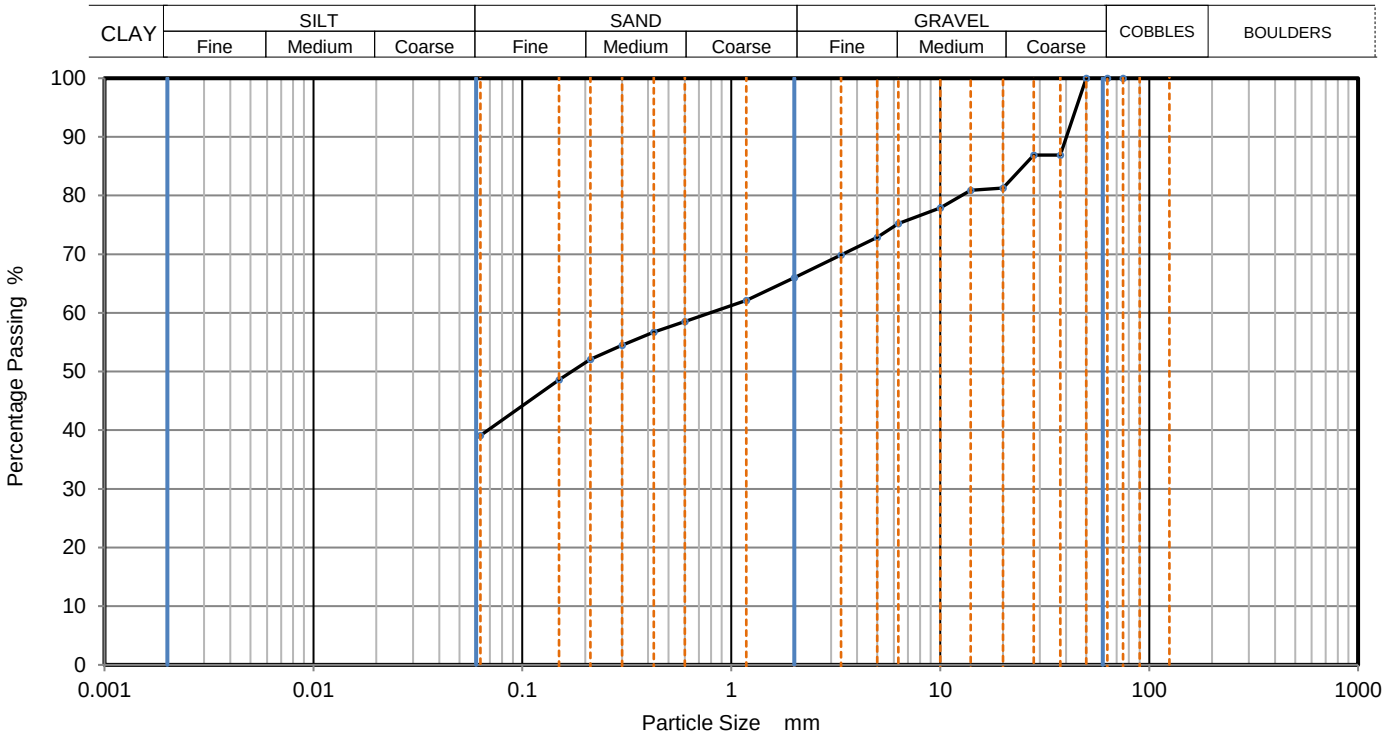
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Light greyish-brown slightly sandy gravelly SILT. Gravel is coarse.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023050539



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	87		
28	87		
20	81		
14	81		
10	78		
6.3	75		
5	73		
3.35	70		
2	66		
1.18	62		
0.6	59		
0.425	57		
0.3	55		
0.212	52		
0.15	49		
0.063	39		

Dry Mass of sample, g	829

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	27
Fines <0.063mm	39

Grading Analysis		
D100	mm	
D60	mm	0.795
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

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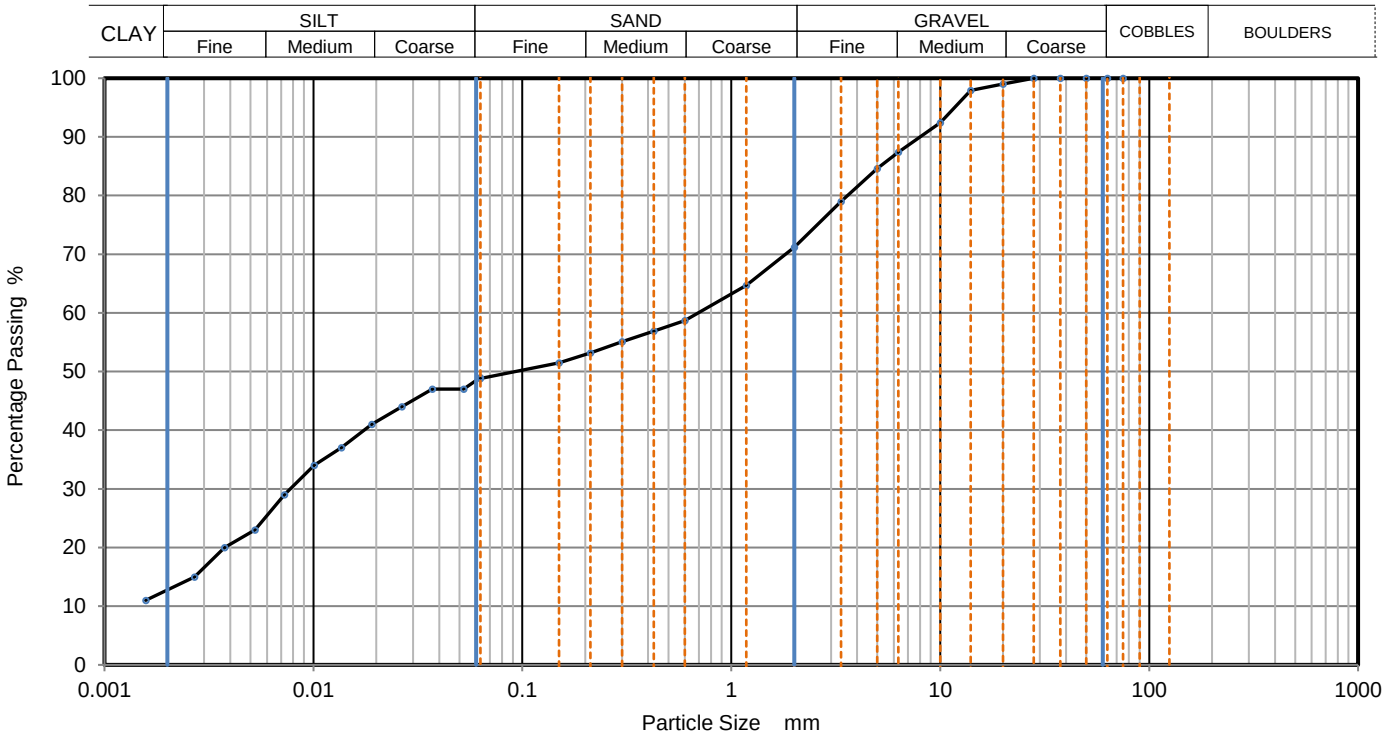
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023050545



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	49
		0.0524	47
75	100	0.0370	47
63	100	0.0265	44
50	100	0.0190	41
37.5	100	0.0136	37
28	100	0.0101	34
20	99	0.0073	29
14	98	0.0052	23
10	92	0.0038	20
6.3	87	0.0027	15
5	85	0.0016	11
3.35	79		
2	71		
1.18	65		
0.6	59	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	55		
0.212	53		
0.15	52		
0.063	49		

Dry Mass of sample, g	921

Sample Proportions	% dry mass
Very coarse	0
Gravel	29
Sand	23
Silt	36
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.692
D30	mm	0.00761
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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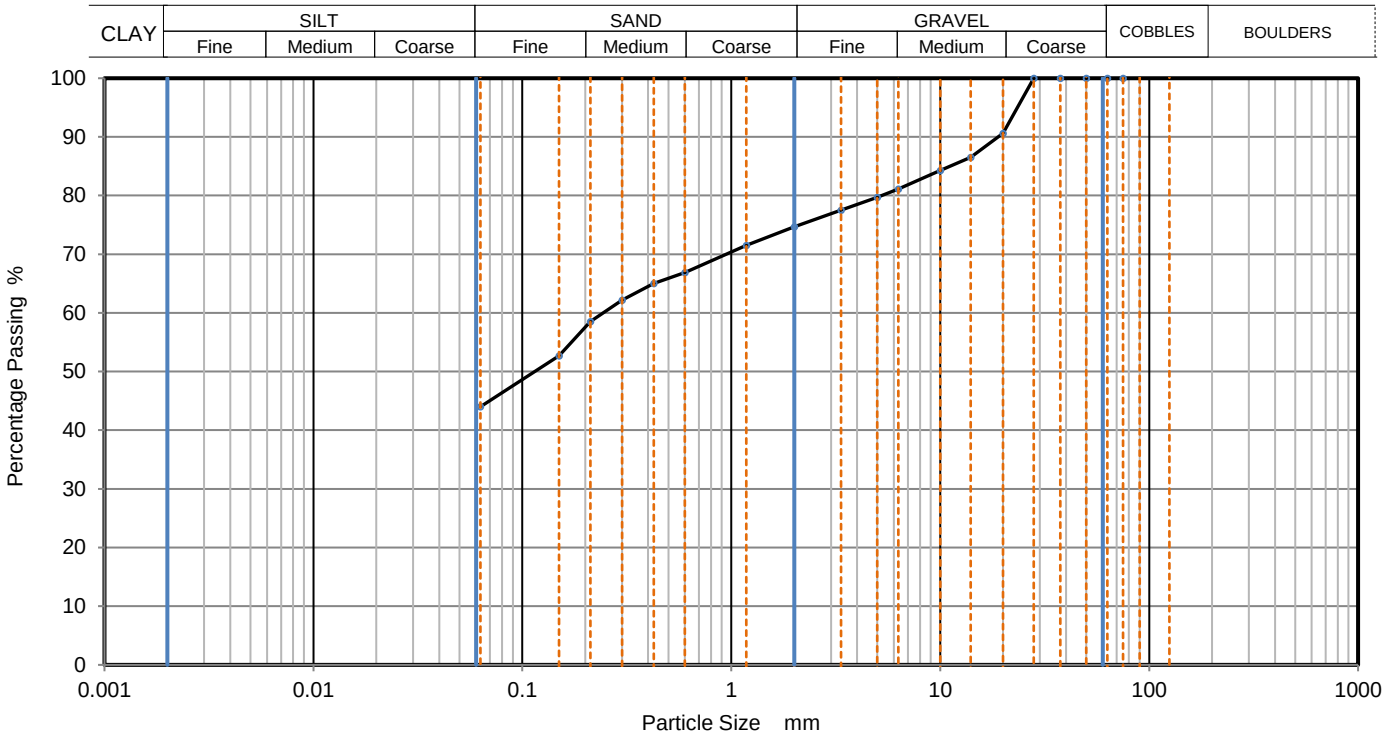
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power	Sample No.	11
Soil Description	Greenish-grey slightly gravelly slightly sandy SILT.	Depth, m	3.50
Specimen Reference	Specimen Depth m	Sample Type	D
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023050568



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	91		
14	87		
10	84		
6.3	81		
5	80		
3.35	78		
2	75		
1.18	72		
0.6	67		
0.425	65		
0.3	62		
0.212	59		
0.15	53		
0.063	44		

Dry Mass of sample, g: 1036

Sample Proportions	% dry mass
Very coarse	0
Gravel	25
Sand	31
Fines <0.063mm	44

Grading Analysis		
D100	mm	
D60	mm	0.244
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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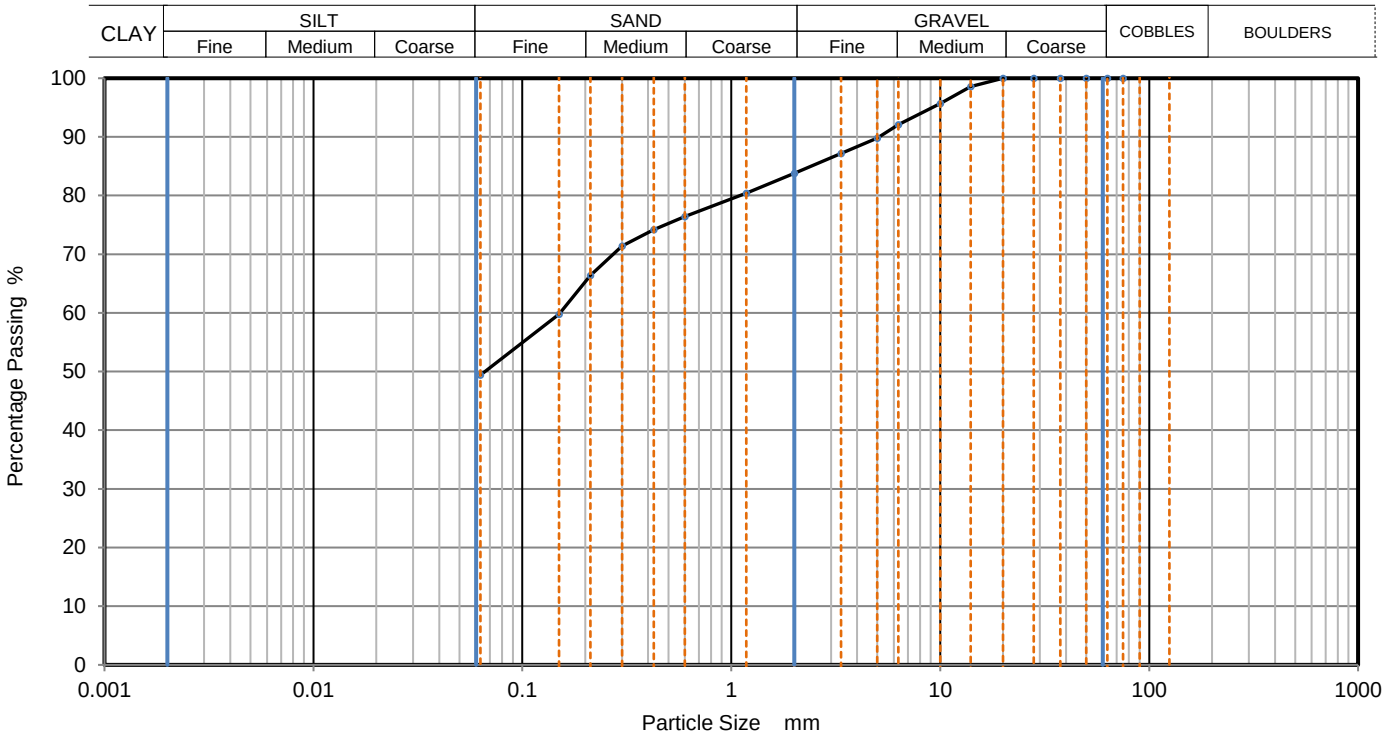
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power	Sample No.	13
Soil Description	Greyish-brown slightly gravelly sandy SILT.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023050570



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	96		
6.3	92		
5	90		
3.35	87		
2	84		
1.18	80		
0.6	76		
0.425	74		
0.3	71		
0.212	66		
0.15	60		
0.063	49		

Dry Mass of sample, g	941

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	34
Fines <0.063mm	49

Grading Analysis		
D100	mm	
D60	mm	0.151
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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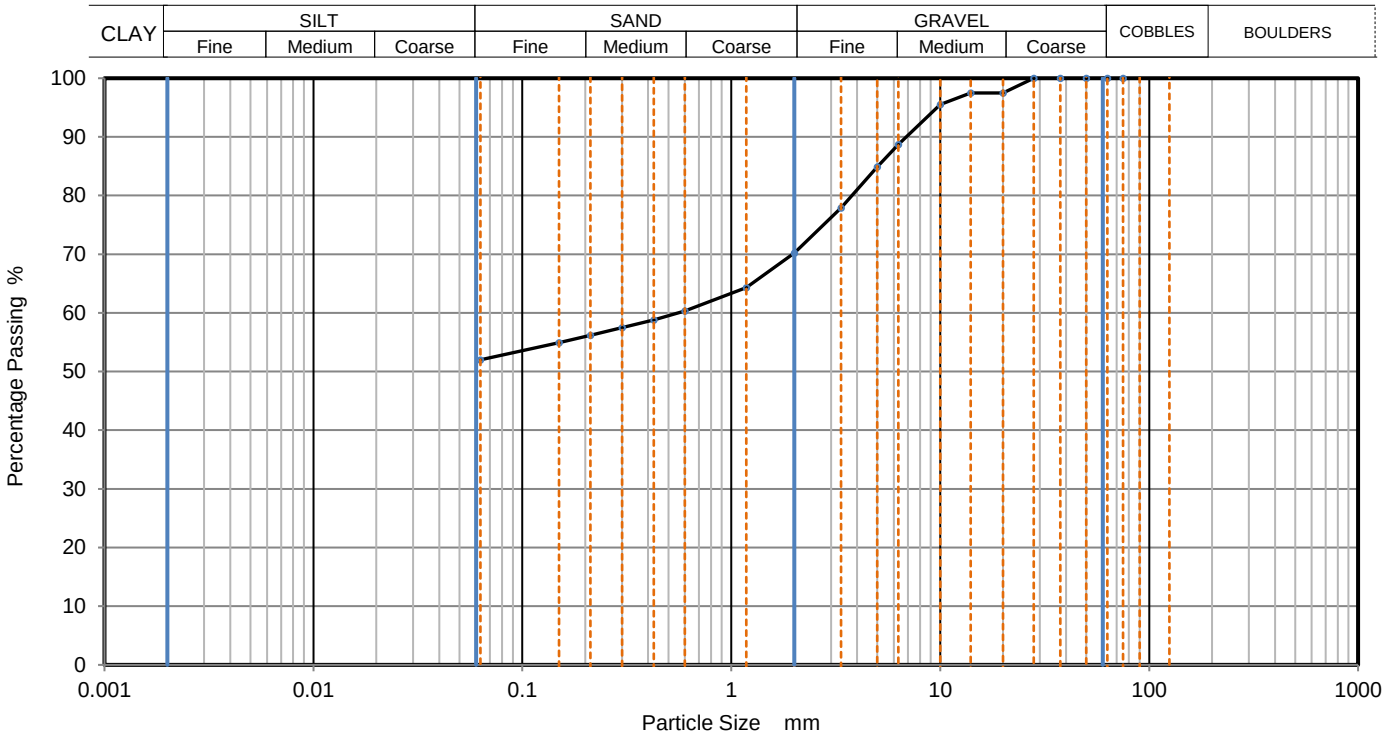
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	BH112
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description	Brown slightly sandy slightly gravelly SILT.			Depth, m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120230426177



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	98		
10	96		
6.3	89		
5	85		
3.35	78		
2	70		
1.18	64		
0.6	60		
0.425	59		
0.3	58		
0.212	56		
0.15	55		
0.063	52		

Dry Mass of sample, g	806

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	18
Fines <0.063mm	52

Grading Analysis		
D100	mm	
D60	mm	0.56
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
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Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	85.7
37.500	82.2
28.000	79.0
20.000	75.6
14.000	74.6
10.000	69.9
6.300	65.1
5.000	62.7
3.350	59.2
2.000	54.3
1.180	50.2
0.600	46.2
0.425	44.4
0.300	42.6
0.212	40.6
0.150	38.6
0.063	34.7

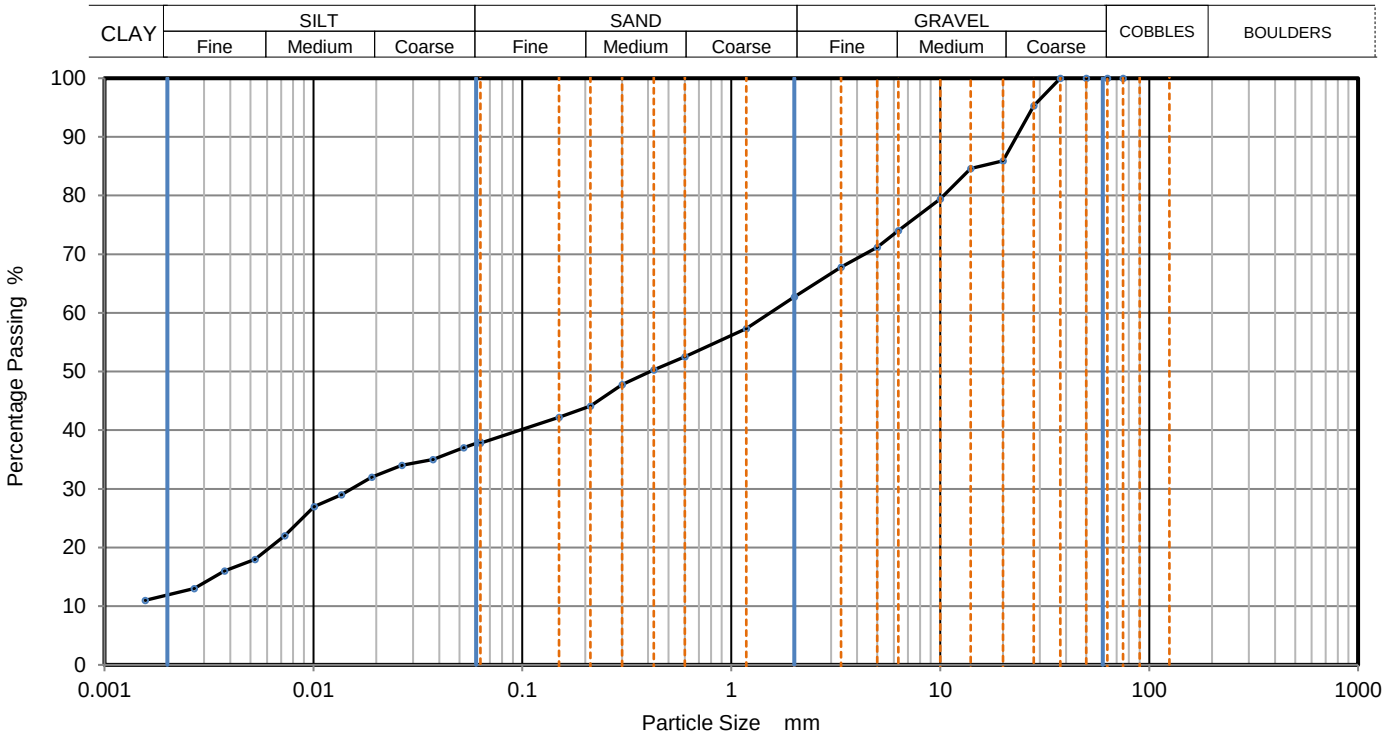
Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		34.7			19.6			45.7		0.0	0.0

Sample Description	Light brown slightly sandy gravelly clayey SILT.	Project No.	NMTL 3631
		BH/TP No.	BH113
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U6
Operator Js	Checked Nc / Approved Bc / Date sample tested 14/08/2023	Depth	2.00-2.45m

NM TL Ltd

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH113
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Light brown slightly sandy gravelly SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023050585



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	38
		0.0523	37
75	100	0.0373	35
63	100	0.0265	34
50	100	0.0190	32
37.5	100	0.0136	29
28	95	0.0101	27
20	86	0.0073	22
14	85	0.0053	18
10	79	0.0038	16
6.3	74	0.0027	13
5	71	0.0016	11
3.35	68		
2	63		
1.18	57		
0.6	53	Particle density	(assumed)
0.425	50	2.65	Mg/m3
0.3	48		
0.212	44		
0.15	42		
0.063	38		

Dry Mass of sample, g	902

Sample Proportions	% dry mass
Very coarse	0
Gravel	37
Sand	25
Silt	26
Clay	12

Grading Analysis		
D100	mm	
D60	mm	1.54
D30	mm	0.0151
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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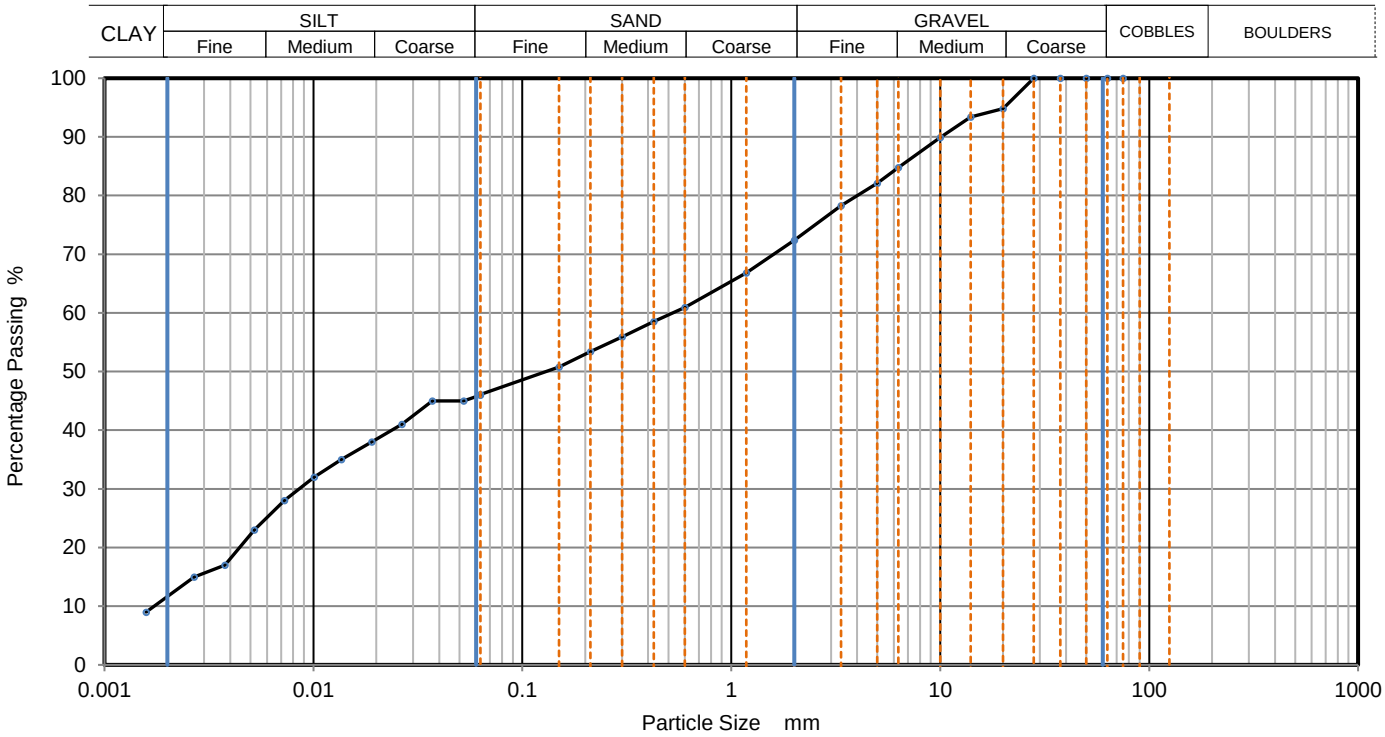
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH113
Site Name	Derrygreenagh Power	Sample No.	13
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023050588



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	46
		0.0524	45
75	100	0.0370	45
63	100	0.0265	41
50	100	0.0190	38
37.5	100	0.0136	35
28	100	0.0101	32
20	95	0.0073	28
14	93	0.0052	23
10	90	0.0038	17
6.3	85	0.0027	15
5	82	0.0016	9
3.35	78		
2	72		
1.18	67		
0.6	61	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	56		
0.212	53		
0.15	51		
0.063	46		

Dry Mass of sample, g: 867

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	26
Silt	34
Clay	12

Grading Analysis		
D100	mm	
D60	mm	0.527
D30	mm	0.00857
D10	mm	0.00169
Uniformity Coefficient		310
Curvature Coefficient		0.082

Remarks

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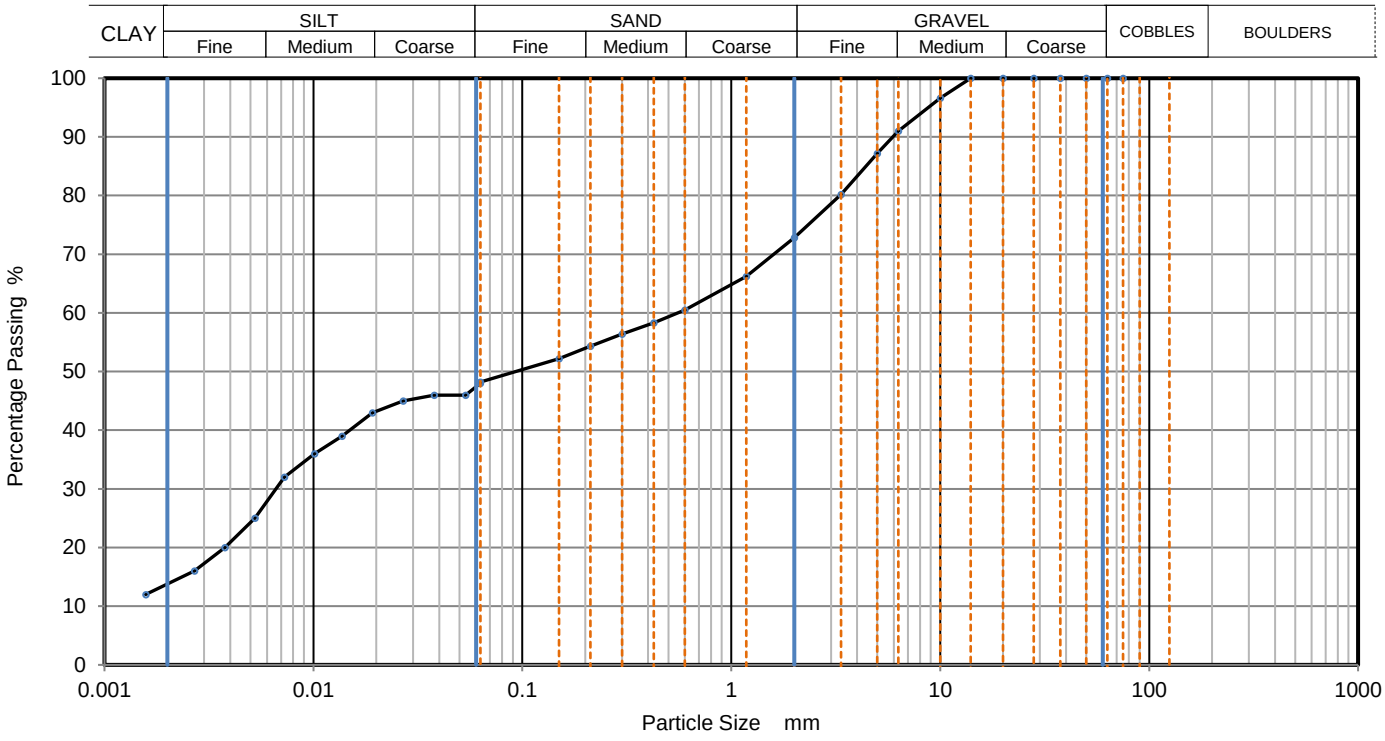
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH114
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202305087



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	48
		0.0534	46
75	100	0.0378	46
63	100	0.0269	45
50	100	0.0191	43
37.5	100	0.0137	39
28	100	0.0101	36
20	100	0.0073	32
14	100	0.0052	25
10	97	0.0038	20
6.3	91	0.0027	16
5	87	0.0016	12
3.35	80		
2	73		
1.18	66		
0.6	61	Particle density (assumed)	
0.425	58	2.65 Mg/m3	
0.3	56		
0.212	54		
0.15	52		
0.063	48		

Dry Mass of sample, g	843

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	25
Silt	34
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.554
D30	mm	0.00658
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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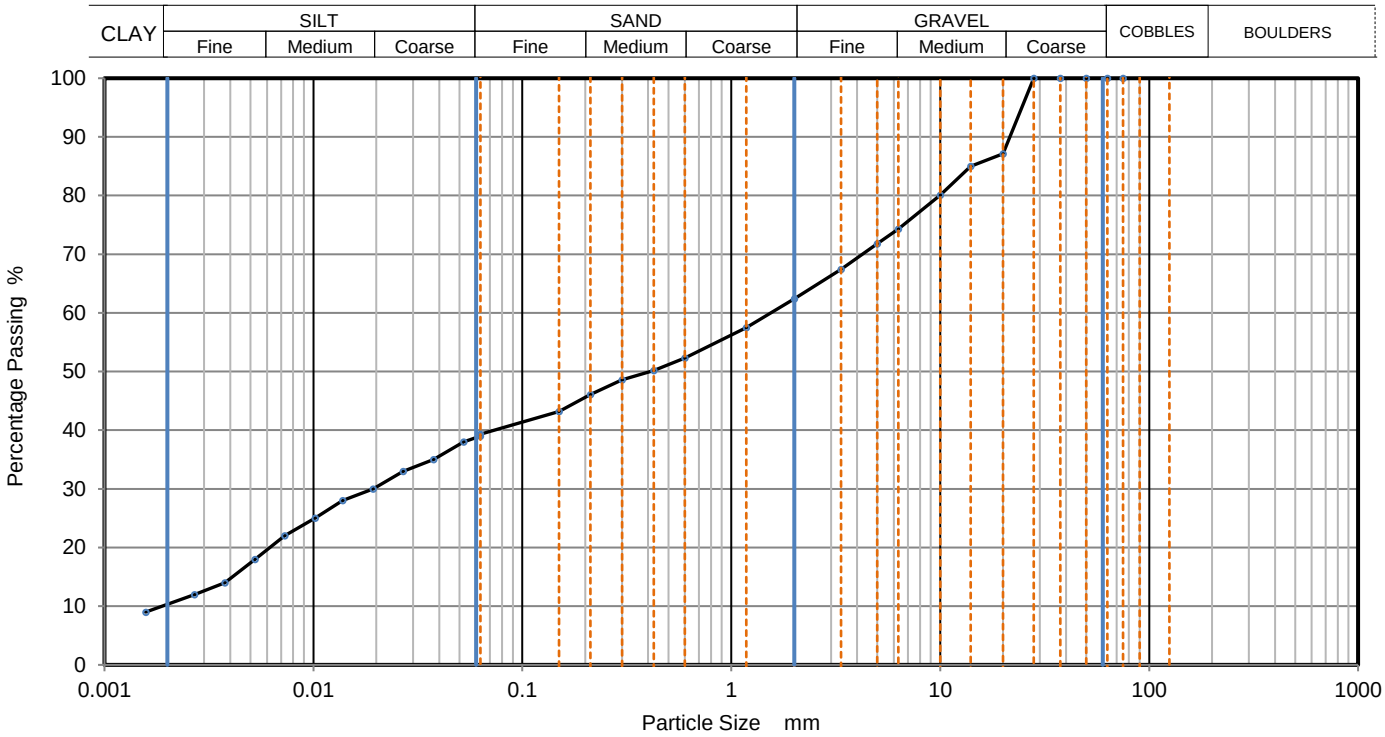
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH115
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Light brown slightly sandy gravelly SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426314



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	39
		0.0524	38
75	100	0.0375	35
63	100	0.0269	33
50	100	0.0193	30
37.5	100	0.0138	28
28	100	0.0102	25
20	87	0.0073	22
14	85	0.0052	18
10	80	0.0038	14
6.3	74	0.0027	12
5	72	0.0016	9
3.35	67		
2	62		
1.18	58		
0.6	52	Particle density	(assumed)
0.425	50	2.65	Mg/m3
0.3	49		
0.212	46		
0.15	43		
0.063	39		

Dry Mass of sample, g: 761

Sample Proportions	% dry mass
Very coarse	0
Gravel	38
Sand	23
Silt	29
Clay	10

Grading Analysis		
D100	mm	
D60	mm	1.55
D30	mm	0.0189
D10	mm	0.00187
Uniformity Coefficient		830
Curvature Coefficient		0.12

Remarks

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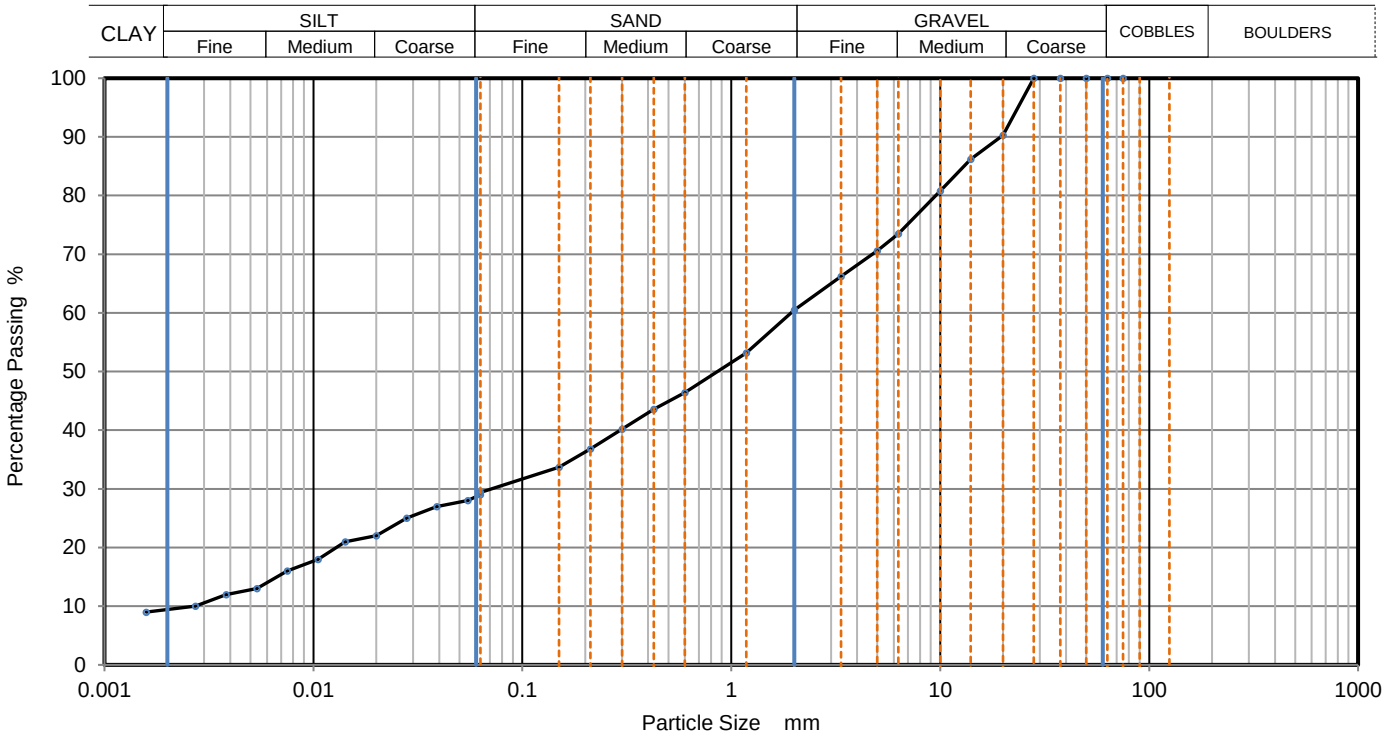
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH116
Site Name	Derrygreenagh Power	Sample No.	9
Soil Description	Brownish-grey very silty very sandy GRAVEL.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023052363



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	29
		0.0548	28
75	100	0.0390	27
63	100	0.0279	25
50	100	0.0200	22
37.5	100	0.0142	21
28	100	0.0105	18
20	90	0.0075	16
14	86	0.0054	13
10	81	0.0038	12
6.3	74	0.0027	10
5	71	0.0016	9
3.35	66		
2	61		
1.18	53		
0.6	46	Particle density	(assumed)
0.425	44	2.65	Mg/m3
0.3	40		
0.212	37		
0.15	34		
0.063	29		

Dry Mass of sample, g	783

Sample Proportions	% dry mass
Very coarse	0
Gravel	40
Sand	31
Silt	20
Clay	9

Grading Analysis		
D100	mm	
D60	mm	1.93
D30	mm	0.071
D10	mm	0.0028
Uniformity Coefficient		690
Curvature Coefficient		0.93

Remarks

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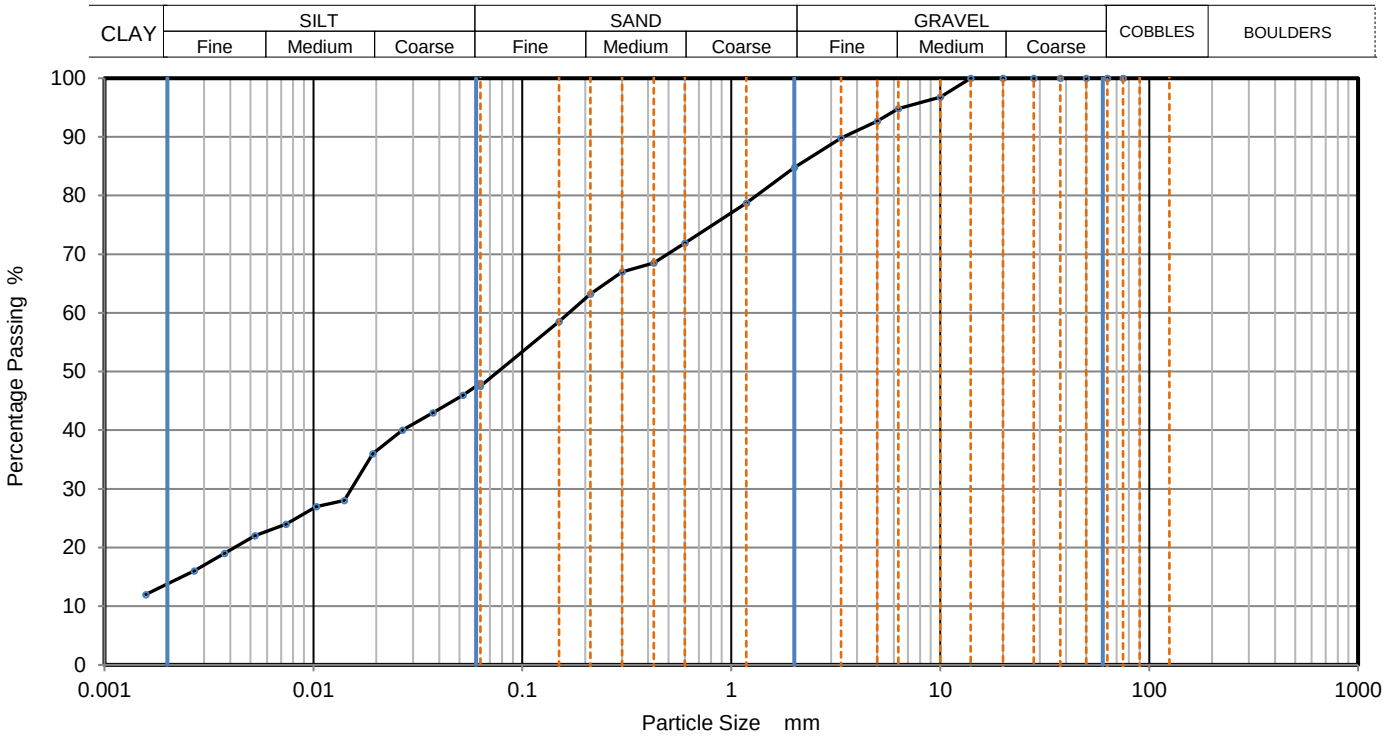
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH117
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Brownish-grey slightly gravelly sandy SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023052381



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	48
		0.0520	46
75	100	0.0373	43
63	100	0.0267	40
50	100	0.0193	36
37.5	100	0.0140	28
28	100	0.0103	27
20	100	0.0074	24
14	100	0.0053	22
10	97	0.0038	19
6.3	95	0.0027	16
5	93	0.0016	12
3.35	90		
2	85		
1.18	79		
0.6	72	Particle density (assumed)	
0.425	69	2.65 Mg/m3	
0.3	67		
0.212	63		
0.15	59		
0.063	48		

Dry Mass of sample, g	1043

Sample Proportions	% dry mass
Very coarse	0
Gravel	15
Sand	37
Silt	34
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.167
D30	mm	0.0152
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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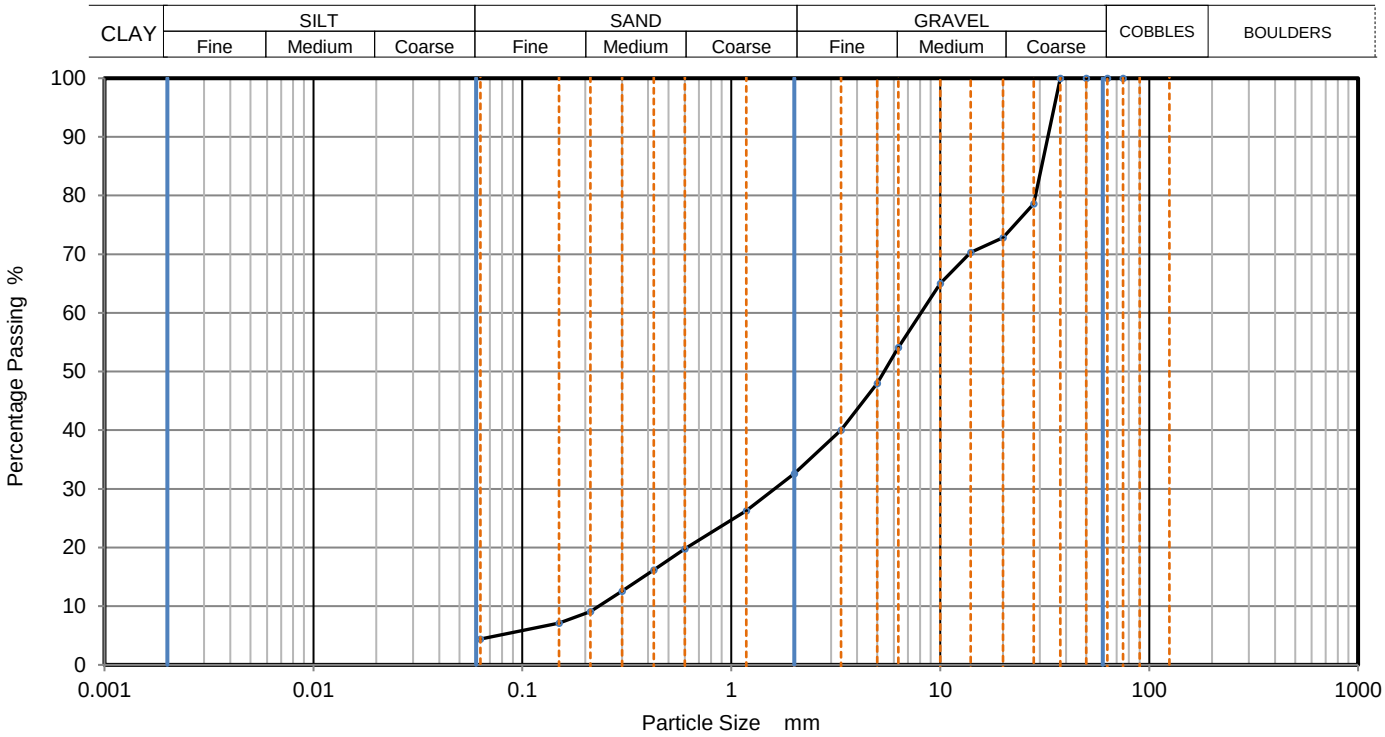
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	BHCC01
Site Name	Derrygreenagh Power			Sample No.	12
Soil Description	Dark grey slightly silty very sandy GRAVEL.			Depth, m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12023070311



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	79		
20	73		
14	70		
10	65		
6.3	54		
5	48		
3.35	40		
2	33		
1.18	26		
0.6	20		
0.425	16		
0.3	13		
0.212	9		
0.15	7		
0.063	4		

Dry Mass of sample, g	907

Sample Proportions	% dry mass
Very coarse	0
Gravel	67
Sand	28
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	8.09
D30	mm	1.61
D10	mm	0.231
Uniformity Coefficient		35
Curvature Coefficient		1.4

Remarks

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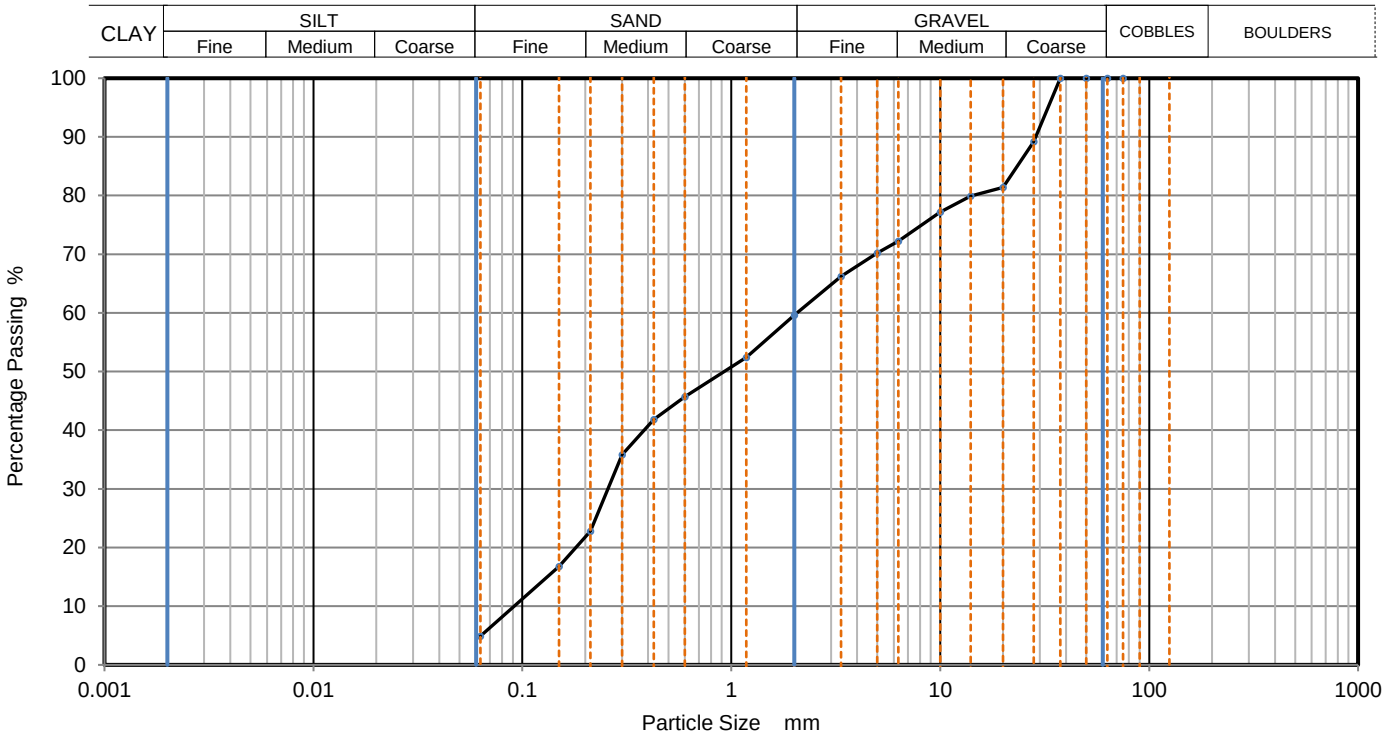
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHCC01
Site Name	Derrygreenagh Power	Sample No.	15
Soil Description	Dark grey silty very gravelly medium SAND.	Depth, m	5.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023070315



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	89		
20	81		
14	80		
10	77		
6.3	72		
5	70		
3.35	66		
2	60		
1.18	52		
0.6	46		
0.425	42		
0.3	36		
0.212	23		
0.15	17		
0.063	5		

Dry Mass of sample, g: 944

Sample Proportions	% dry mass
Very coarse	0
Gravel	40
Sand	55
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	2.07
D30	mm	0.257
D10	mm	0.0913
Uniformity Coefficient		23
Curvature Coefficient		0.35

Remarks

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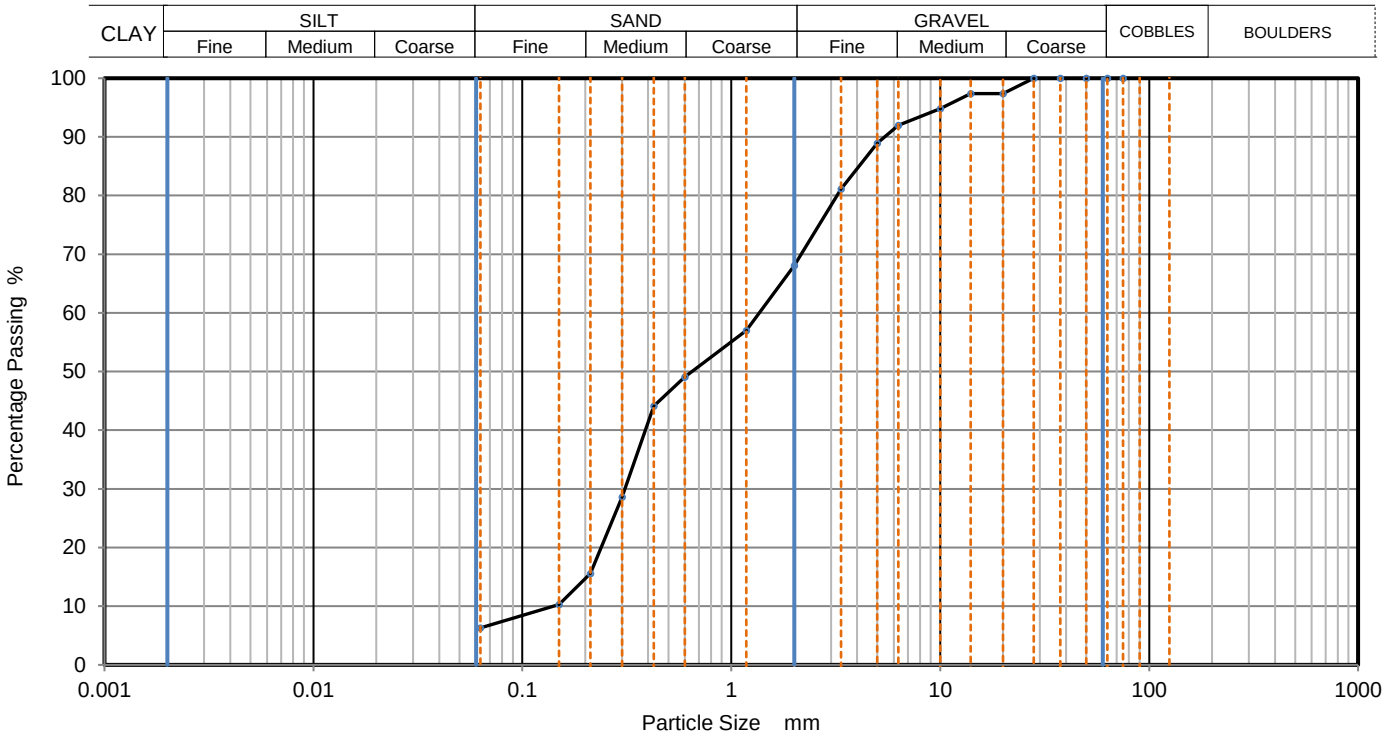
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHCC01
Site Name	Derrygreenagh Power	Sample No.	24
Soil Description	Dark grey silty very gravelly medium SAND.	Depth, m	9.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023070324



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	97		
10	95		
6.3	92		
5	89		
3.35	81		
2	68		
1.18	57		
0.6	49		
0.425	44		
0.3	29		
0.212	16		
0.15	10		
0.063	6		

Dry Mass of sample, g	928

Sample Proportions	% dry mass
Very coarse	0
Gravel	32
Sand	62
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	1.36
D30	mm	0.31
D10	mm	0.139
Uniformity Coefficient		9.7
Curvature Coefficient		0.51

Remarks

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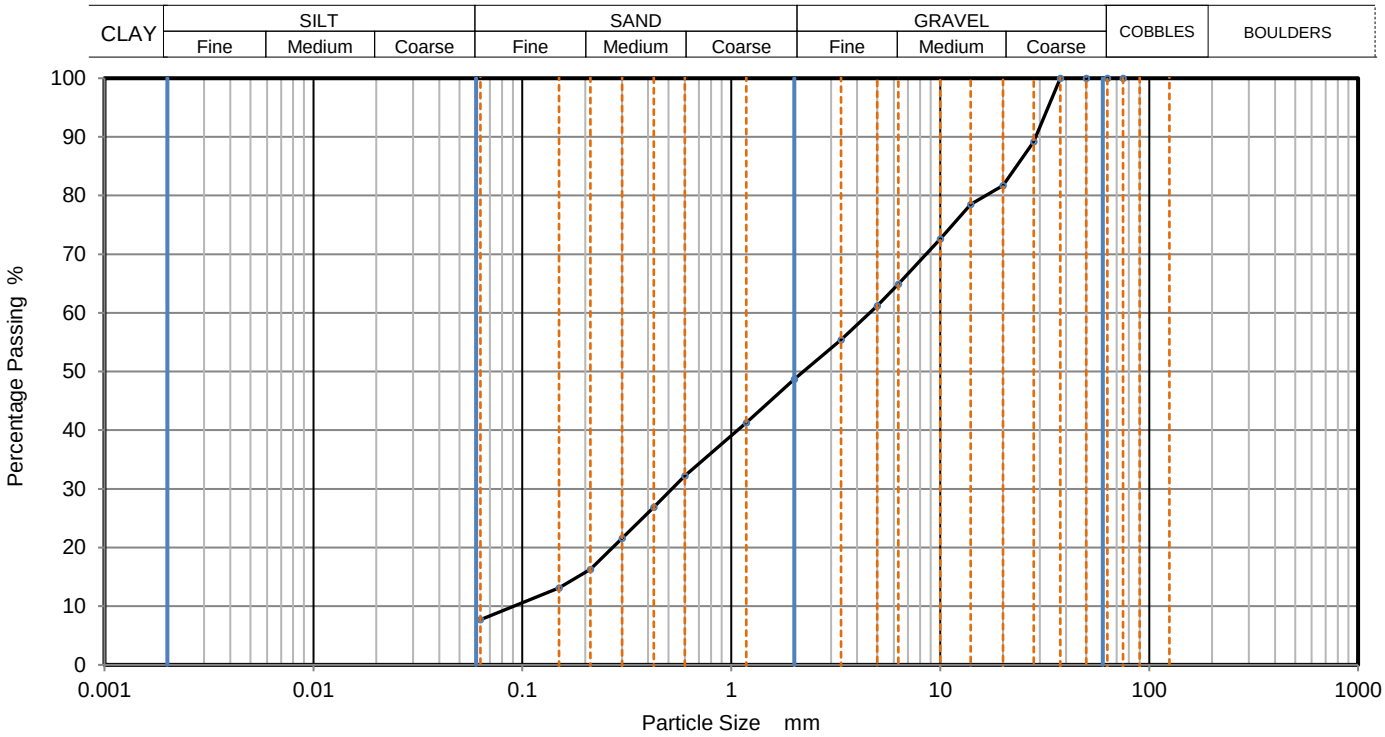
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHCC02
Site Name	Derrygreenagh Power	Sample No.	12
Soil Description	Dark bluish-grey silty very sandy GRAVEL.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023070338



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	89		
20	82		
14	79		
10	73		
6.3	65		
5	61		
3.35	55		
2	49		
1.18	41		
0.6	32		
0.425	27		
0.3	22		
0.212	16		
0.15	13		
0.063	8		

Dry Mass of sample, g: 1270

Sample Proportions	% dry mass
Very coarse	0
Gravel	51
Sand	41
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	4.6
D30	mm	0.52
D10	mm	0.0912
Uniformity Coefficient		50
Curvature Coefficient		0.64

Remarks

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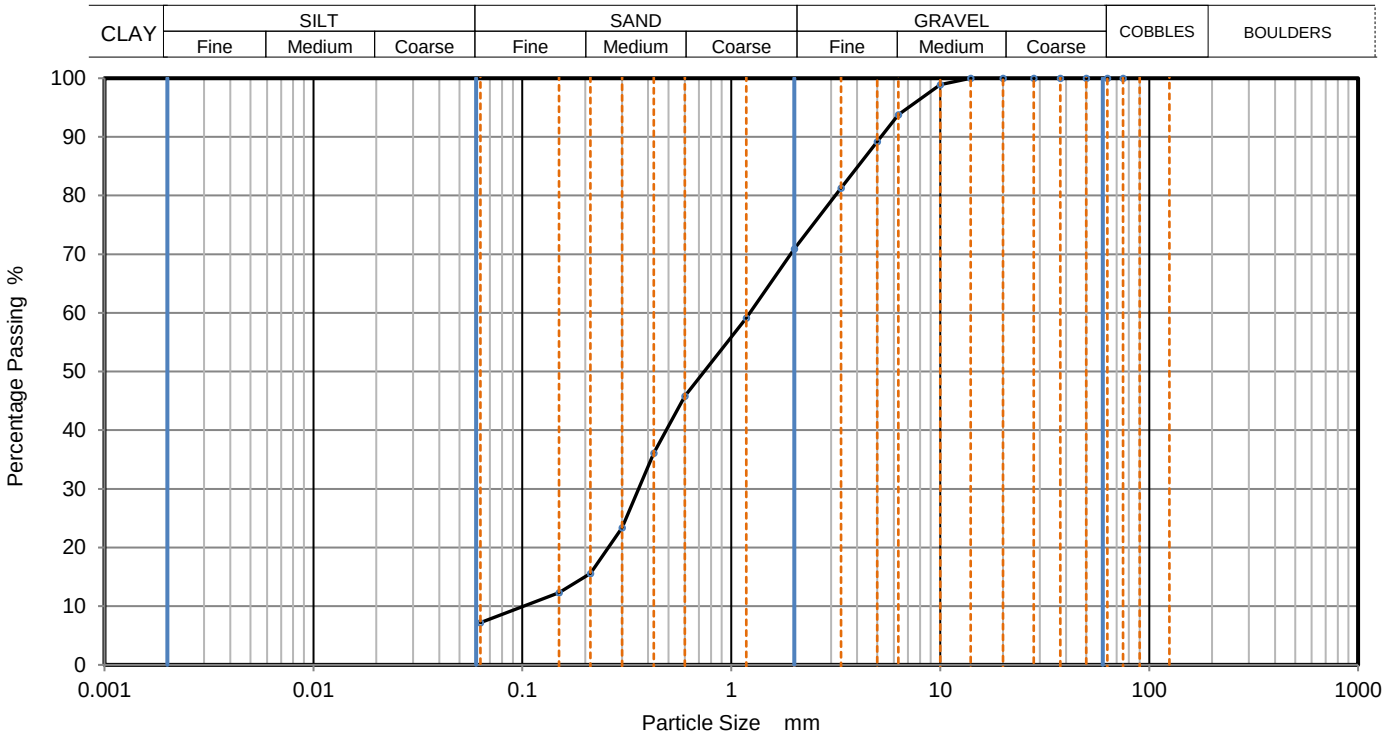
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHCC02
Site Name	Derrygreenagh Power	Sample No.	21
Soil Description	Dark grey silty very gravelly medium and coarse SAND.	Depth, m	8.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023070347



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	94		
5	89		
3.35	81		
2	71		
1.18	59		
0.6	46		
0.425	36		
0.3	23		
0.212	16		
0.15	12		
0.063	7		

Dry Mass of sample, g	823

Sample Proportions	% dry mass
Very coarse	0
Gravel	29
Sand	64
Fines <0.063mm	7

Grading Analysis		
D100	mm	
D60	mm	1.23
D30	mm	0.36
D10	mm	0.101
Uniformity Coefficient		12
Curvature Coefficient		1

Remarks

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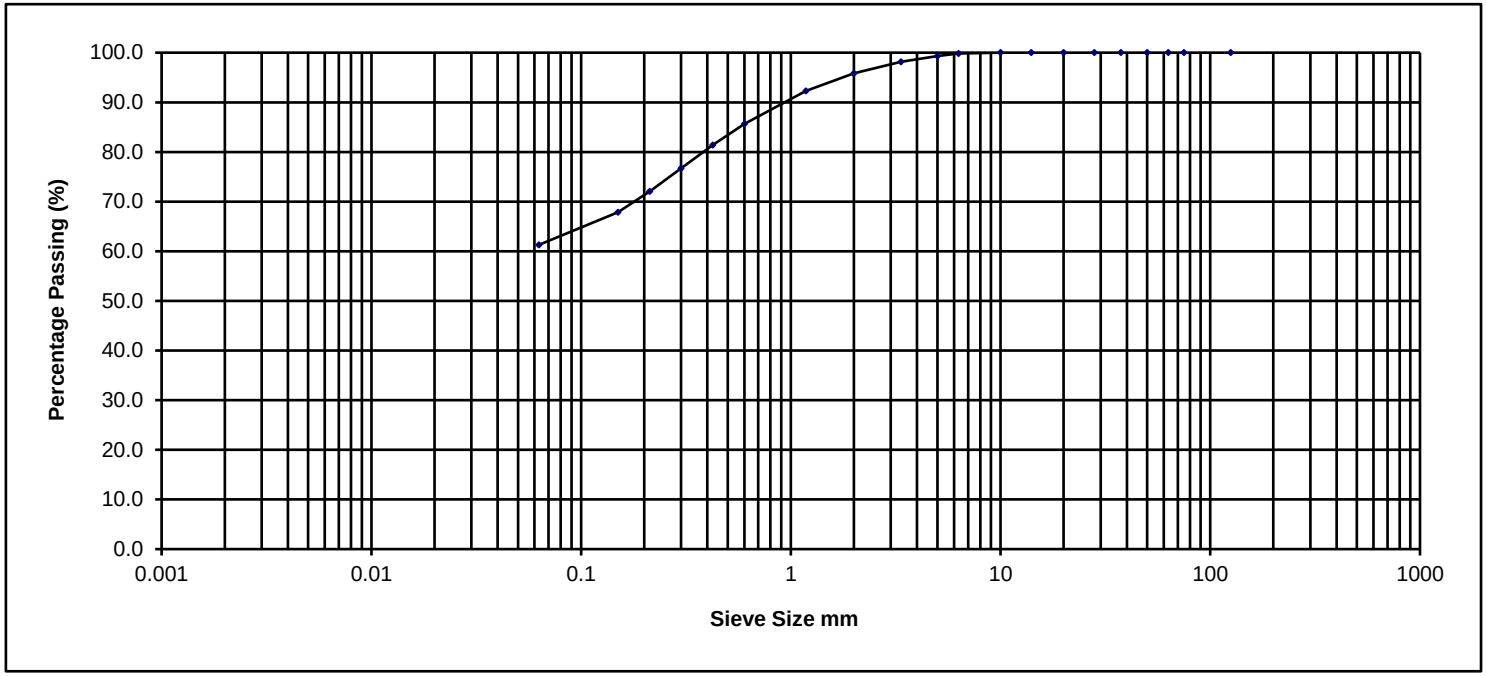
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	99.8
5.000	99.3
3.350	98.1
2.000	95.8
1.180	92.3
0.600	85.6
0.425	81.4
0.300	76.7
0.212	72.0
0.150	67.9
0.063	61.3



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		61.3			34.5			4.2		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT.	Project No.	NMTL 3631
	sands and gravel are root and fibre particles	BH/TP No.	BHPW301
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U6
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/08/2023	Depth	2.00-2.45

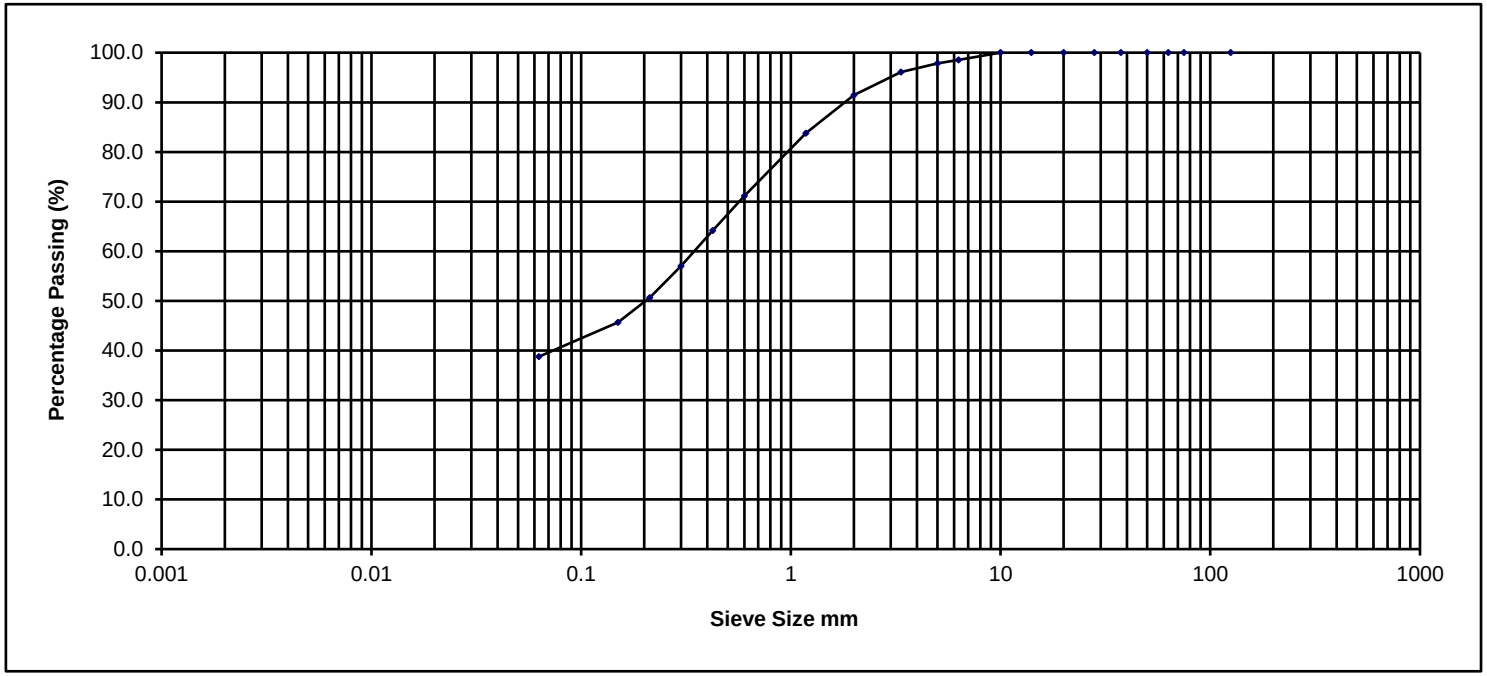
NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	98.5
5.000	97.9
3.350	96.1
2.000	91.4
1.180	83.7
0.600	71.2
0.425	64.2
0.300	57.0
0.212	50.6
0.150	45.7
0.063	38.8



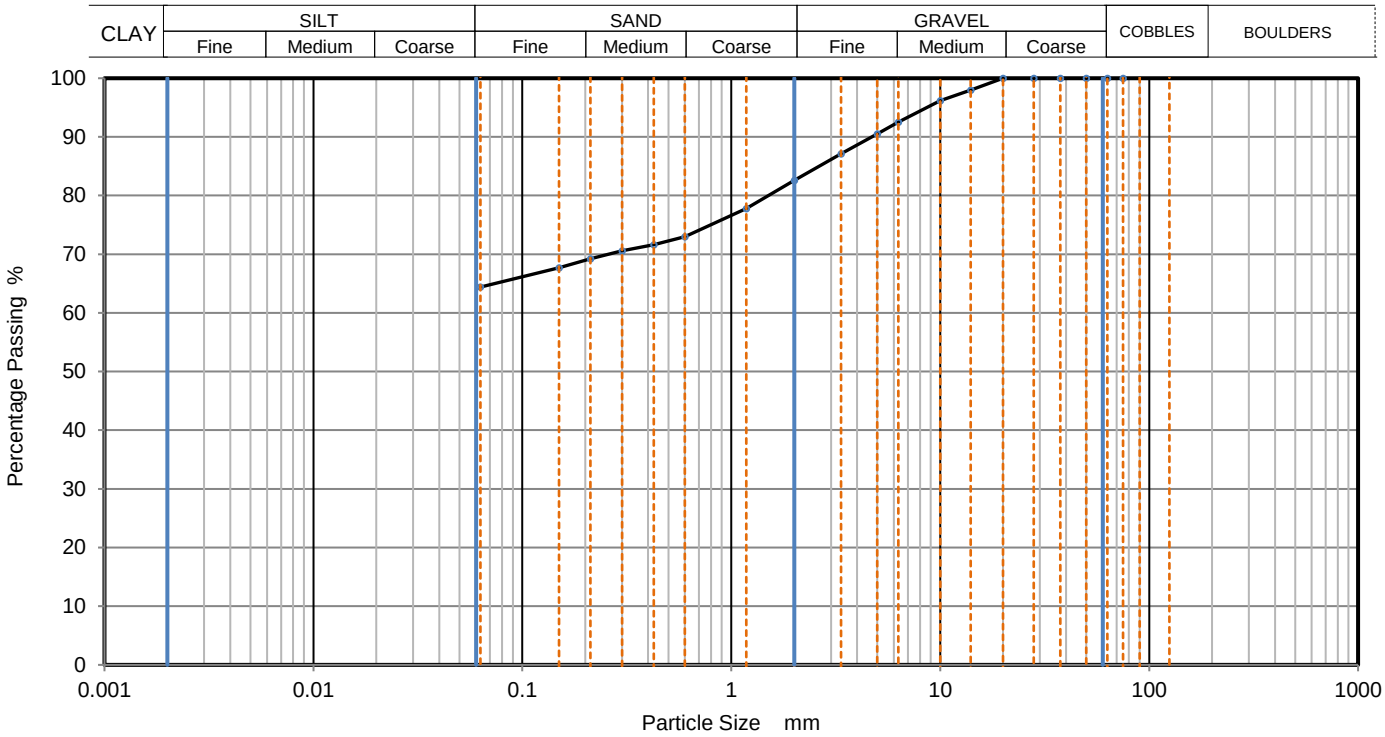
Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		38.8			52.7			8.6		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT.	Project No.	NMTL 3631
	sands and gravel are root and fibre particles	BH/TP No.	BHPW301
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U11
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/08/2023	Depth	4..00-4.45m

NM TL Ltd

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	BHPW301
Site Name	Derrygreenagh Power			Sample No.	23
Soil Description	Cream slightly gravelly slightly sandy SILT.			Depth, m	8.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120230426348



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	96		
6.3	93		
5	91		
3.35	87		
2	83		
1.18	78		
0.6	73		
0.425	72		
0.3	71		
0.212	69		
0.15	68		
0.063	64		

Dry Mass of sample, g	584

Sample Proportions	% dry mass
Very coarse	0
Gravel	17
Sand	18
Fines <0.063mm	64

Grading Analysis		
D100	mm	
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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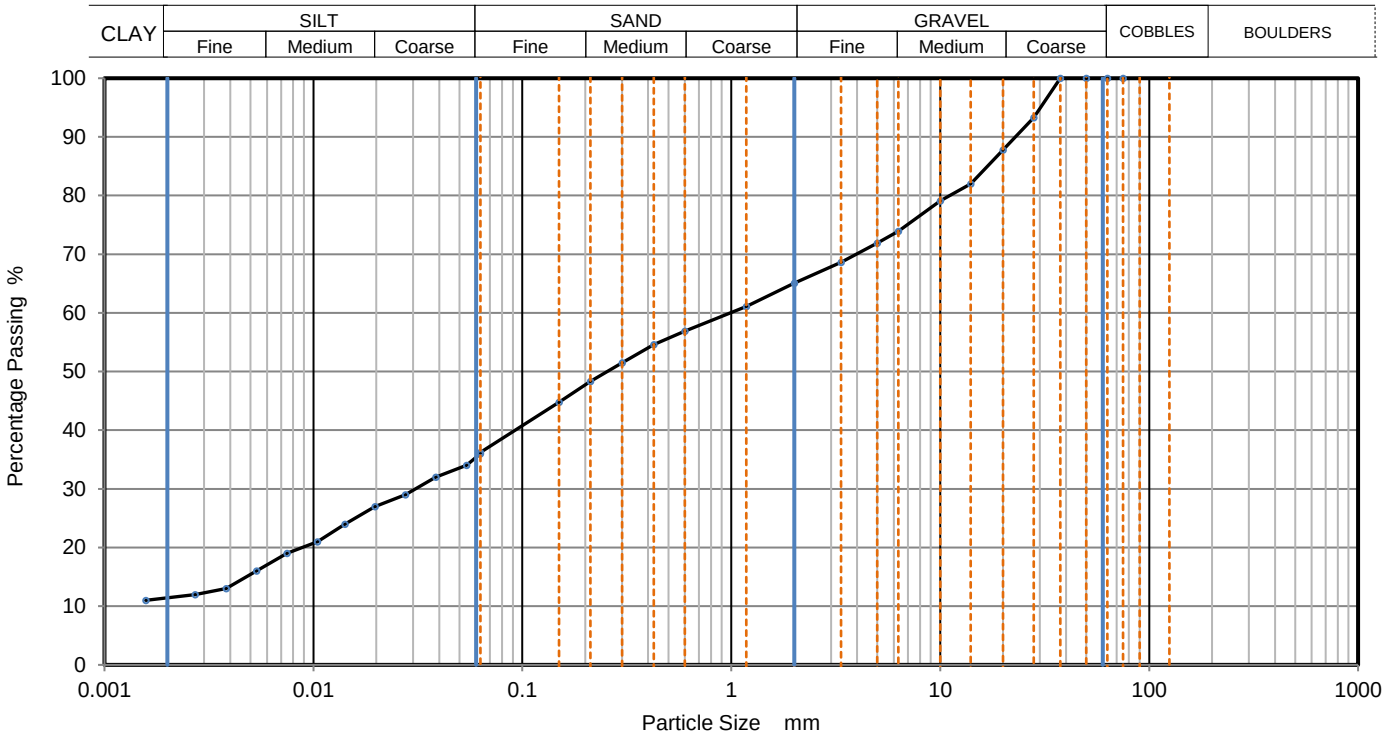
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS01
Site Name	Derrygreenagh Power	Sample No.	11
Soil Description	Grey and black slightly sandy gravelly SILT and PEAT.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060710



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	36
		0.0541	34
75	100	0.0385	32
63	100	0.0276	29
50	100	0.0197	27
37.5	100	0.0141	24
28	93	0.0104	21
20	88	0.0075	19
14	82	0.0053	16
10	79	0.0038	13
6.3	74	0.0027	12
5	72	0.0016	11
3.35	69		
2	65		
1.18	61		
0.6	57	Particle density	(assumed)
0.425	55	2.65	Mg/m3
0.3	52		
0.212	48		
0.15	45		
0.063	36		

Dry Mass of sample, g	707

Sample Proportions	% dry mass
Very coarse	0
Gravel	35
Sand	29
Silt	25
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.985
D30	mm	0.0294
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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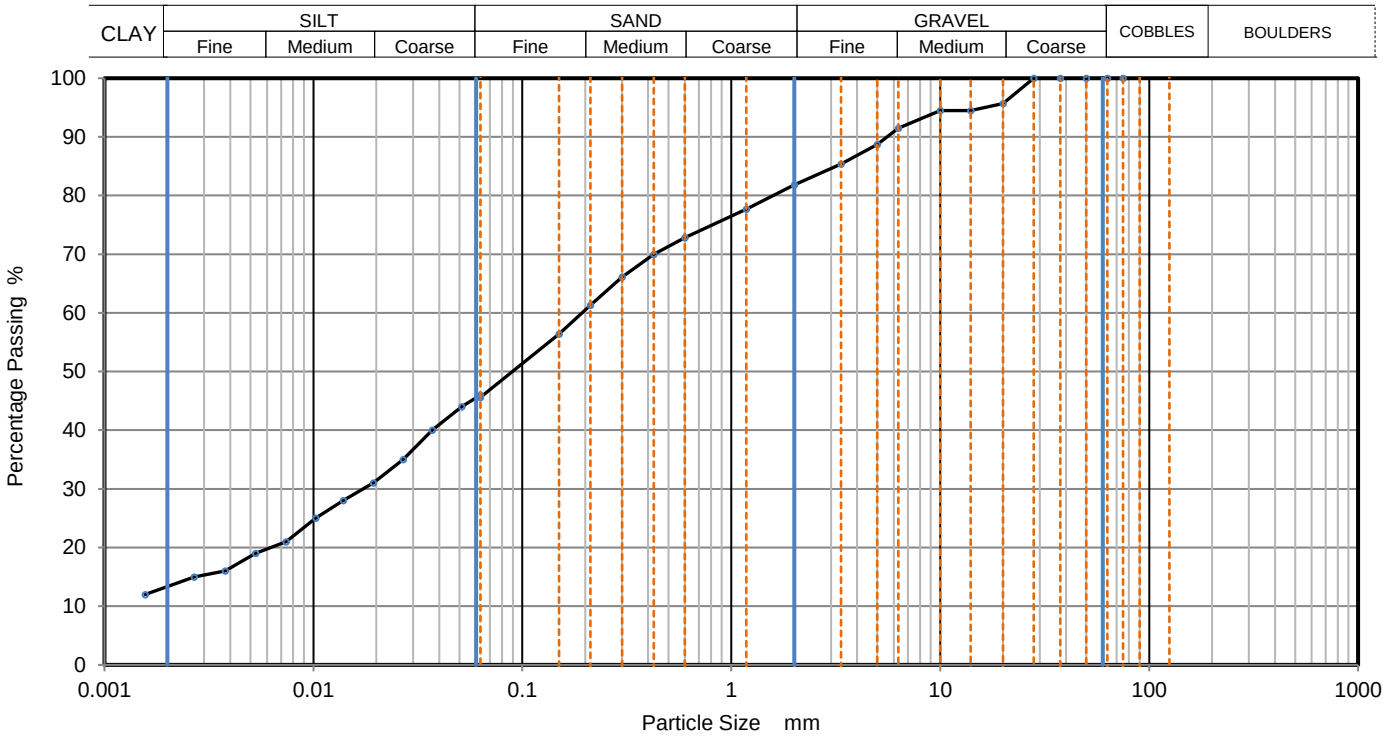
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS02
Site Name	Derrygreenagh Power	Sample No.	9
Soil Description	Light grey slightly gravelly sandy SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202305188



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	46
		0.0512	44
75	100	0.0370	40
63	100	0.0269	35
50	100	0.0194	31
37.5	100	0.0139	28
28	100	0.0103	25
20	96	0.0074	21
14	95	0.0053	19
10	95	0.0038	16
6.3	92	0.0027	15
5	89	0.0016	12
3.35	85		
2	82		
1.18	78		
0.6	73	Particle density (assumed)	
0.425	70	2.65 Mg/m3	
0.3	66		
0.212	61		
0.15	56		
0.063	46		

Dry Mass of sample, g	1165

Sample Proportions	% dry mass
Very coarse	0
Gravel	18
Sand	36
Silt	32
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.193
D30	mm	0.0174
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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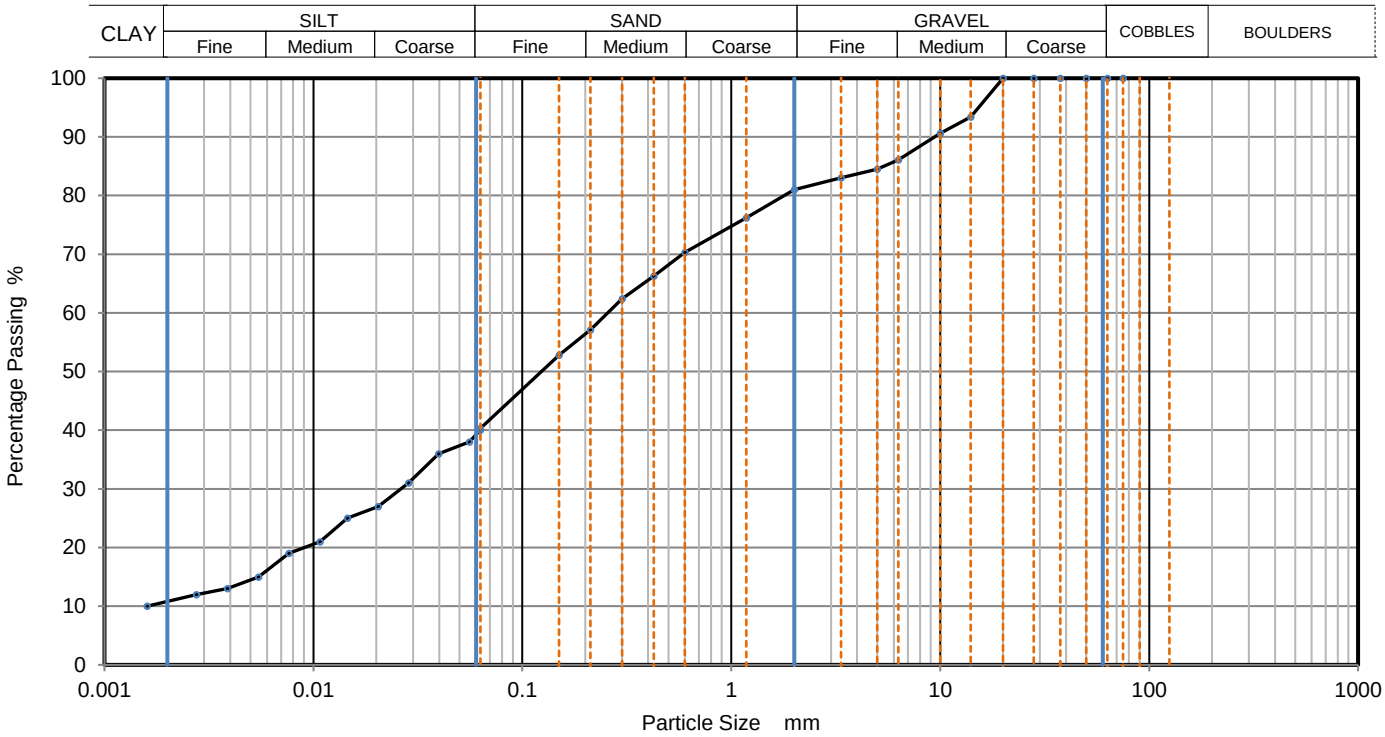
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS03
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Grey and black slightly gravelly sandy PEAT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230523123



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	40
		0.0558	38
75	100	0.0397	36
63	100	0.0286	31
50	100	0.0205	27
37.5	100	0.0145	25
28	100	0.0107	21
20	100	0.0076	19
14	93	0.0055	15
10	91	0.0039	13
6.3	86	0.0028	12
5	85	0.0016	10
3.35	83		
2	81		
1.18	76		
0.6	70	Particle density	(assumed)
0.425	66	2.65	Mg/m3
0.3	62		
0.212	57		
0.15	53		
0.063	40		

Dry Mass of sample, g	252

Sample Proportions	% dry mass
Very coarse	0
Gravel	19
Sand	41
Silt	30
Clay	10

Grading Analysis		
D100	mm	
D60	mm	0.256
D30	mm	0.0269
D10	mm	0.00179
Uniformity Coefficient		140
Curvature Coefficient		1.6

Remarks

Preparation and testing in accordance with BS1377 unless noted below

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Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	100.0
5.000	96.6
3.350	96.2
2.000	92.4
1.180	89.5
0.600	86.6
0.425	84.7
0.300	82.5
0.212	79.7
0.150	77.3
0.063	66.9

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		66.9			25.5			7.6		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT.	Project No.	NMTL 3631
	sands and gravel are root and fibre particles	BH/TP No.	BHSS05
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U3
Operator Js	Checked Nc / Approved Bc / Date sample tested 08/08/2023	Depth	1.00-1.45m

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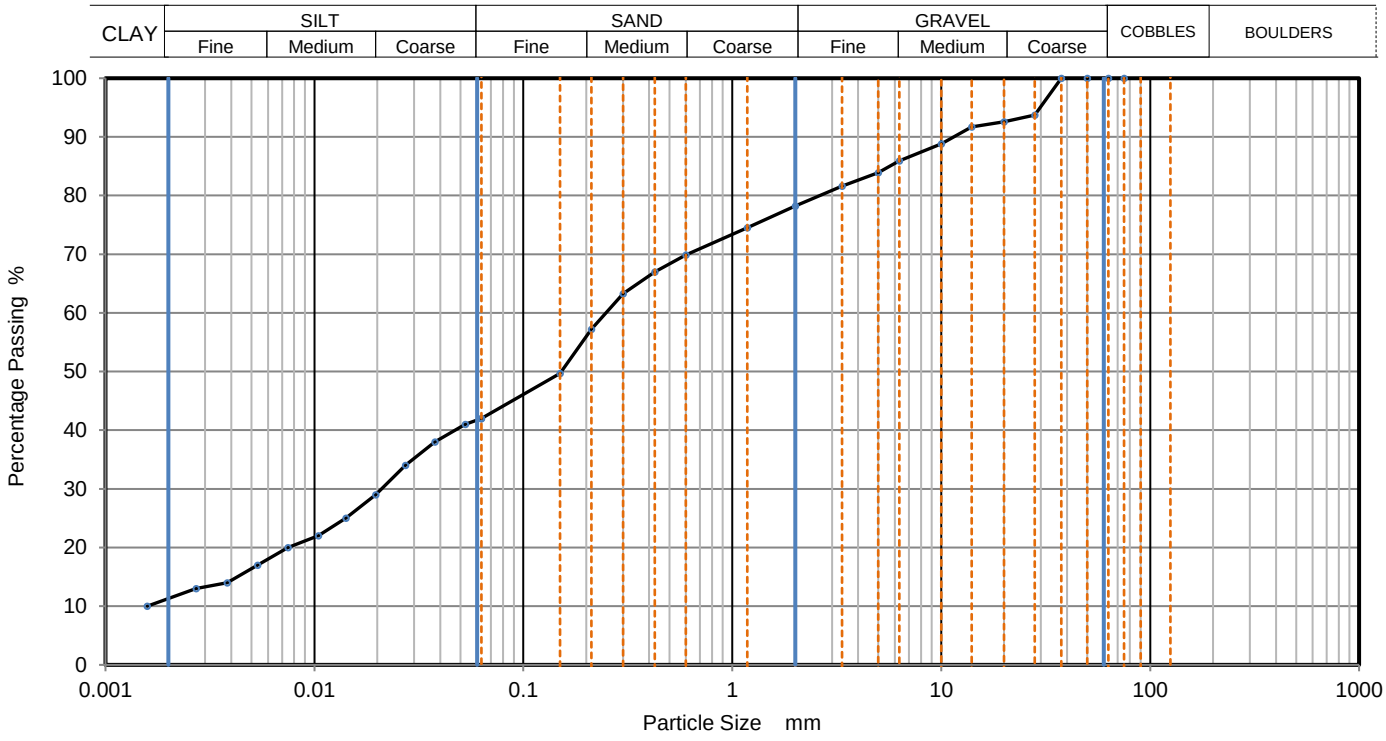
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS05
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Dark grey slightly gravelly sandy SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230505104



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	42
		0.0527	41
75	100	0.0378	38
63	100	0.0272	34
50	100	0.0196	29
37.5	100	0.0141	25
28	94	0.0104	22
20	93	0.0075	20
14	92	0.0053	17
10	89	0.0038	14
6.3	86	0.0027	13
5	84	0.0016	10
3.35	82		
2	78		
1.18	75		
0.6	70	Particle density	(assumed)
0.425	67	2.65	Mg/m3
0.3	63		
0.212	57		
0.15	50		
0.063	42		

Dry Mass of sample, g	1039

Sample Proportions	% dry mass
Very coarse	0
Gravel	22
Sand	36
Silt	31
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.248
D30	mm	0.0206
D10	mm	0.00165
Uniformity Coefficient		150
Curvature Coefficient		1

Remarks

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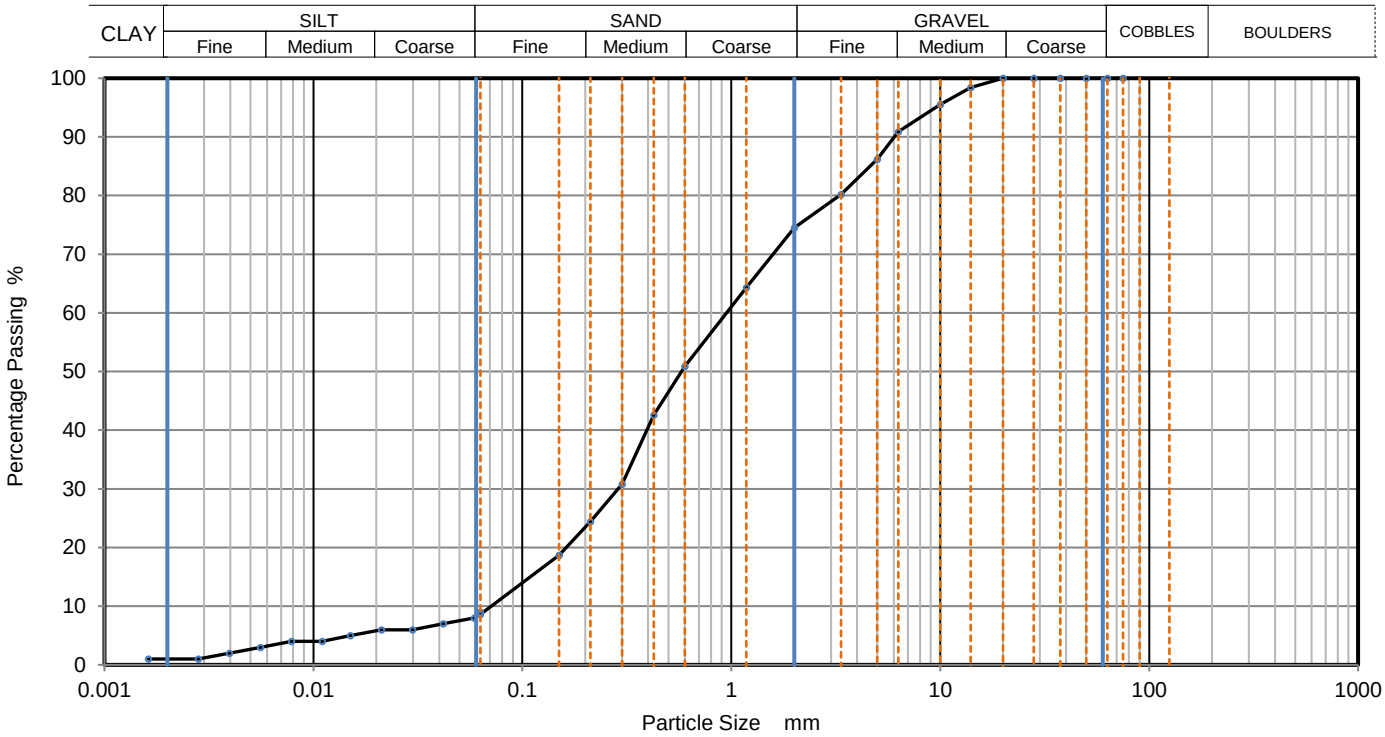
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS06
Site Name	Derrygreenagh Power	Sample No.	9
Soil Description	Brownish-black slightly gravelly sandy peaty ORGANIC SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023070358



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	9
		0.0588	8
75	100	0.0418	7
63	100	0.0297	6
50	100	0.0211	6
37.5	100	0.0150	5
28	100	0.0110	4
20	100	0.0078	4
14	98	0.0056	3
10	96	0.0040	2
6.3	91	0.0028	1
5	86	0.0016	1
3.35	80		
2	75		
1.18	64		
0.6	51	Particle density	(assumed)
0.425	43	2.65	Mg/m3
0.3	31		
0.212	24		
0.15	19		
0.063	9		

Dry Mass of sample, g	346

Sample Proportions	% dry mass
Very coarse	0
Gravel	26
Sand	66
Silt	7
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.95
D30	mm	0.288
D10	mm	0.0711
Uniformity Coefficient		13
Curvature Coefficient		1.2

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
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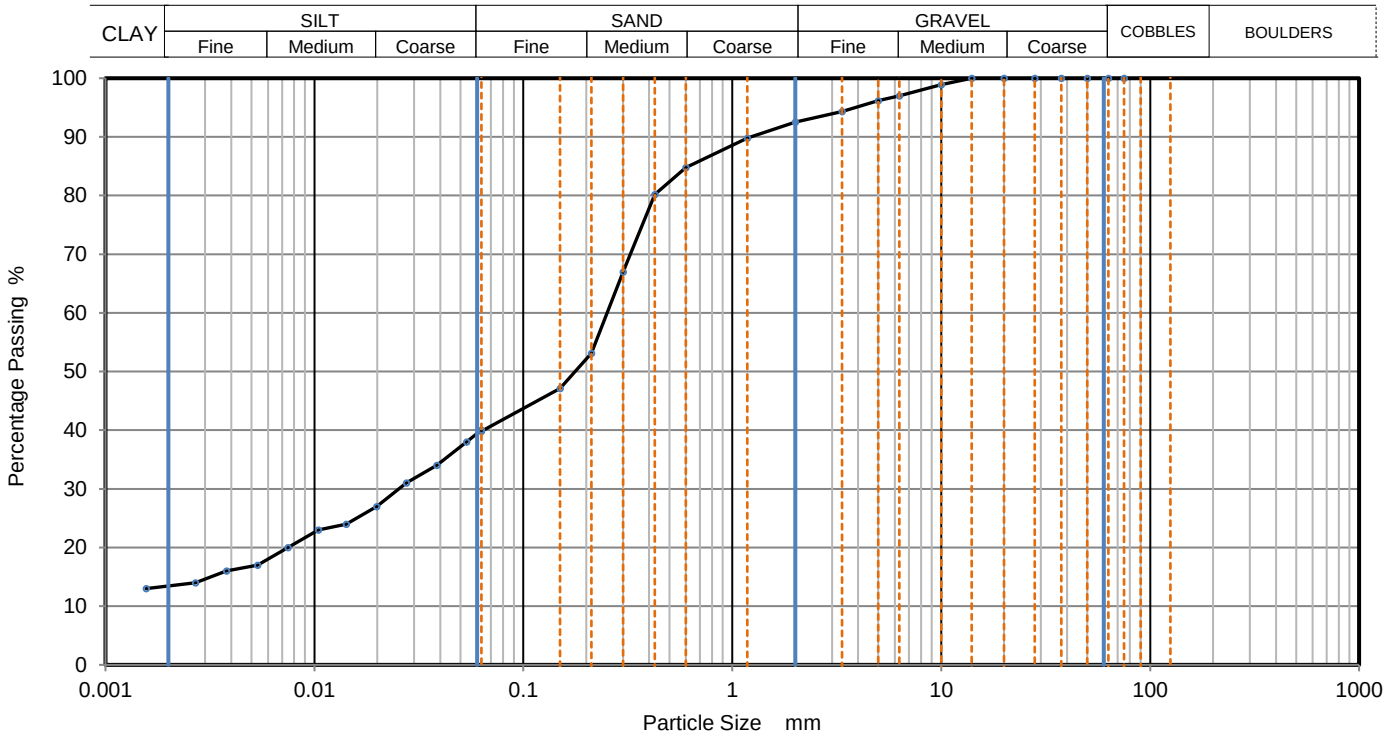
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown slightly gravelly sandy SILT. Sand is medium.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081434



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	40
		0.0534	38
75	100	0.0385	34
63	100	0.0276	31
50	100	0.0199	27
37.5	100	0.0142	24
28	100	0.0104	23
20	100	0.0075	20
14	100	0.0053	17
10	99	0.0038	16
6.3	97	0.0027	14
5	96	0.0016	13
3.35	94		
2	93		
1.18	90		
0.6	85	Particle density (assumed)	
0.425	80	2.65 Mg/m3	
0.3	67		
0.212	53		
0.15	47		
0.063	40		

Dry Mass of sample, g	504

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	53
Silt	27
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.252
D30	mm	0.025
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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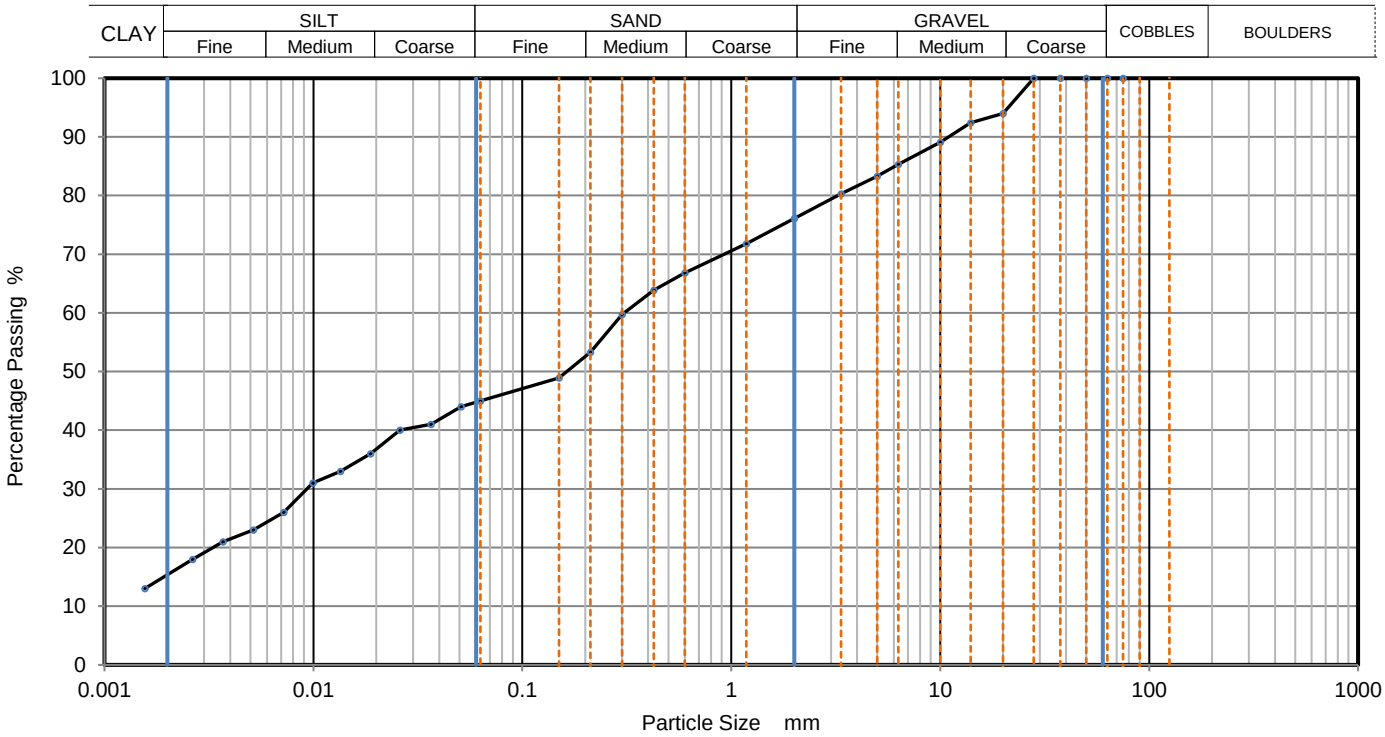
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Light brown slightly gravelly slightly sandy SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081441



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0509	44
75	100	0.0365	41
63	100	0.0260	40
50	100	0.0188	36
37.5	100	0.0134	33
28	100	0.0099	31
20	94	0.0072	26
14	92	0.0052	23
10	89	0.0037	21
6.3	85	0.0026	18
5	83	0.0016	13
3.35	80		
2	76		
1.18	72		
0.6	67	Particle density	(assumed)
0.425	64	2.65	Mg/m3
0.3	60		
0.212	53		
0.15	49		
0.063	45		

Dry Mass of sample, g	1061

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	31
Silt	30
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.308
D30	mm	0.00943
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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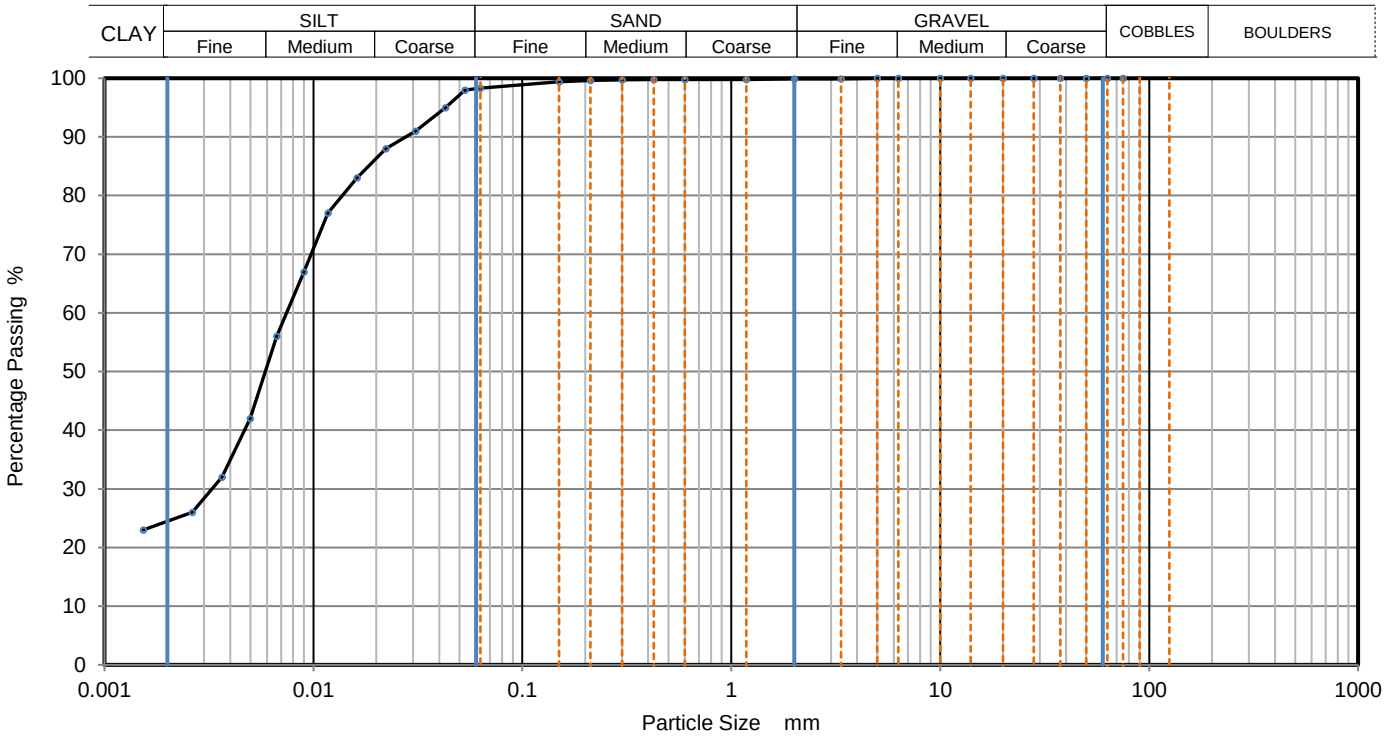
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power	Sample No.	16
Soil Description	Greyish-brown slighlty sandy SILT.	Depth, m	5.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081450



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0531	98
		0.0428	95
75	100	0.0309	91
63	100	0.0223	88
50	100	0.0162	83
37.5	100	0.0118	77
28	100	0.0090	67
20	100	0.0067	56
14	100	0.0050	42
10	100	0.0036	32
6.3	100	0.0026	26
5	100	0.0015	23
3.35	100		
2	100		
1.18	100		
0.6	100	Particle density	(assumed)
0.425	100	2.65	Mg/m3
0.3	100		
0.212	100		
0.15	99		
0.063	98		

Dry Mass of sample, g	760

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	2
Silt	74
Clay	25

Grading Analysis		
D100	mm	
D60	mm	0.00744
D30	mm	0.0033
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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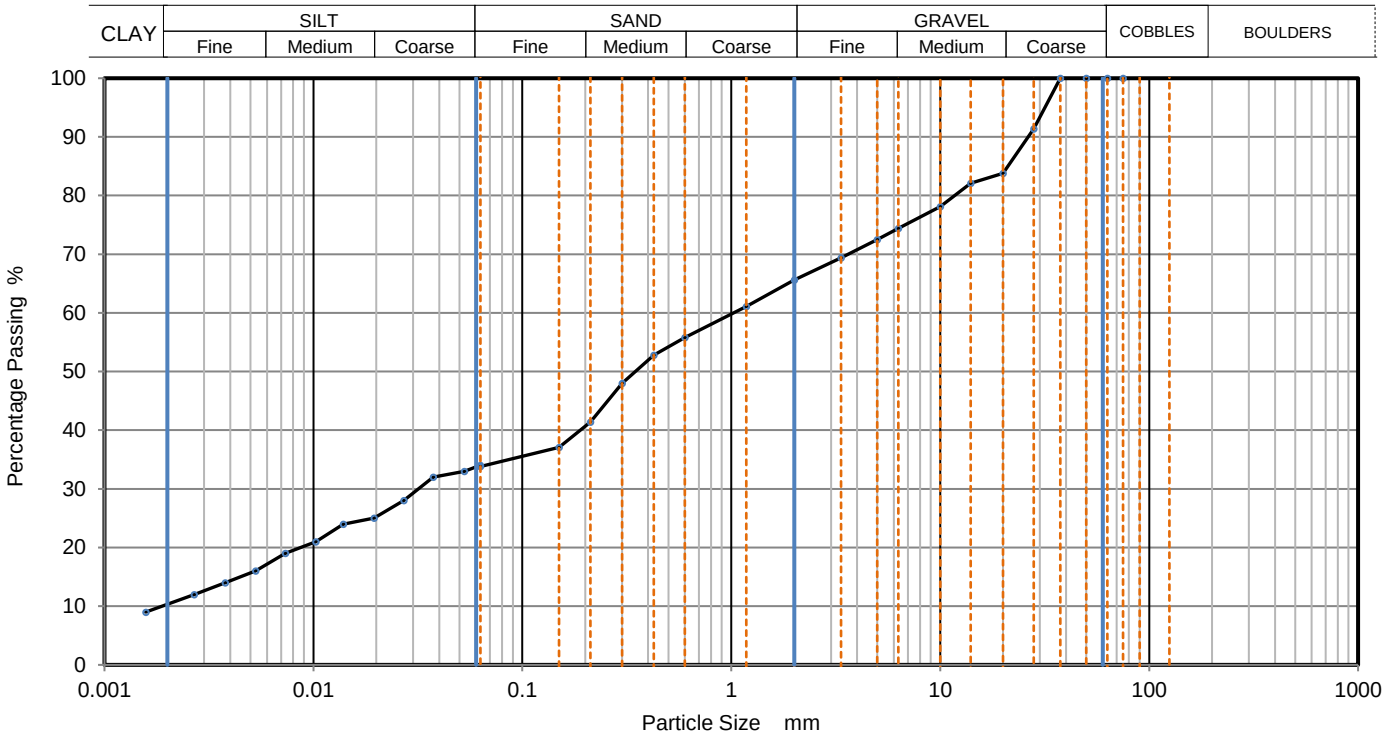
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS102
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Dark brown very silty SAND and GRAVEL.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081455



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	34
		0.0527	33
75	100	0.0375	32
63	100	0.0271	28
50	100	0.0195	25
37.5	100	0.0139	24
28	91	0.0103	21
20	84	0.0073	19
14	82	0.0053	16
10	78	0.0038	14
6.3	74	0.0027	12
5	73	0.0016	9
3.35	69		
2	66		
1.18	61		
0.6	56	Particle density	(assumed)
0.425	53	2.65	Mg/m3
0.3	48		
0.212	41		
0.15	37		
0.063	34		

Dry Mass of sample, g	780

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	32
Silt	23
Clay	11

Grading Analysis		
D100	mm	
D60	mm	1.03
D30	mm	0.0323
D10	mm	0.00184
Uniformity Coefficient		560
Curvature Coefficient		0.55

Remarks

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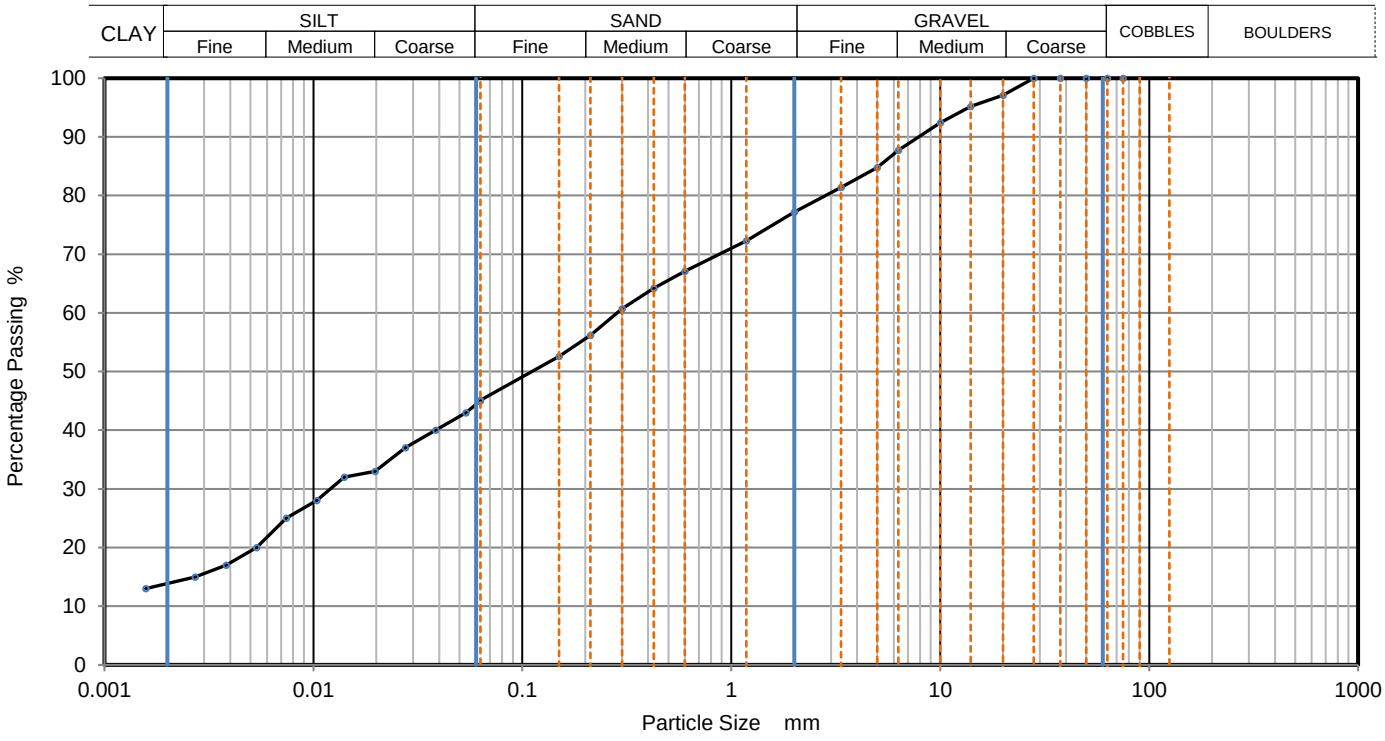
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS102
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Light grey slightly gravelly slightly sandy SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081461



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0538	43
75	100	0.0385	40
63	100	0.0276	37
50	100	0.0197	33
37.5	100	0.0140	32
28	100	0.0104	28
20	97	0.0074	25
14	95	0.0053	20
10	92	0.0038	17
6.3	88	0.0027	15
5	85	0.0016	13
3.35	81		
2	77		
1.18	72		
0.6	67	Particle density (assumed)	
0.425	64	2.65 Mg/m3	
0.3	61		
0.212	56		
0.15	53		
0.063	45		

Dry Mass of sample, g	854

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	32
Silt	31
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.283
D30	mm	0.012
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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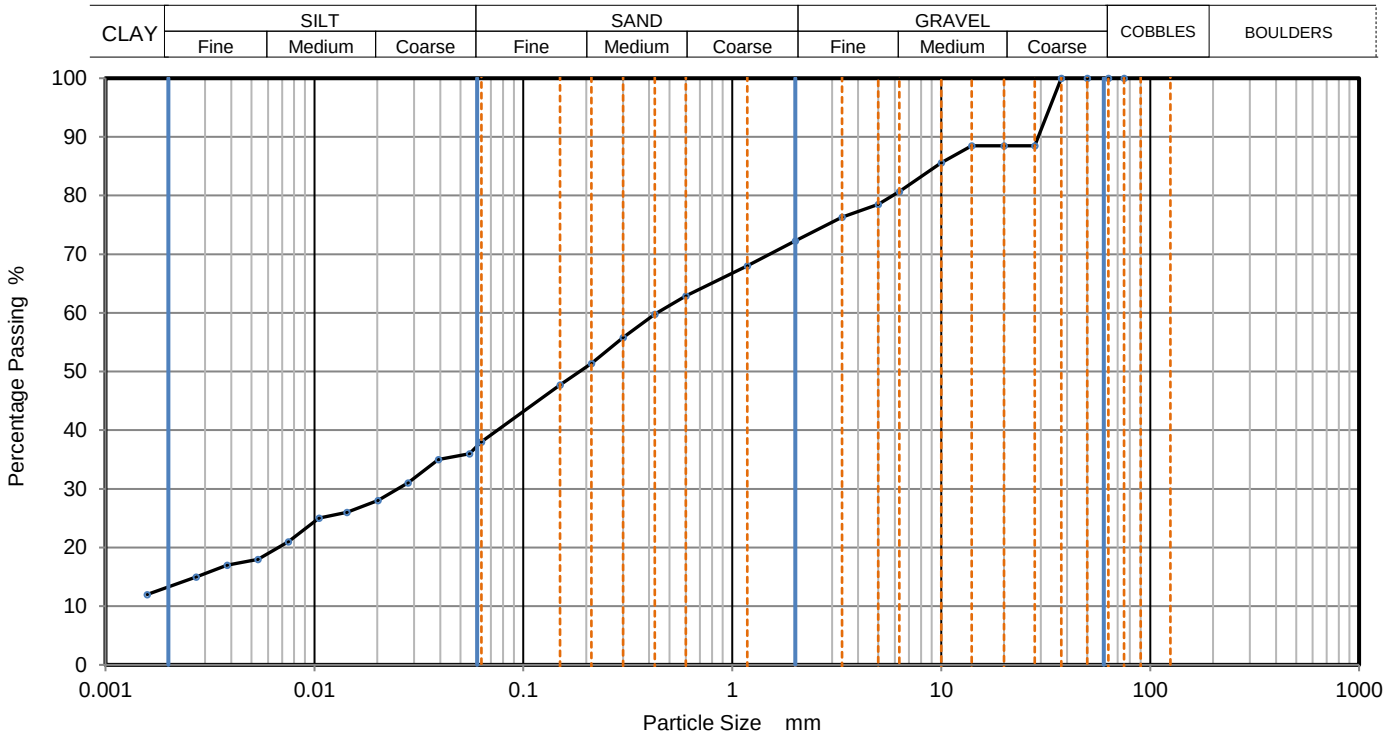
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greensih-grey slightly gravelly sandy SILT.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081465



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	38
		0.0552	36
75	100	0.0392	35
63	100	0.0281	31
50	100	0.0201	28
37.5	100	0.0143	26
28	89	0.0105	25
20	89	0.0075	21
14	89	0.0054	18
10	86	0.0038	17
6.3	81	0.0027	15
5	79	0.0016	12
3.35	76		
2	72		
1.18	68		
0.6	63	Particle density (assumed)	
0.425	60	2.65 Mg/m3	
0.3	56		
0.212	51		
0.15	48		
0.063	38		

Dry Mass of sample, g	997

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	34
Silt	25
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.433
D30	mm	0.0244
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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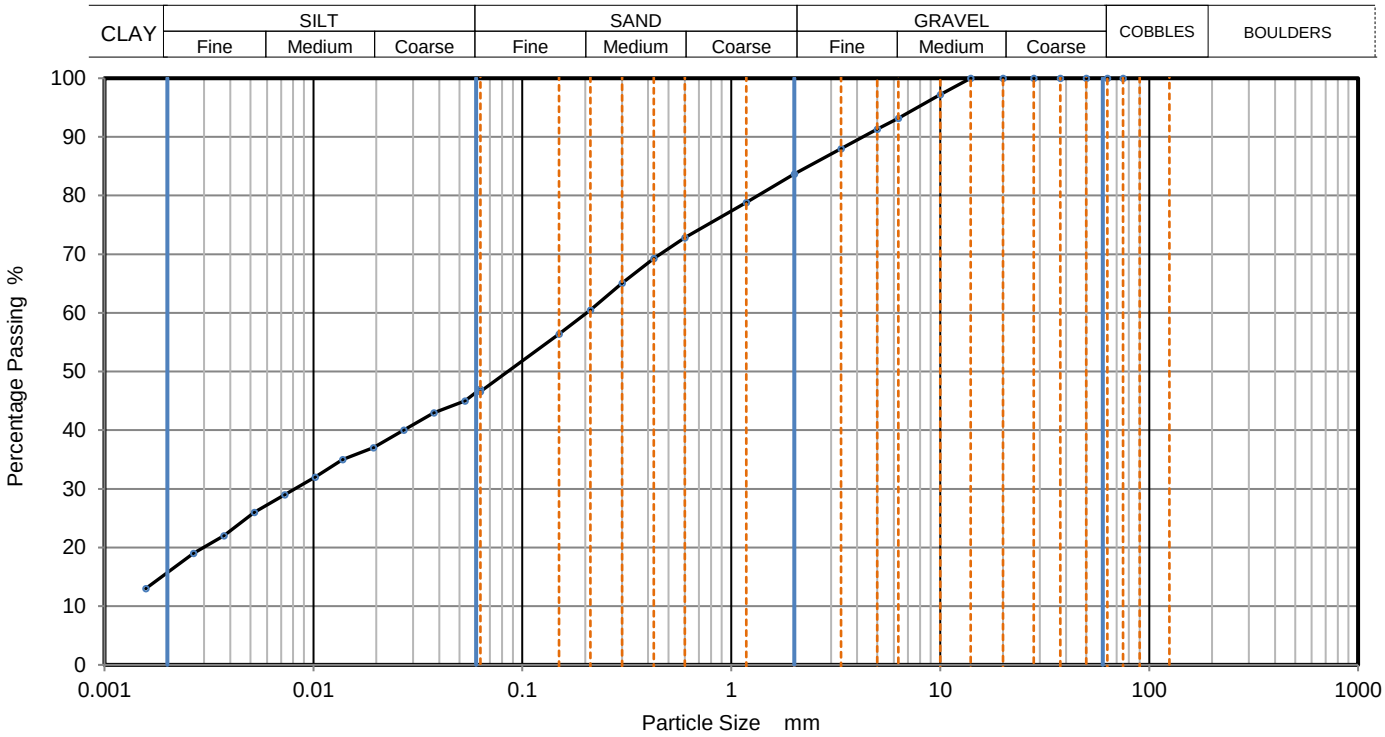
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greensih-grey slightly gravelly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081468



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	47
		0.0531	45
75	100	0.0378	43
63	100	0.0271	40
50	100	0.0194	37
37.5	100	0.0138	35
28	100	0.0102	32
20	100	0.0073	29
14	100	0.0052	26
10	97	0.0037	22
6.3	93	0.0027	19
5	91	0.0016	13
3.35	88		
2	84		
1.18	79		
0.6	73	Particle density	(assumed)
0.425	69	2.65	Mg/m3
0.3	65		
0.212	61		
0.15	56		
0.063	47		

Dry Mass of sample, g	840

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	37
Silt	31
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.203
D30	mm	0.00816
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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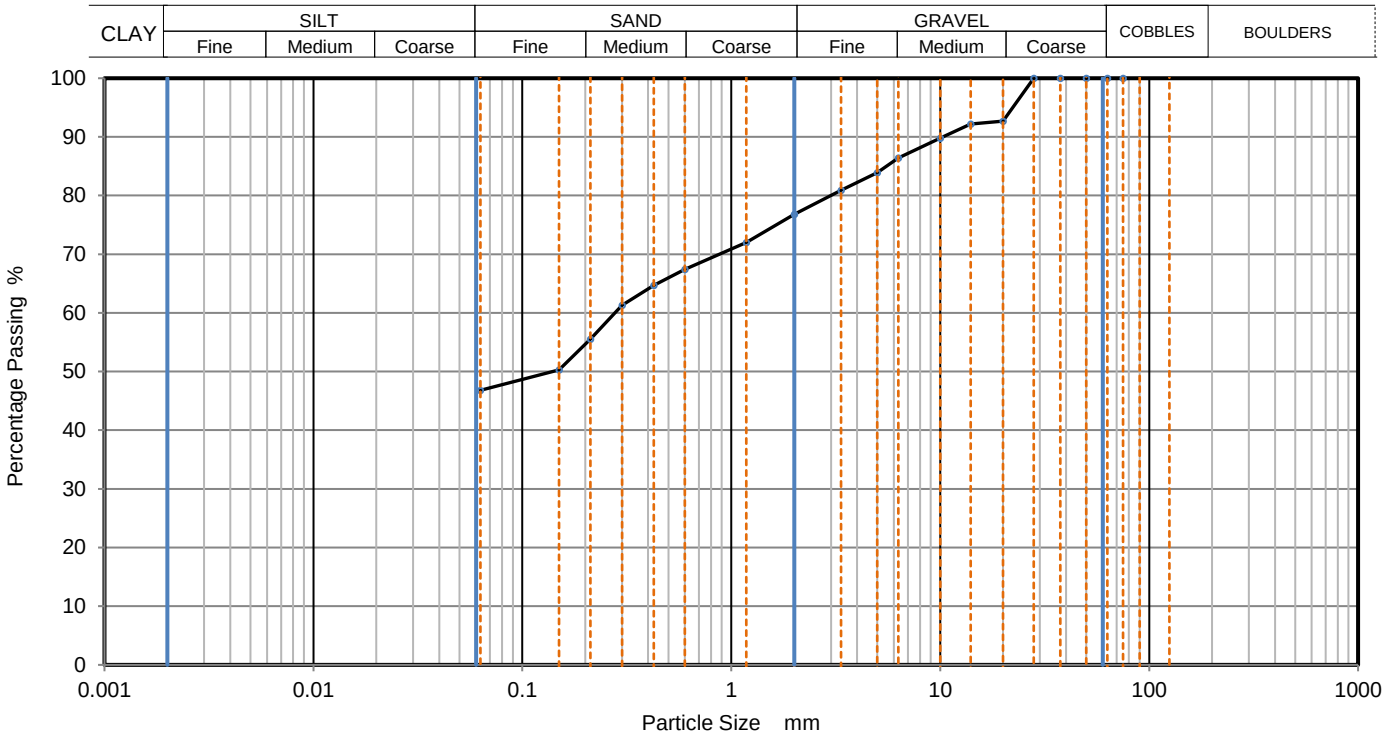
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power	Sample No.	13
Soil Description	Light greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023081478



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	92		
10	90		
6.3	86		
5	84		
3.35	81		
2	77		
1.18	72		
0.6	67		
0.425	65		
0.3	61		
0.212	56		
0.15	50		
0.063	47		

Dry Mass of sample, g: 943

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	30
Fines <0.063mm	47

Grading Analysis		
D100	mm	
D60	mm	0.277
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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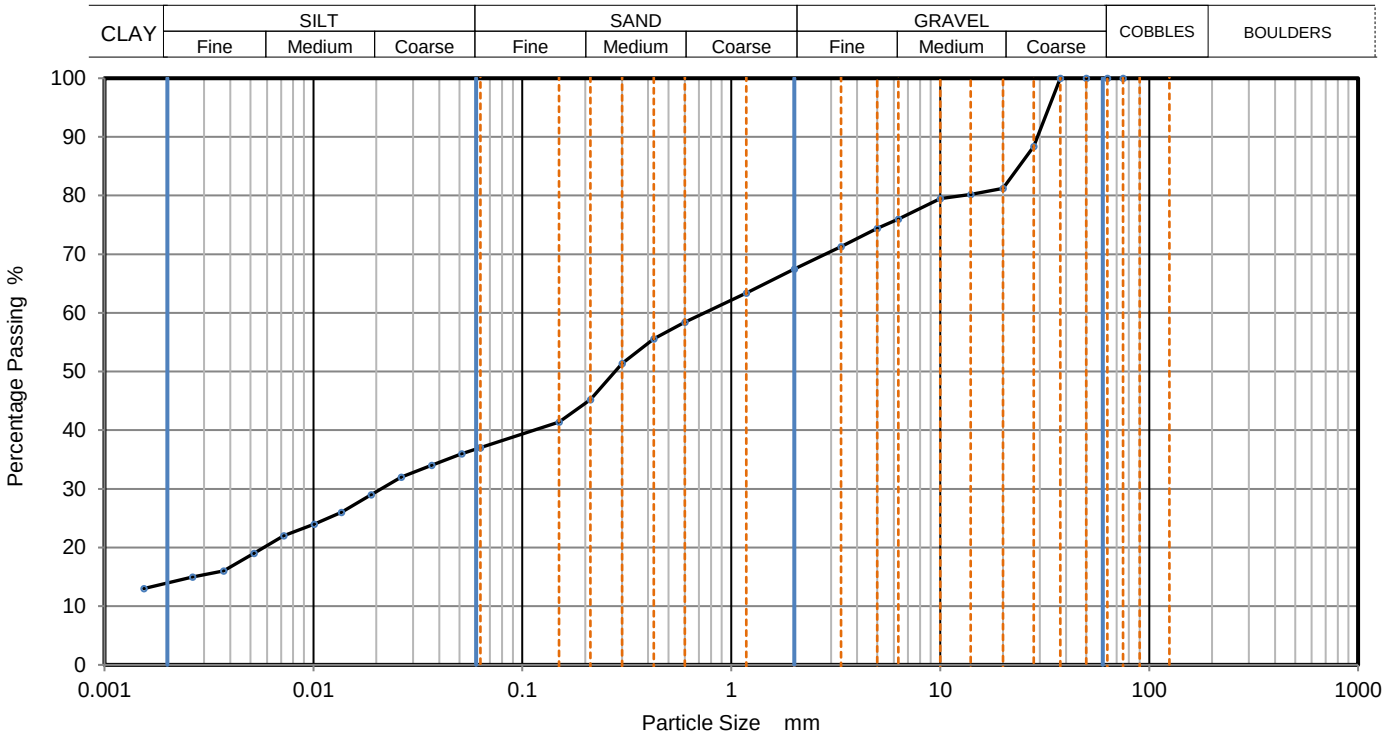
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS104
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greenish-brown slightly sandy slightly gravelly SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081483



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	37
		0.0512	36
75	100	0.0368	34
63	100	0.0264	32
50	100	0.0189	29
37.5	100	0.0136	26
28	88	0.0101	24
20	81	0.0072	22
14	80	0.0052	19
10	80	0.0037	16
6.3	76	0.0026	15
5	74	0.0015	13
3.35	71		
2	68		
1.18	63		
0.6	58	Particle density (assumed)	
0.425	56	2.65 Mg/m3	
0.3	51		
0.212	45		
0.15	41		
0.063	37		

Dry Mass of sample, g	1001

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	31
Silt	23
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.745
D30	mm	0.0208
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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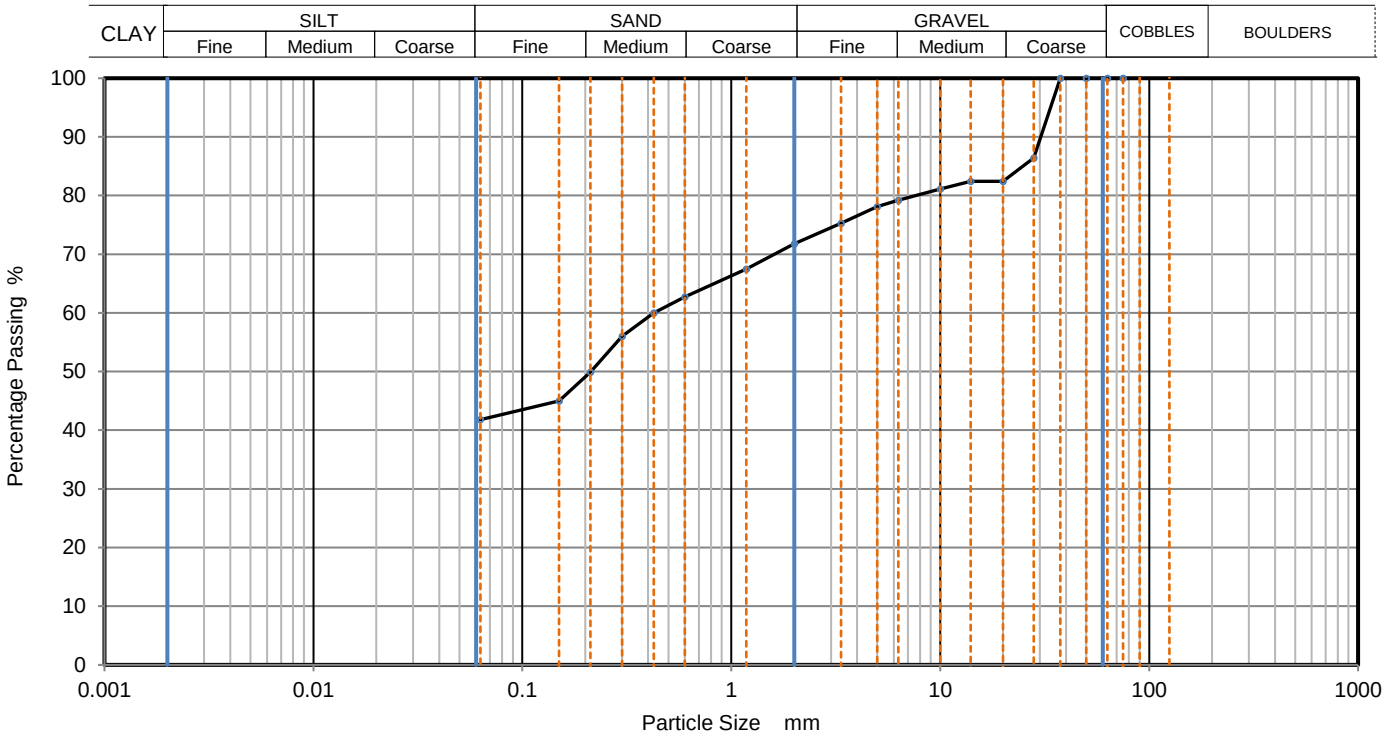
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS104
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Light greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023081486



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	86		
20	82		
14	82		
10	81		
6.3	79		
5	78		
3.35	75		
2	72		
1.18	68		
0.6	63		
0.425	60		
0.3	56		
0.212	50		
0.15	45		
0.063	42		

Dry Mass of sample, g	1042

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	30
Fines <0.063mm	42

Grading Analysis		
D100	mm	
D60	mm	0.427
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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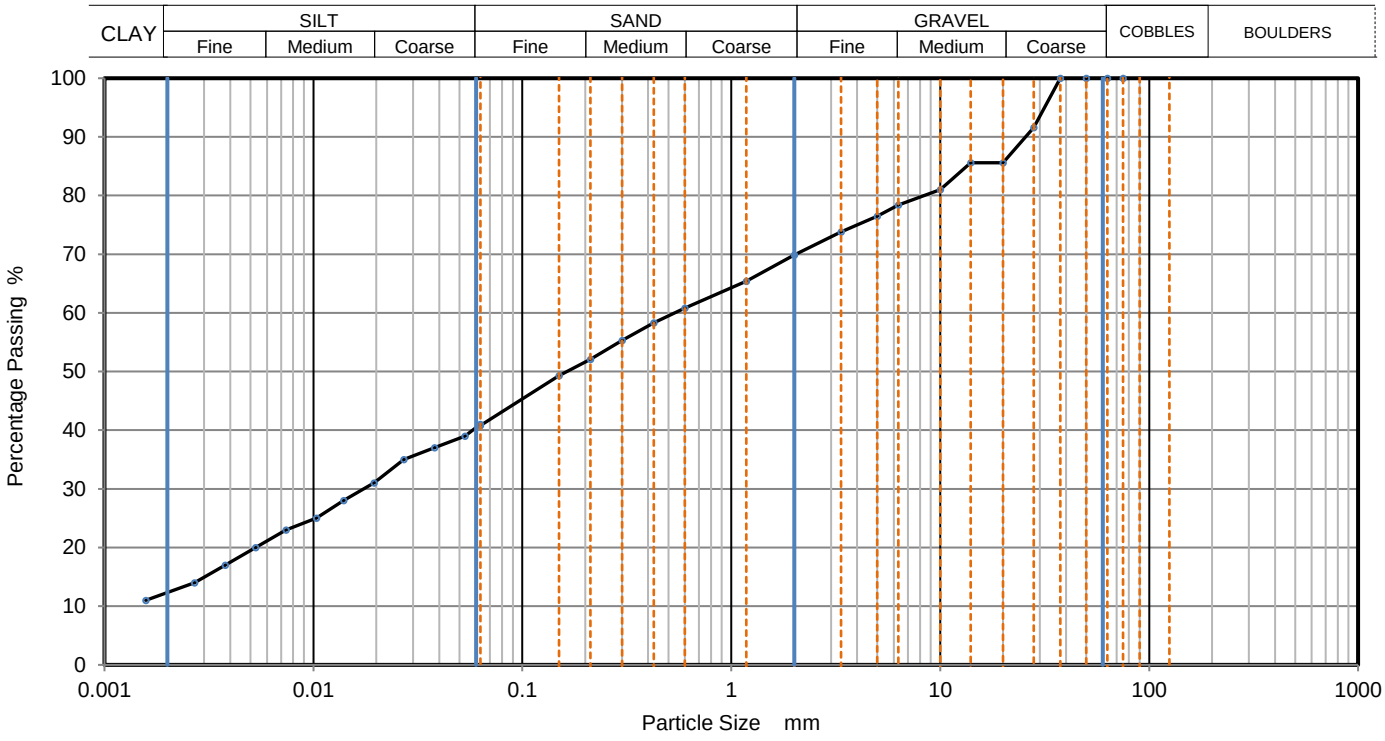
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS104
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Light grey slightly sandy slightly gravelly SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081490



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0531	39
75	100	0.0380	37
63	100	0.0271	35
50	100	0.0195	31
37.5	100	0.0140	28
28	92	0.0103	25
20	86	0.0074	23
14	86	0.0053	20
10	81	0.0038	17
6.3	78	0.0027	14
5	77	0.0016	11
3.35	74		
2	70		
1.18	65		
0.6	61	Particle density (assumed)	
0.425	58	2.65 Mg/m3	
0.3	55		
0.212	52		
0.15	49		
0.063	41		

Dry Mass of sample, g	997

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	29
Silt	28
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.538
D30	mm	0.0174
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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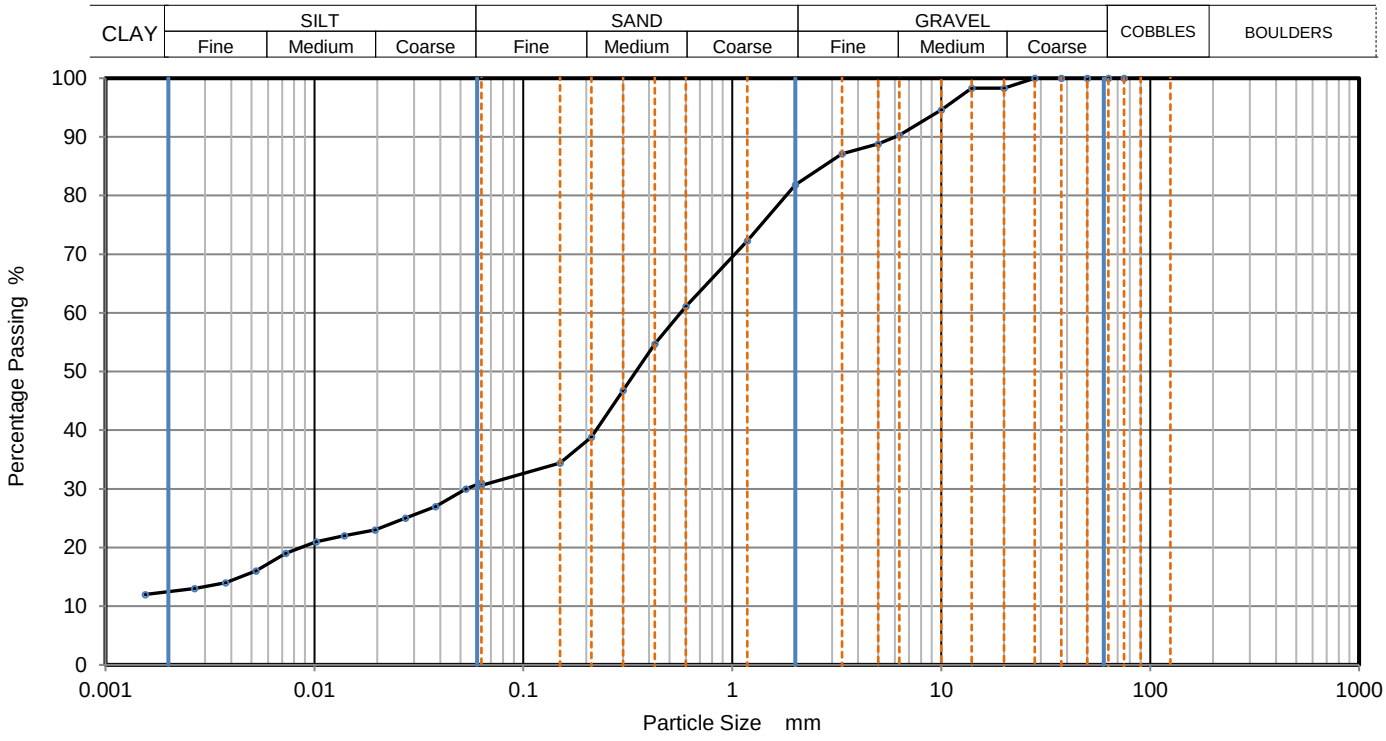
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS105
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brown and greensih-grey gravelly very silty medium and coarse SAND.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081495



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	31
		0.0531	30
75	100	0.0380	27
63	100	0.0272	25
50	100	0.0195	23
37.5	100	0.0139	22
28	100	0.0102	21
20	98	0.0073	19
14	98	0.0053	16
10	95	0.0038	14
6.3	90	0.0027	13
5	89	0.0015	12
3.35	87		
2	82		
1.18	72		
0.6	61	Particle density	(assumed)
0.425	55	2.65	Mg/m3
0.3	47		
0.212	39		
0.15	34		
0.063	31		

Dry Mass of sample, g: 683

Sample Proportions	% dry mass
Very coarse	0
Gravel	18
Sand	51
Silt	19
Clay	12

Grading Analysis		
D100	mm	
D60	mm	0.566
D30	mm	0.057
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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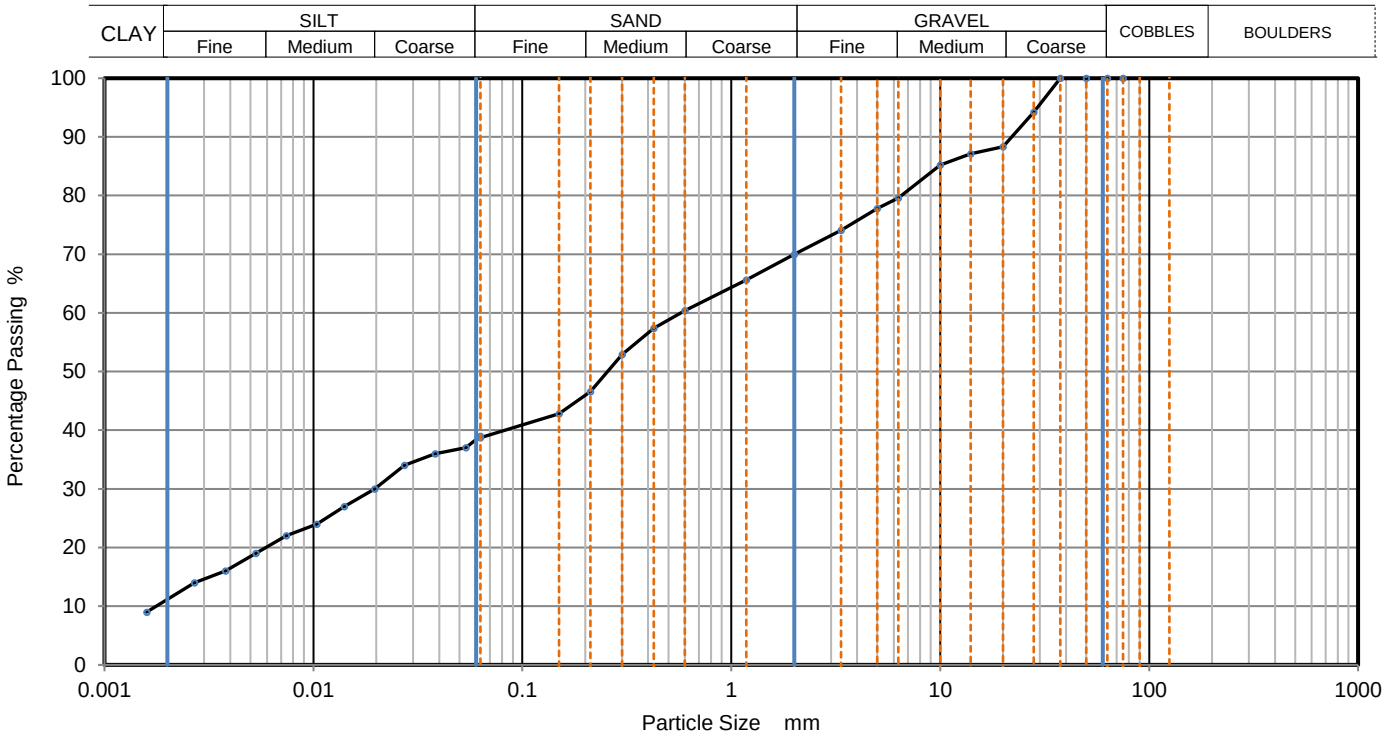
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS105
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081498



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	39
		0.0538	37
75	100	0.0383	36
63	100	0.0272	34
50	100	0.0196	30
37.5	100	0.0140	27
28	94	0.0104	24
20	88	0.0074	22
14	87	0.0053	19
10	85	0.0038	16
6.3	80	0.0027	14
5	78	0.0016	9
3.35	74		
2	70		
1.18	66		
0.6	60	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	53		
0.212	47		
0.15	43		
0.063	39		

Dry Mass of sample, g	941

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	31
Silt	28
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.575
D30	mm	0.0194
D10	mm	0.00181
Uniformity Coefficient		320
Curvature Coefficient		0.36

Remarks

Preparation and testing in accordance with BS1377 unless noted below

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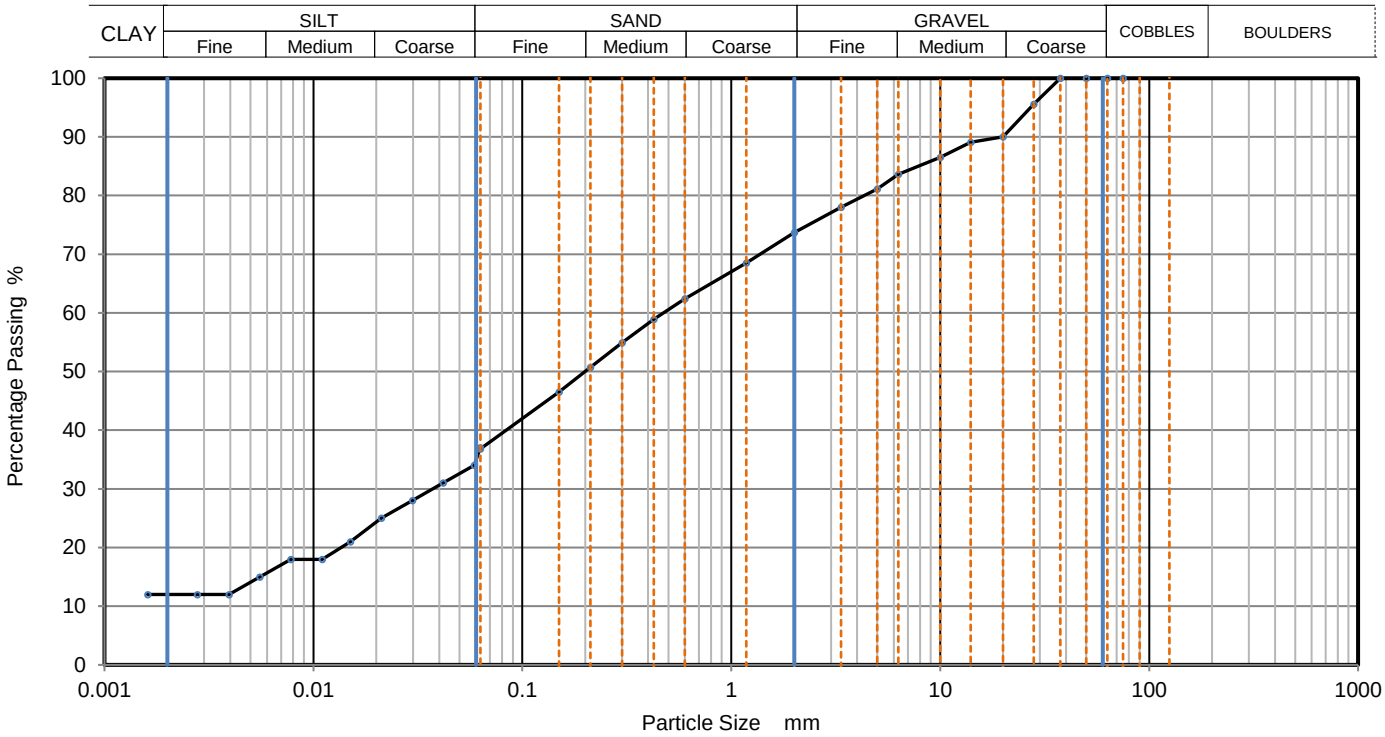
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greenish-grey slightly gravelly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230814105



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	37
		0.0588	34
75	100	0.0418	31
63	100	0.0297	28
50	100	0.0211	25
37.5	100	0.0150	21
28	96	0.0110	18
20	90	0.0078	18
14	89	0.0055	15
10	87	0.0039	12
6.3	84	0.0028	12
5	81	0.0016	12
3.35	78		
2	74		
1.18	69		
0.6	62	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	55		
0.212	51		
0.15	47		
0.063	37		

Dry Mass of sample, g	885

Sample Proportions	% dry mass
Very coarse	0
Gravel	26
Sand	37
Silt	25
Clay	12

Grading Analysis		
D100	mm	
D60	mm	0.472
D30	mm	0.0388
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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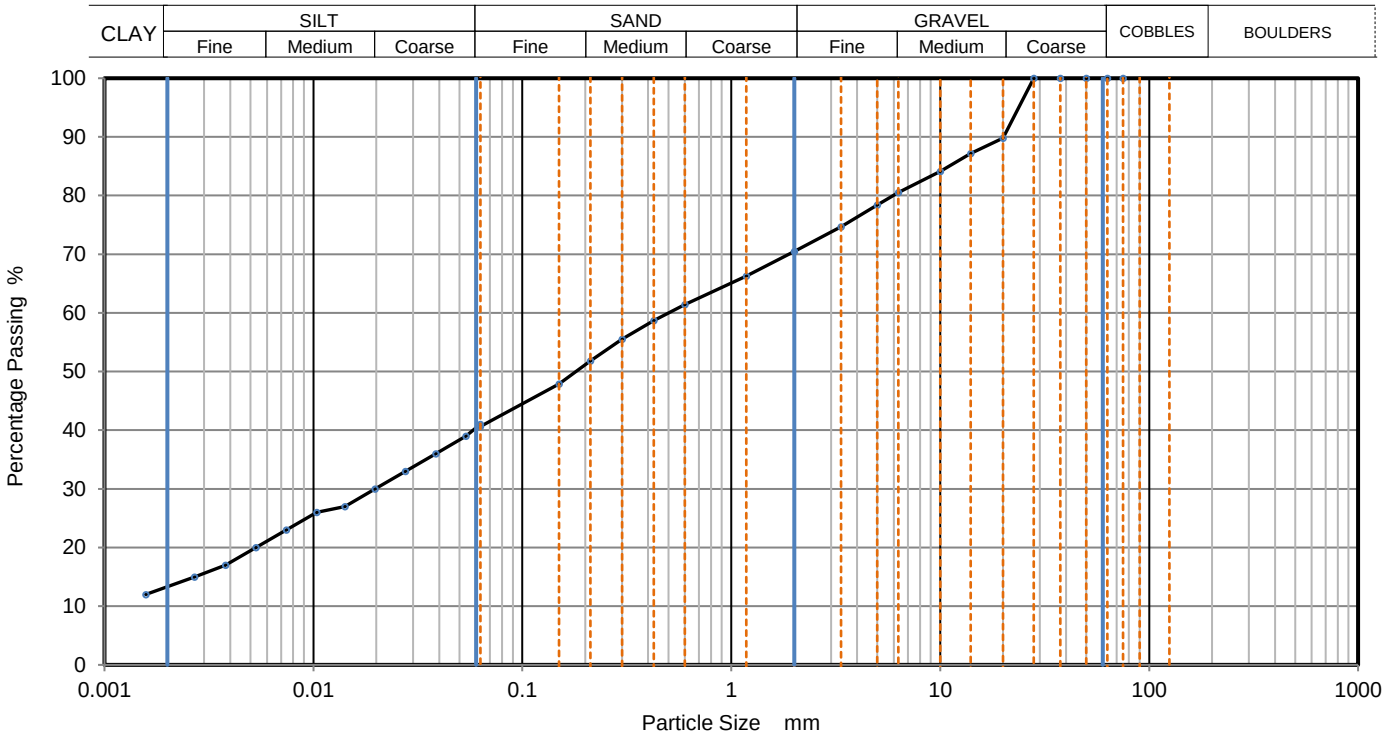
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Light grey slightly gravelly slightly sandy SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230814111



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0538	39
75	100	0.0385	36
63	100	0.0276	33
50	100	0.0197	30
37.5	100	0.0141	27
28	100	0.0104	26
20	90	0.0074	23
14	87	0.0053	20
10	84	0.0038	17
6.3	81	0.0027	15
5	78	0.0016	12
3.35	75		
2	71		
1.18	66		
0.6	61	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	56		
0.212	52		
0.15	48		
0.063	41		

Dry Mass of sample, g: 1067

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	30
Silt	27
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.502
D30	mm	0.0196
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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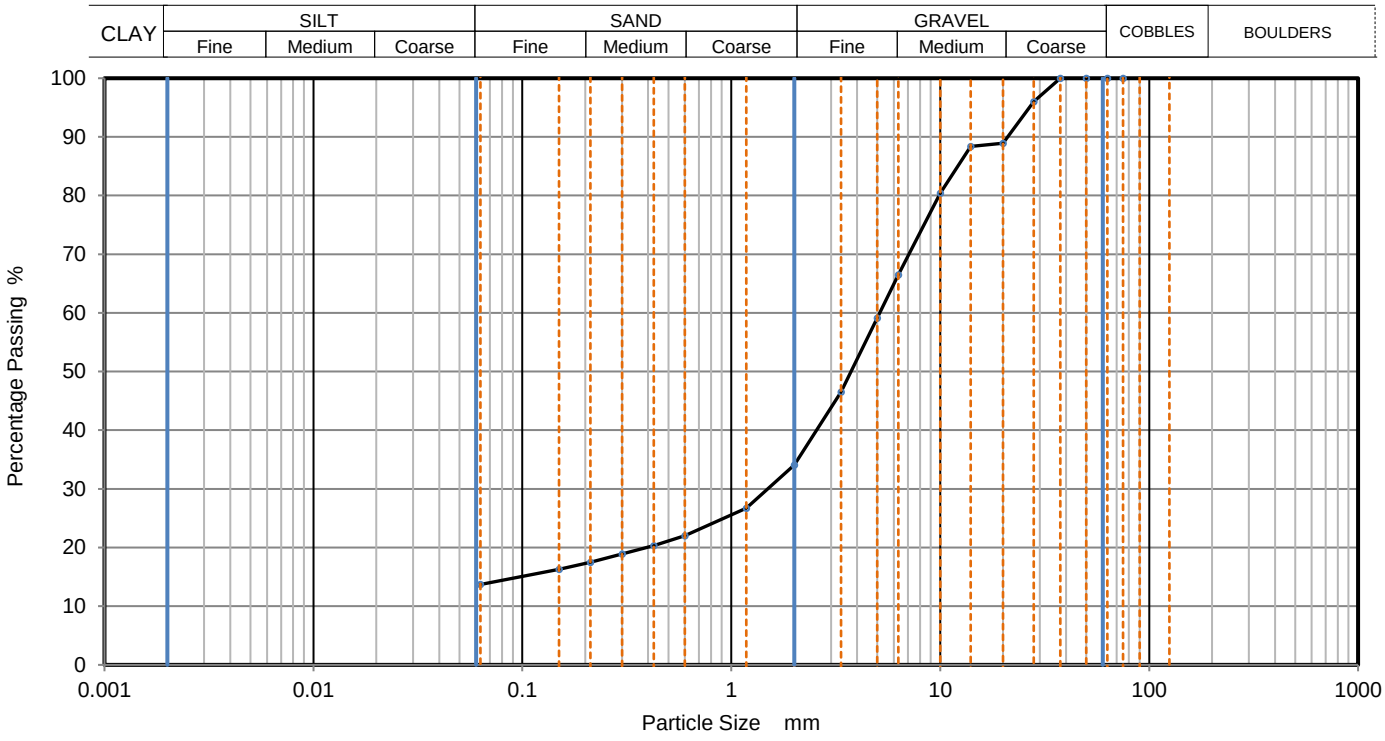
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description	Light grey silty very sandy fine GRAVEL.			Depth, m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120230814115



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	89		
14	88		
10	80		
6.3	67		
5	59		
3.35	47		
2	34		
1.18	27		
0.6	22		
0.425	20		
0.3	19		
0.212	18		
0.15	16		
0.063	14		

Dry Mass of sample, g	1242

Sample Proportions	% dry mass
Very coarse	0
Gravel	66
Sand	20
Fines <0.063mm	14

Grading Analysis		
D100	mm	
D60	mm	5.15
D30	mm	1.5
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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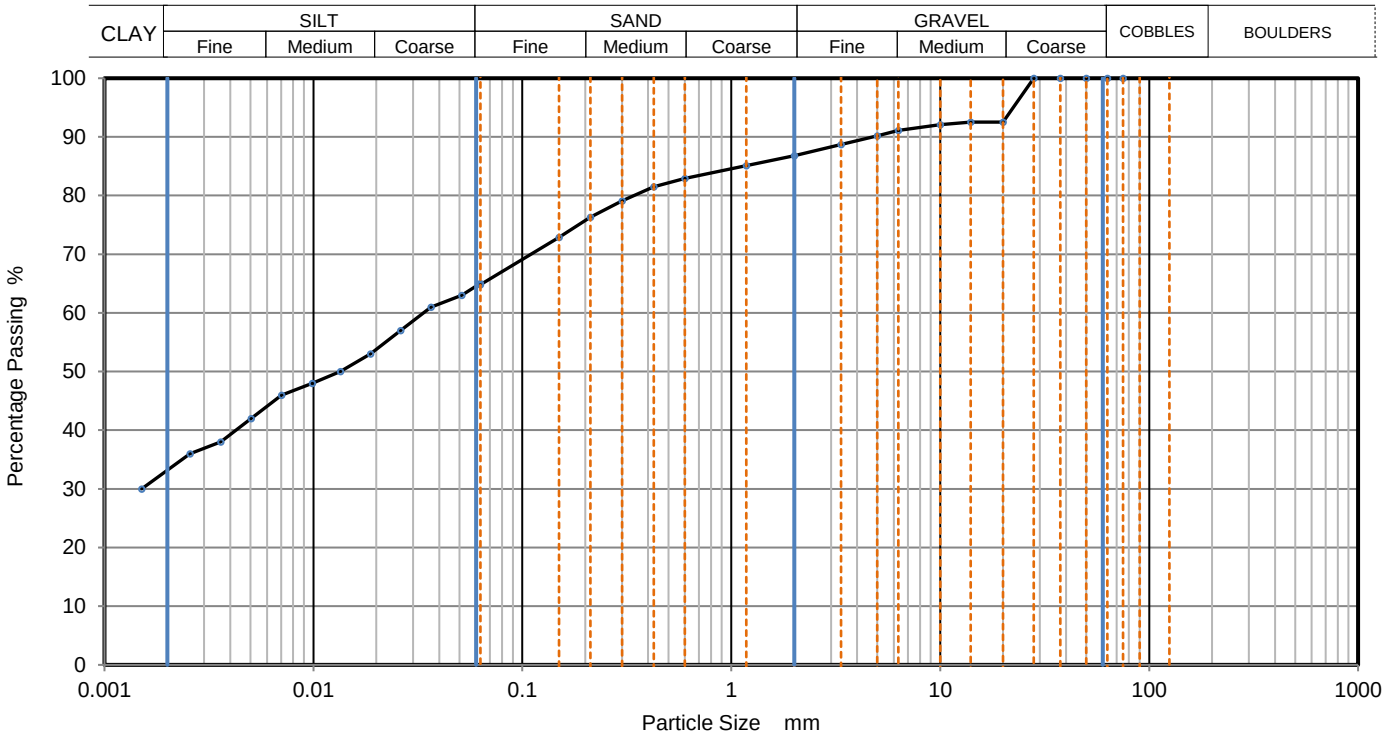
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS107
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Yellowish-brown slightly gravelly slightly sandy SILT.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230814118



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	65
		0.0512	63
75	100	0.0365	61
63	100	0.0262	57
50	100	0.0188	53
37.5	100	0.0134	50
28	100	0.0099	48
20	93	0.0070	46
14	93	0.0050	42
10	92	0.0036	38
6.3	91	0.0026	36
5	90	0.0015	30
3.35	89		
2	87		
1.18	85		
0.6	83	Particle density	(assumed)
0.425	82	2.65	Mg/m3
0.3	79		
0.212	76		
0.15	73		
0.063	65		

Dry Mass of sample, g	885

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	22
Silt	31
Clay	34

Grading Analysis		
D100	mm	
D60	mm	0.0335
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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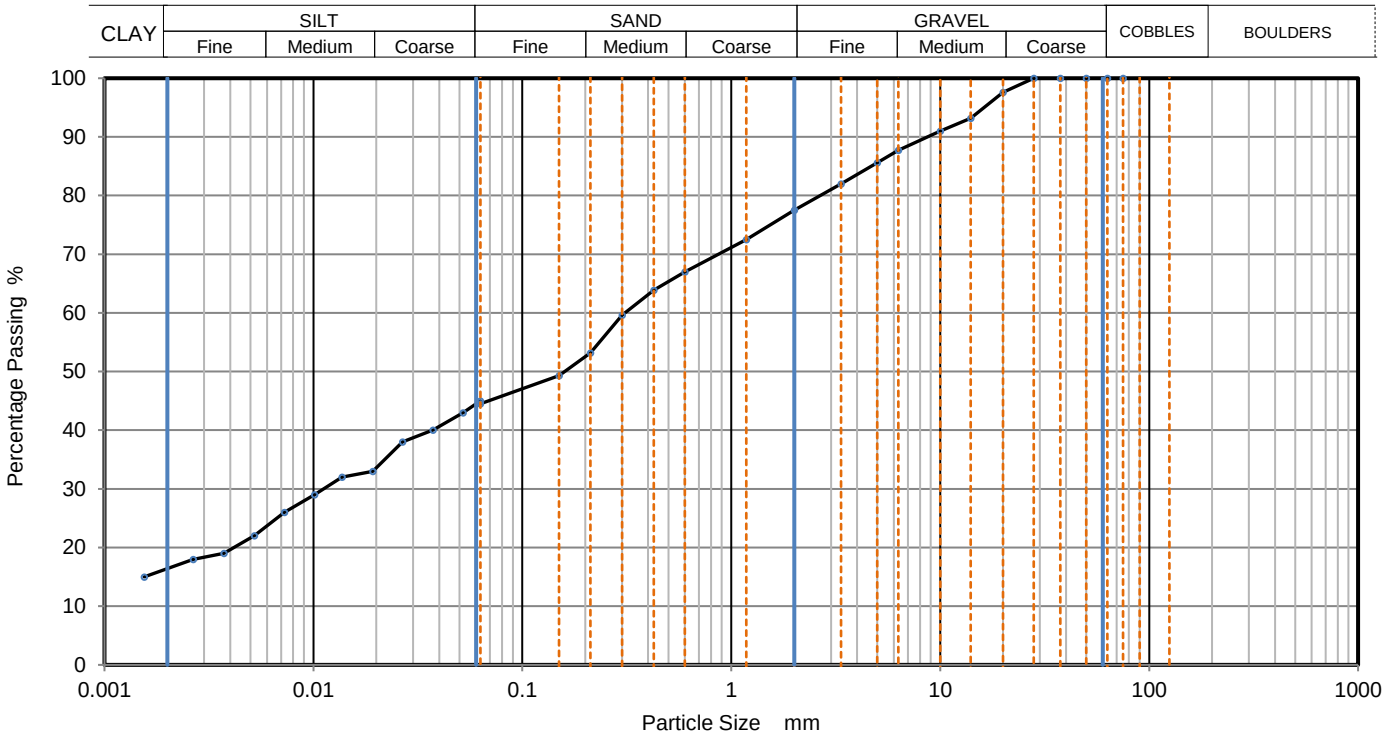
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS107
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230814121



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0520	43
75	100	0.0373	40
63	100	0.0267	38
50	100	0.0193	33
37.5	100	0.0137	32
28	100	0.0101	29
20	98	0.0073	26
14	93	0.0052	22
10	91	0.0037	19
6.3	88	0.0027	18
5	86	0.0015	15
3.35	82		
2	78		
1.18	73		
0.6	67	Particle density	(assumed)
0.425	64	2.65	Mg/m3
0.3	60		
0.212	53		
0.15	49		
0.063	45		

Dry Mass of sample, g: 973

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	33
Silt	28
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.309
D30	mm	0.011
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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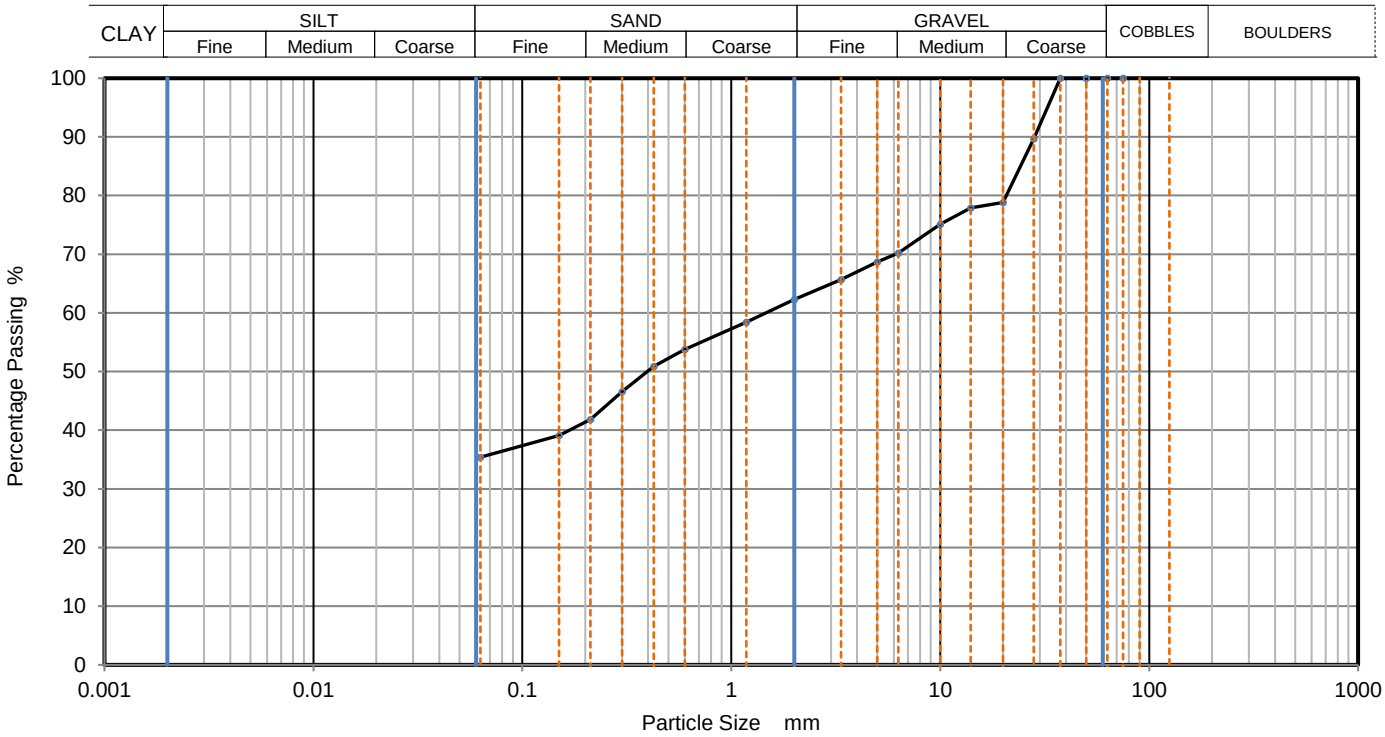
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS107
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Brownish-grey slightly sandy gravelly SILT. Gravel is coarse.	Depth, m	2.00
Specimen Reference	Specimen Depth: m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230814124



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	90		
20	79		
14	78		
10	75		
6.3	70		
5	69		
3.35	66		
2	62		
1.18	58		
0.6	54		
0.425	51		
0.3	47		
0.212	42		
0.15	39		
0.063	35		

Dry Mass of sample, g	1107

Sample Proportions	% dry mass
Very coarse	0
Gravel	38
Sand	27
Fines <0.063mm	35

Grading Analysis		
D100	mm	
D60	mm	1.46
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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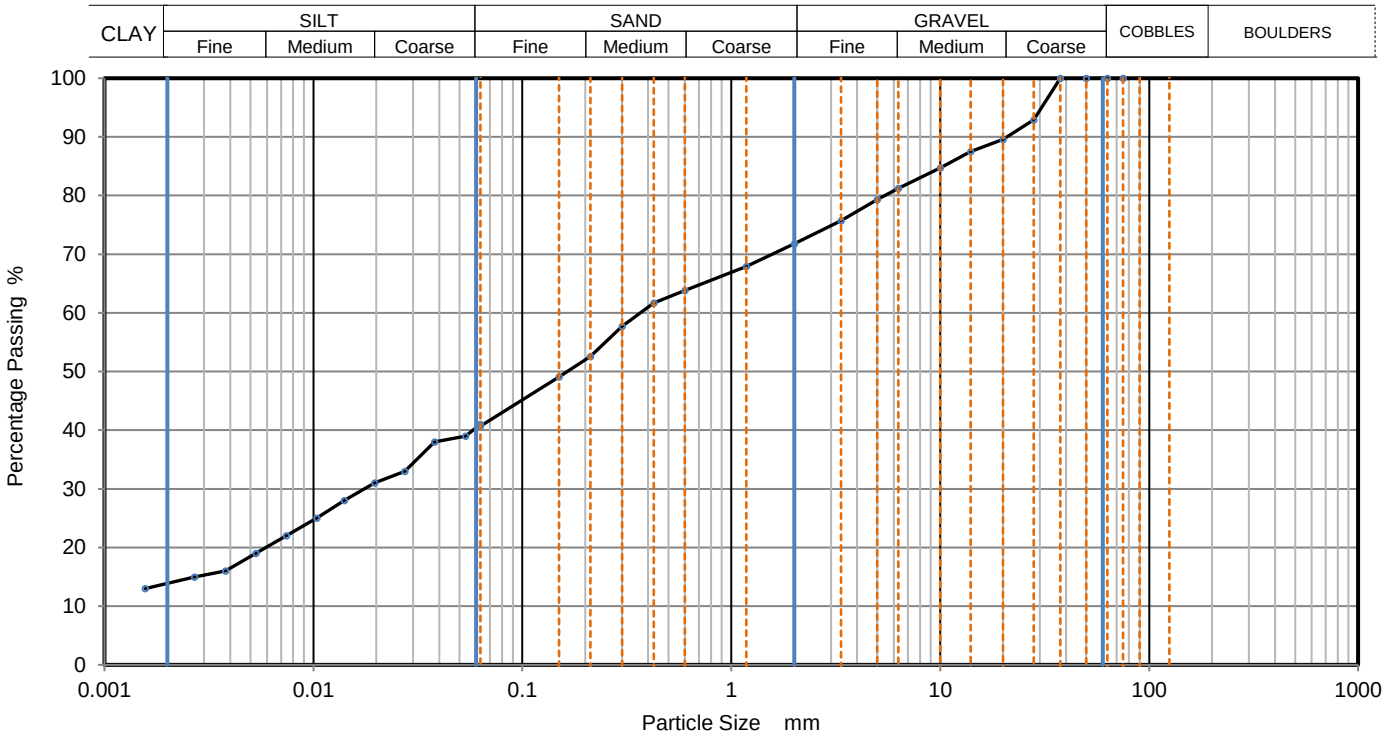
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS1M08
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brown slightly gravelly slightly sandy SILT.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081422



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0534	39
75	100	0.0380	38
63	100	0.0274	33
50	100	0.0196	31
37.5	100	0.0140	28
28	93	0.0104	25
20	90	0.0074	22
14	88	0.0053	19
10	85	0.0038	16
6.3	81	0.0027	15
5	79	0.0016	13
3.35	76		
2	72		
1.18	68		
0.6	64	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	58		
0.212	53		
0.15	49		
0.063	41		

Dry Mass of sample, g	717

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	31
Silt	27
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.367
D30	mm	0.0185
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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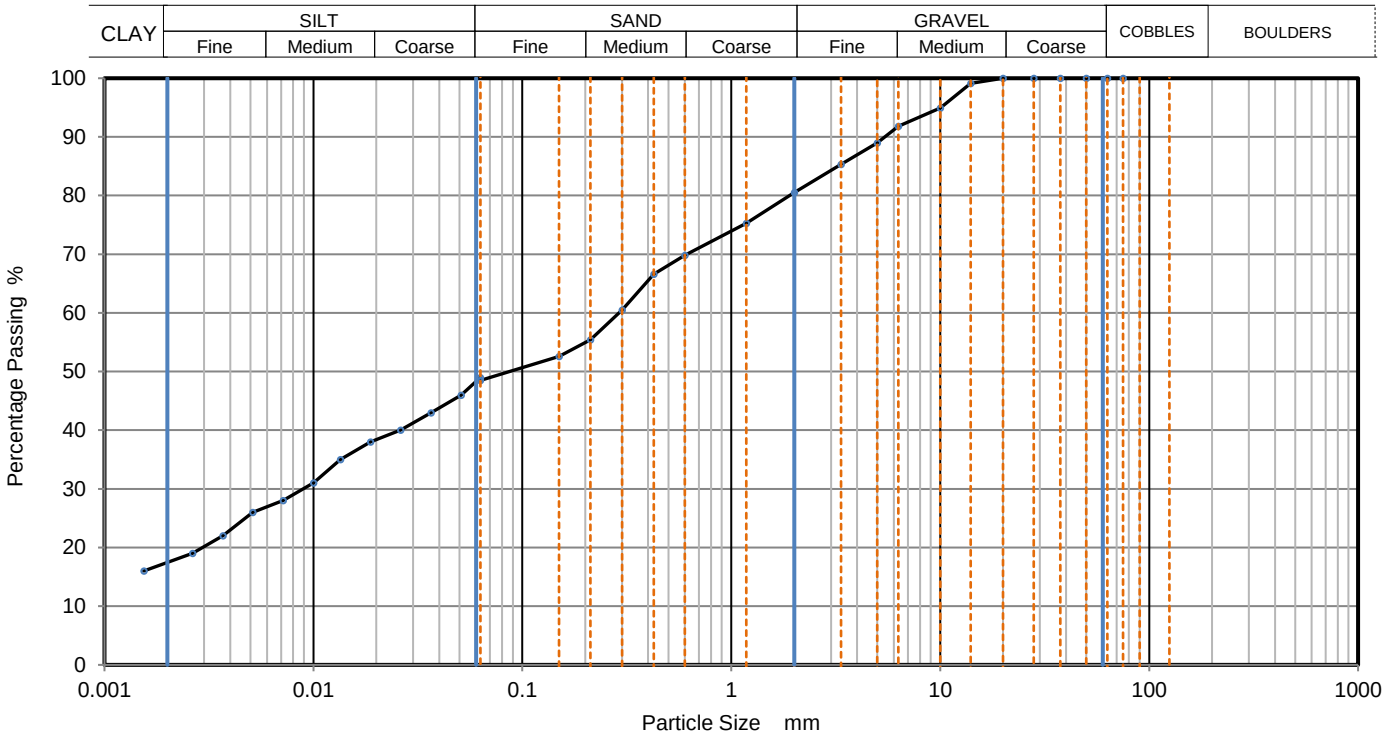
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS1M08
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Light brown slightly gravelly slightly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081425



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	49
		0.0509	46
75	100	0.0365	43
63	100	0.0262	40
50	100	0.0188	38
37.5	100	0.0134	35
28	100	0.0100	31
20	100	0.0072	28
14	99	0.0051	26
10	95	0.0037	22
6.3	92	0.0026	19
5	89	0.0015	16
3.35	85		
2	81		
1.18	75		
0.6	70	Particle density	(assumed)
0.425	67	2.65	Mg/m3
0.3	61		
0.212	55		
0.15	53		
0.063	49		

Dry Mass of sample, g: 758

Sample Proportions	% dry mass
Very coarse	0
Gravel	20
Sand	32
Silt	31
Clay	18

Grading Analysis		
D100	mm	
D60	mm	0.29
D30	mm	0.00886
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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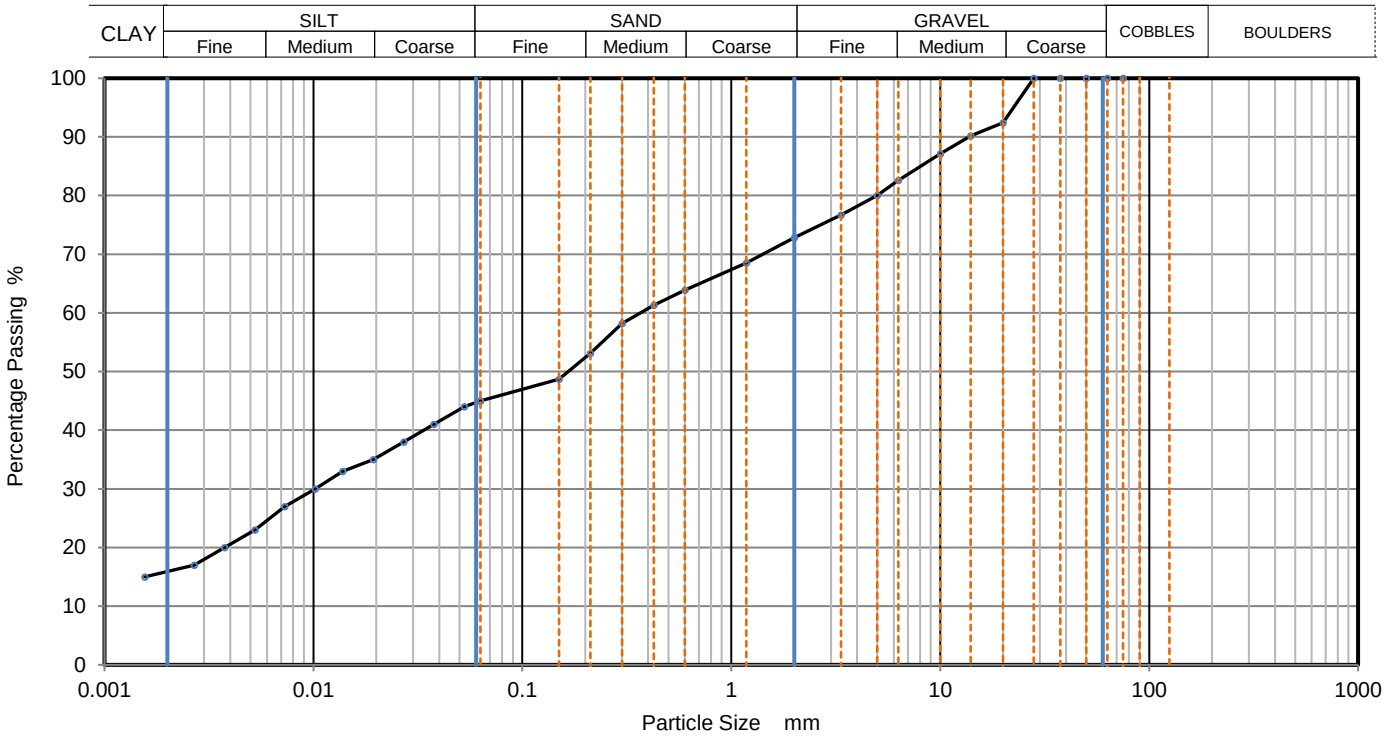
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS1M08
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081431



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0527	44
75	100	0.0378	41
63	100	0.0271	38
50	100	0.0194	35
37.5	100	0.0138	33
28	100	0.0102	30
20	92	0.0073	27
14	90	0.0053	23
10	87	0.0038	20
6.3	83	0.0027	17
5	80	0.0016	15
3.35	77		
2	73		
1.18	69		
0.6	64	Particle density (assumed)	
0.425	61	2.65 Mg/m3	
0.3	58		
0.212	53		
0.15	49		
0.063	45		

Dry Mass of sample, g	983

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	28
Silt	29
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.367
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:38	1
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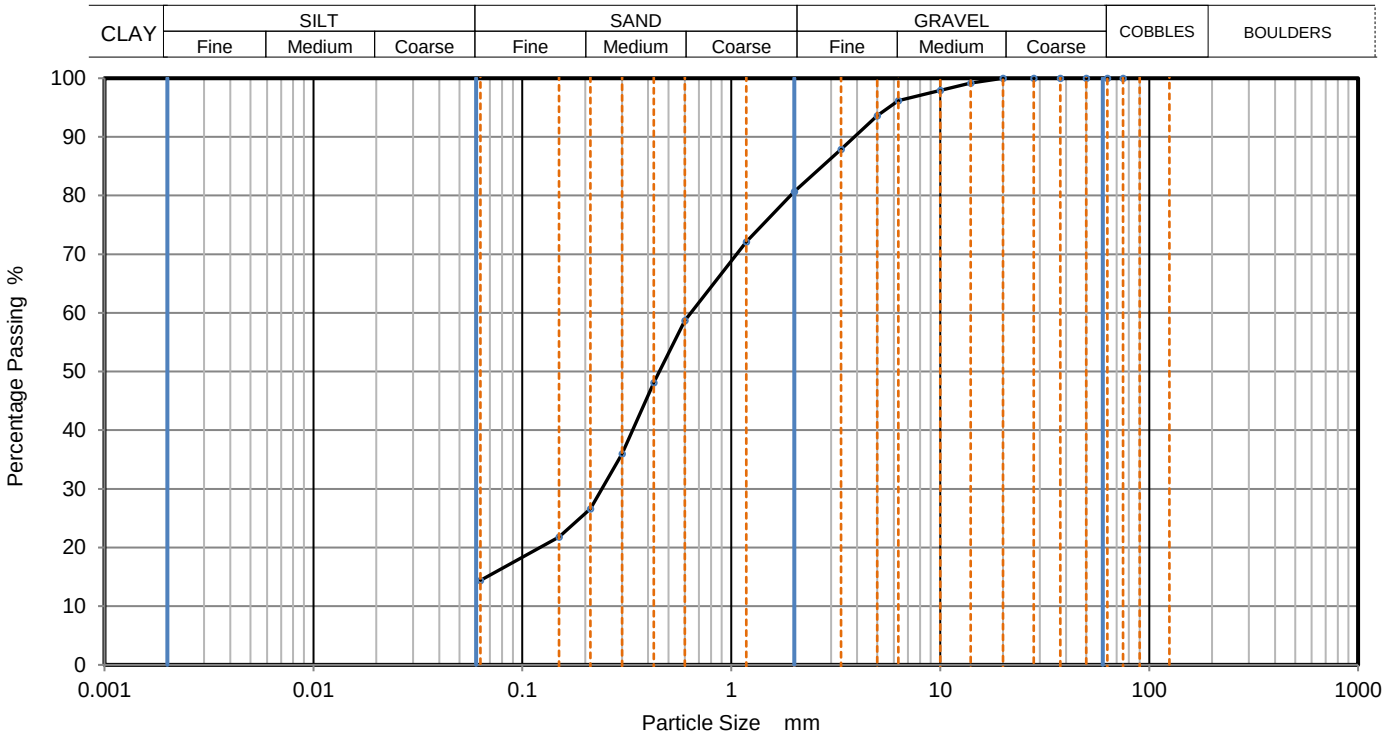
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	BHT01
Site Name	Derrygreenagh Power			Sample No.	9
Soil Description	Blackish-grey silty gravelly medium SAND.			Depth, m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12023070377



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	98		
6.3	96		
5	94		
3.35	88		
2	81		
1.18	72		
0.6	59		
0.425	48		
0.3	36		
0.212	27		
0.15	22		
0.063	14		

Dry Mass of sample, g	458

Sample Proportions	% dry mass
Very coarse	0
Gravel	19
Sand	66
Fines <0.063mm	14

Grading Analysis		
D100	mm	
D60	mm	0.642
D30	mm	0.24
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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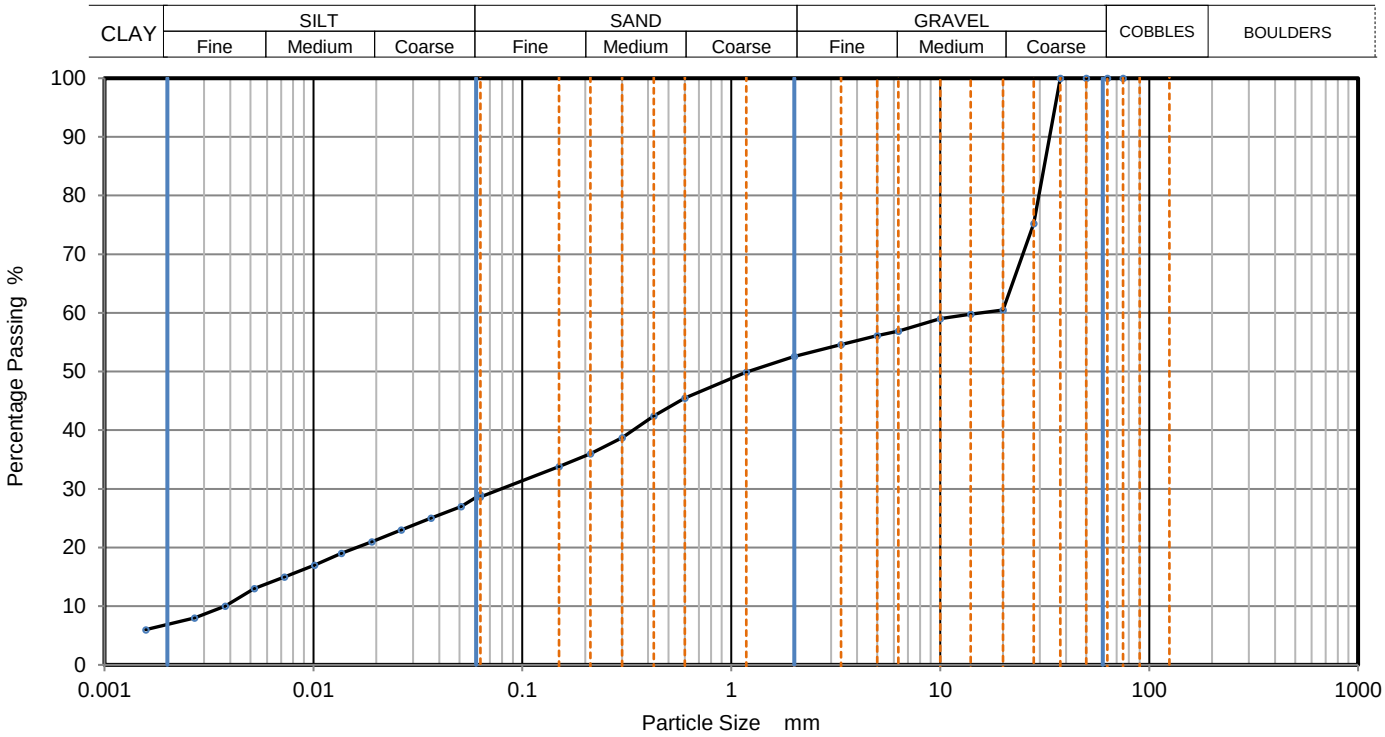
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT01
Site Name	Derrygreenagh Power	Sample No.	15
Soil Description	Dark grey very sandy very silty coarse GRAVEL.	Depth, m	5.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023070384



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	29
		0.0509	27
75	100	0.0365	25
63	100	0.0264	23
50	100	0.0190	21
37.5	100	0.0136	19
28	75	0.0101	17
20	61	0.0073	15
14	60	0.0052	13
10	59	0.0038	10
6.3	57	0.0027	8
5	56	0.0016	6
3.35	55		
2	53		
1.18	50		
0.6	46	Particle density	(assumed)
0.425	42	2.65	Mg/m3
0.3	39		
0.212	36		
0.15	34		
0.063	29		

Dry Mass of sample, g	979

Sample Proportions	% dry mass
Very coarse	0
Gravel	47
Sand	24
Silt	22
Clay	7

Grading Analysis		
D100	mm	
D60	mm	15.8
D30	mm	0.0792
D10	mm	0.00396
Uniformity Coefficient		4000
Curvature Coefficient		0.1

Remarks

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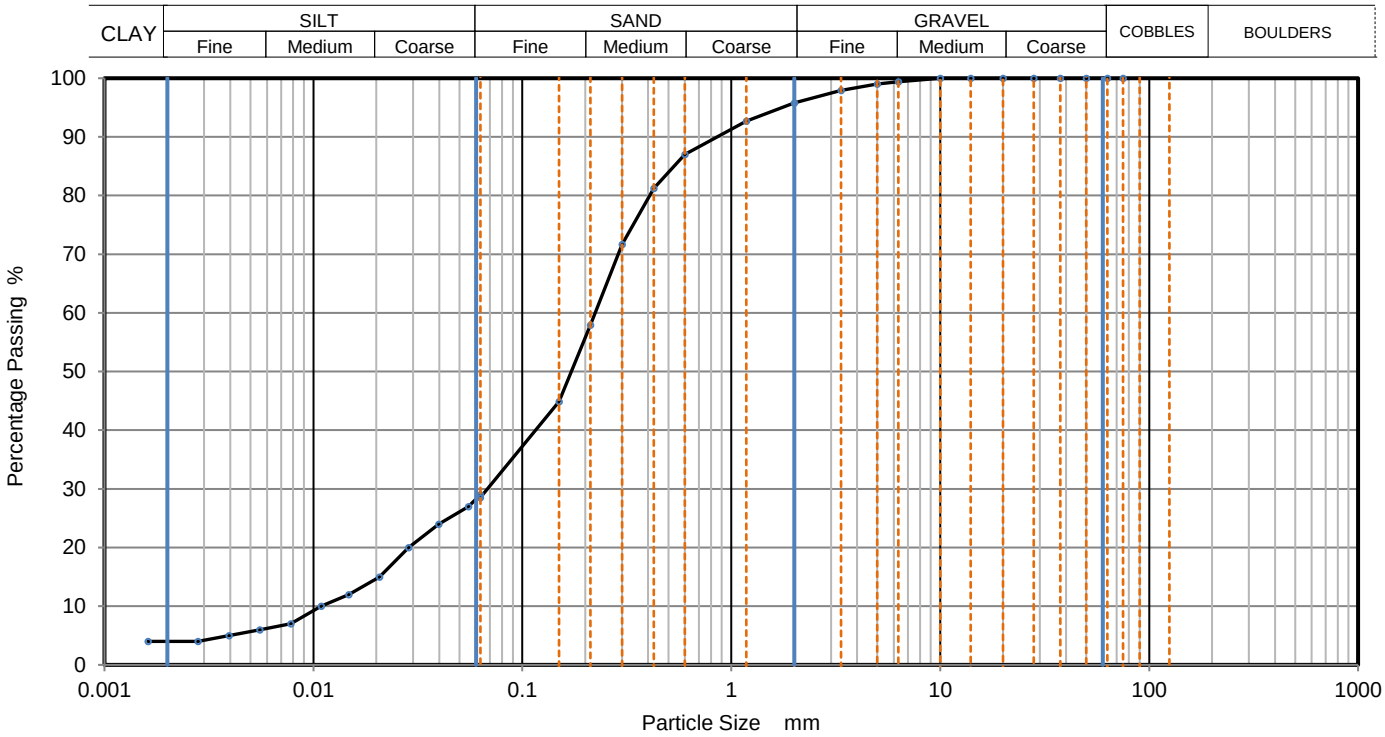
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT02
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Blackish-grey slightly gravelly very silty fine and medium SAND.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230703102



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	29
		0.0552	27
75	100	0.0397	24
63	100	0.0286	20
50	100	0.0207	15
37.5	100	0.0148	12
28	100	0.0109	10
20	100	0.0078	7
14	100	0.0055	6
10	100	0.0039	5
6.3	99	0.0028	4
5	99	0.0016	4
3.35	98		
2	96		
1.18	93		
0.6	87	Particle density	(assumed)
0.425	81	2.65	Mg/m3
0.3	72		
0.212	58		
0.15	45		
0.063	29		

Dry Mass of sample, g: 770

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	67
Silt	25
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.223
D30	mm	0.0681
D10	mm	0.011
Uniformity Coefficient		20
Curvature Coefficient		1.9

Remarks

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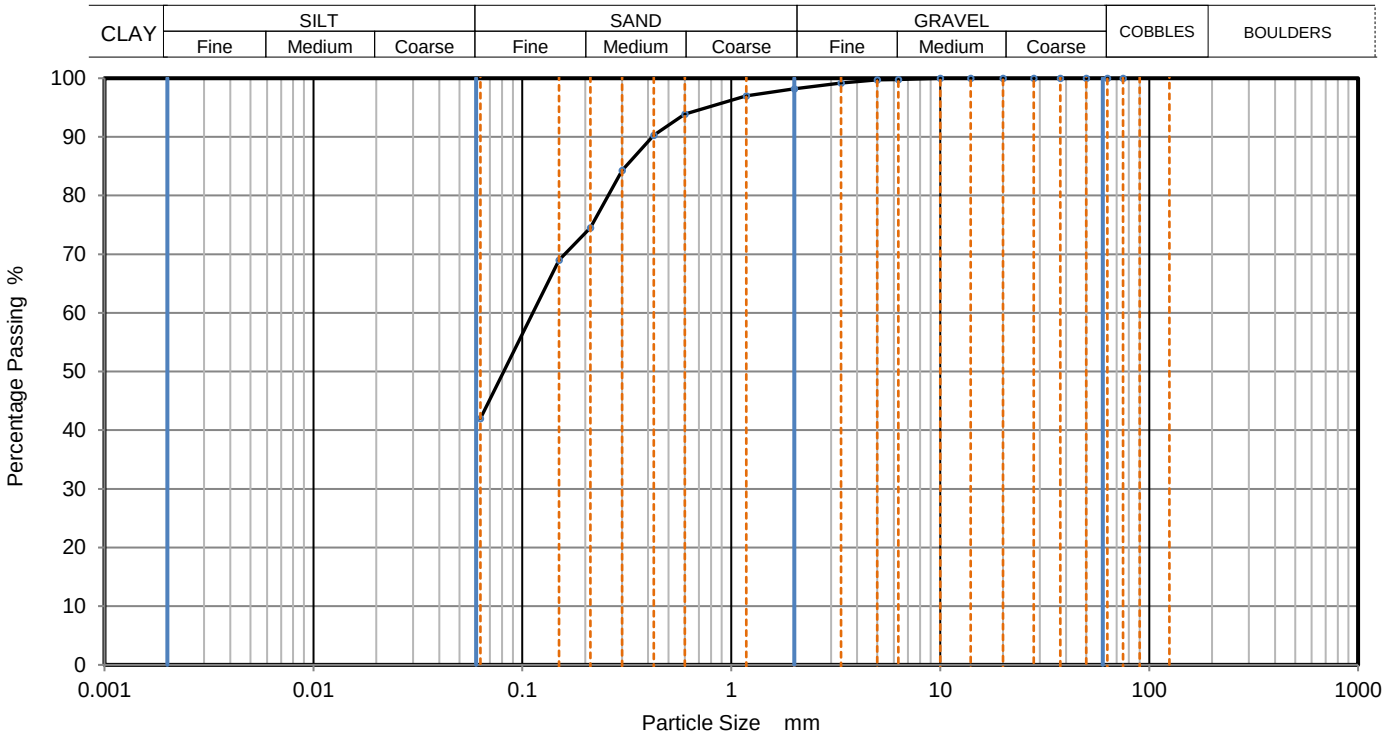
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT02
Site Name	Derrygreenagh Power	Sample No.	16
Soil Description	Dark grey slightly gravelly sandy SILT. Sand is fine.	Depth, m	5.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703108



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	98		
1.18	97		
0.6	94		
0.425	90		
0.3	84		
0.212	75		
0.15	69		
0.063	42		

Dry Mass of sample, g	919

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	56
Fines <0.063mm	42

Grading Analysis		
D100	mm	
D60	mm	0.112
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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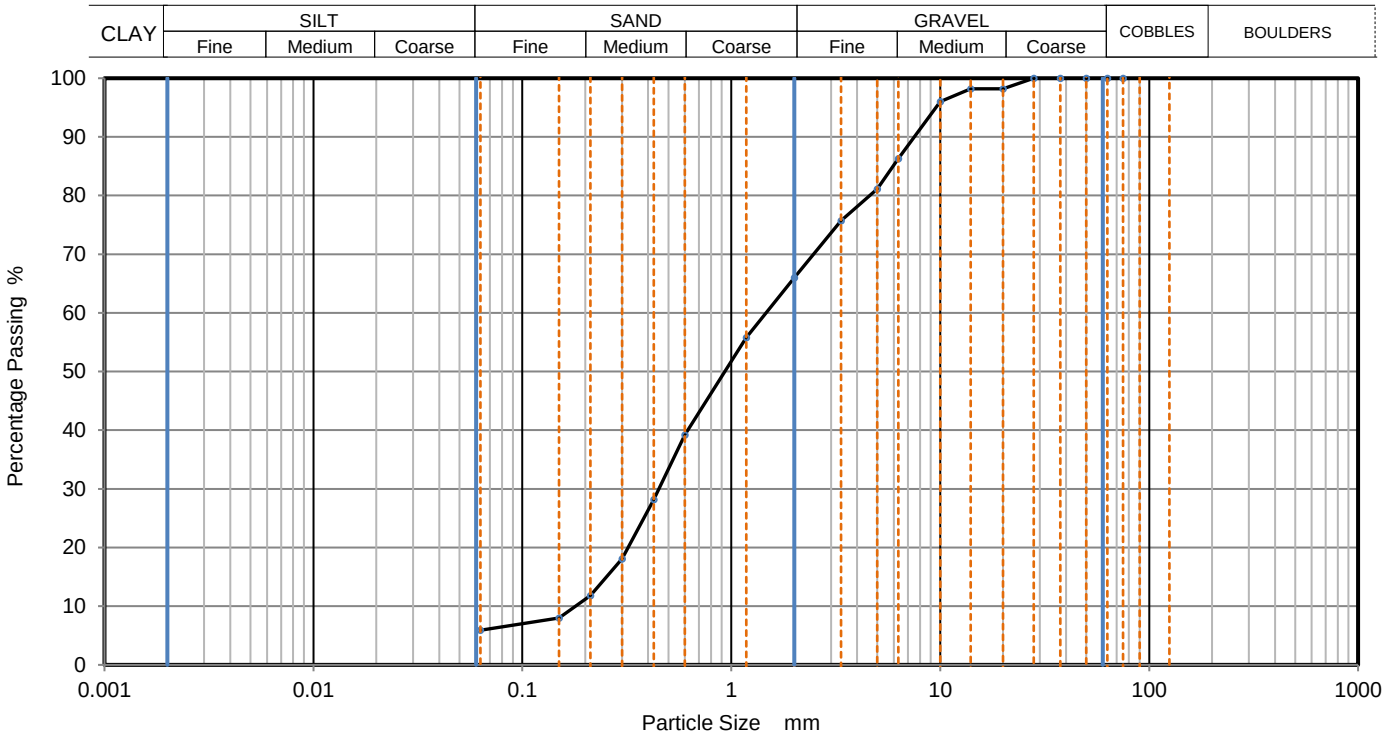
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT03
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Black-grey silty very gravelly medum and coarse SAND.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023062216



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	98		
10	96		
6.3	86		
5	81		
3.35	76		
2	66		
1.18	56		
0.6	39	Particle density	(assumed)
0.425	28	2.65	Mg/m3
0.3	18		
0.212	12		
0.15	8		
0.063	6		

Dry Mass of sample, g	947

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	60
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	1.47
D30	mm	0.45
D10	mm	0.18
Uniformity Coefficient		8.2
Curvature Coefficient		0.77

Remarks

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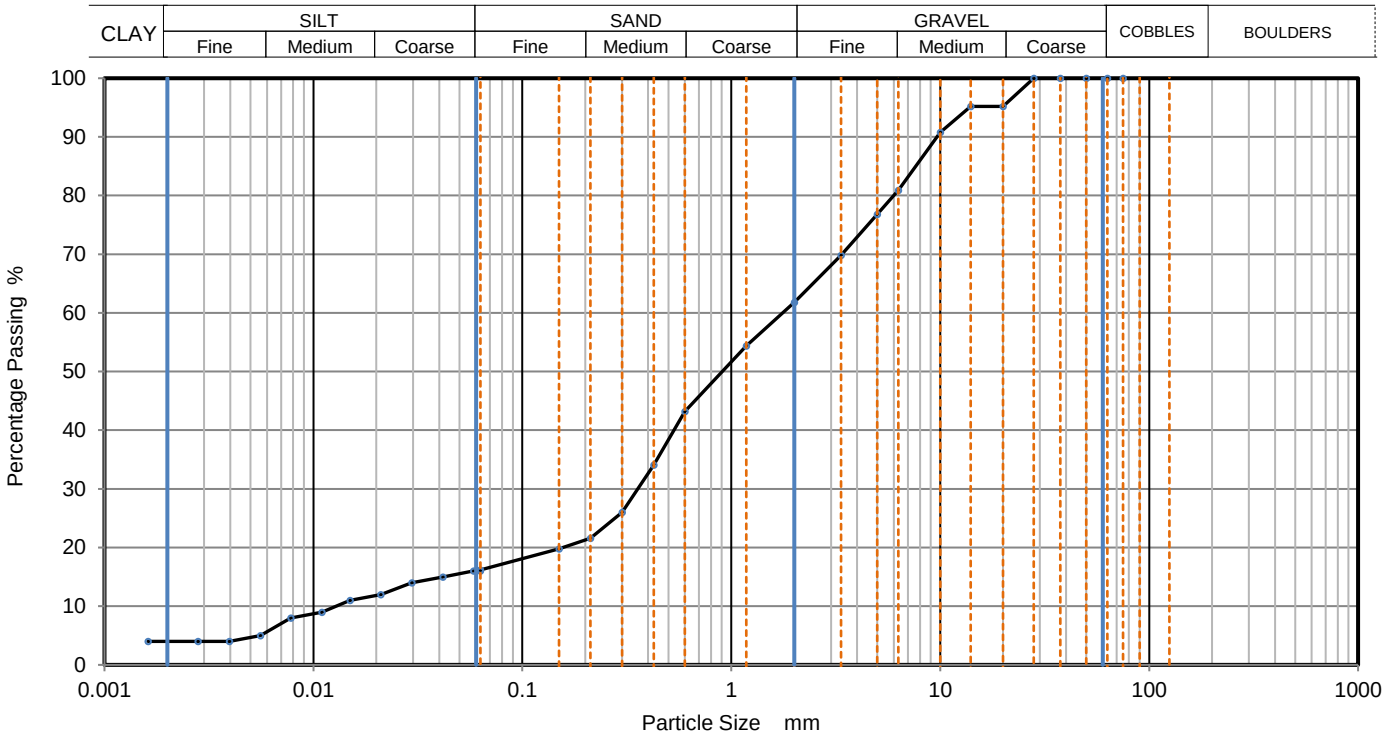
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT04
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Brownish-grey silty very gravelly medium and coarse SAND.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023062235



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	16
		0.0585	16
75	100	0.0416	15
63	100	0.0296	14
50	100	0.0210	12
37.5	100	0.0149	11
28	100	0.0110	9
20	95	0.0078	8
14	95	0.0056	5
10	91	0.0040	4
6.3	81	0.0028	4
5	77	0.0016	4
3.35	70		
2	62		
1.18	54		
0.6	43	Particle density	(assumed)
0.425	34	2.65	Mg/m3
0.3	26		
0.212	22		
0.15	20		
0.063	16		

Dry Mass of sample, g	932

Sample Proportions	% dry mass
Very coarse	0
Gravel	38
Sand	46
Silt	12
Clay	4

Grading Analysis		
D100	mm	
D60	mm	1.76
D30	mm	0.356
D10	mm	0.0124
Uniformity Coefficient		140
Curvature Coefficient		5.8

Remarks

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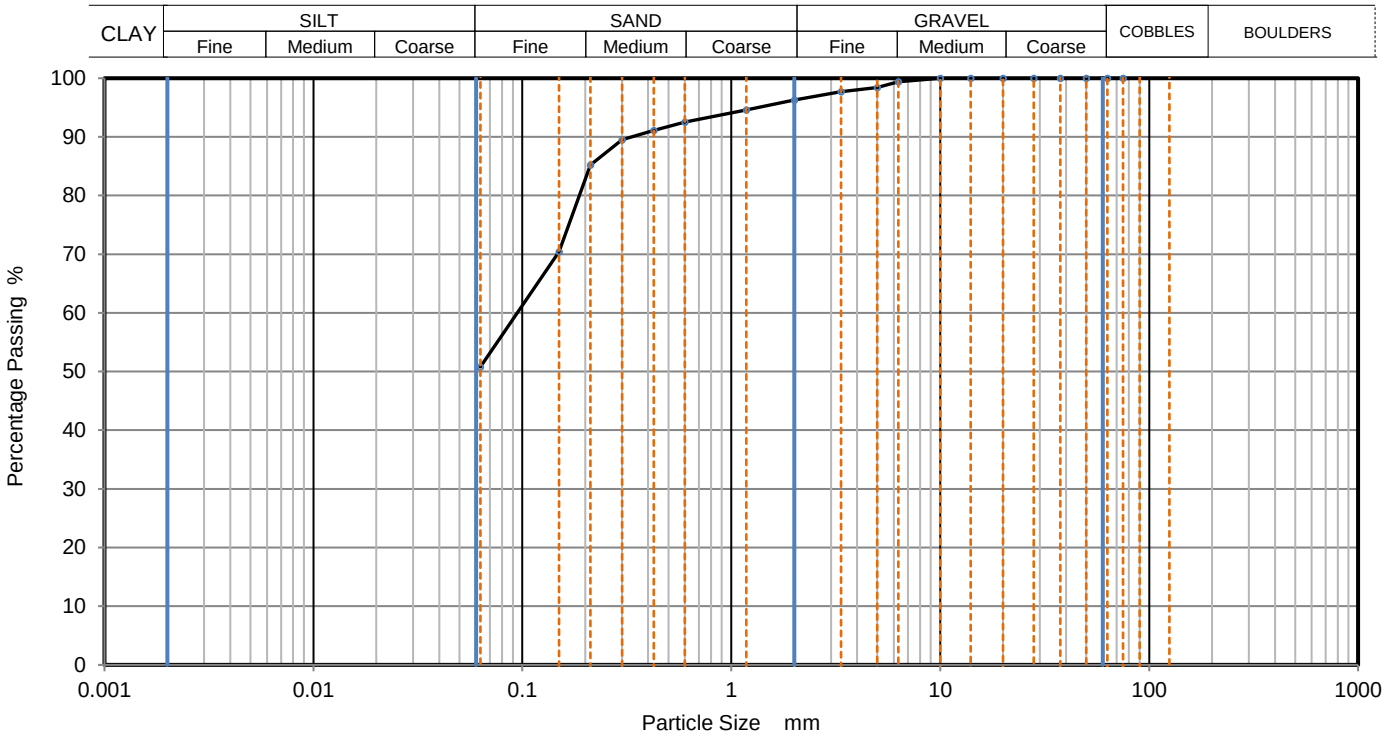
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT05
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Greyish-brown slightly gravelly sandy SILT. SAND is fine.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230607171



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	98		
3.35	98		
2	96		
1.18	95		
0.6	93		
0.425	91		
0.3	90		
0.212	85		
0.15	70		
0.063	51		

Dry Mass of sample, g	581

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	46
Fines <0.063mm	51

Grading Analysis		
D100	mm	
D60	mm	0.0946
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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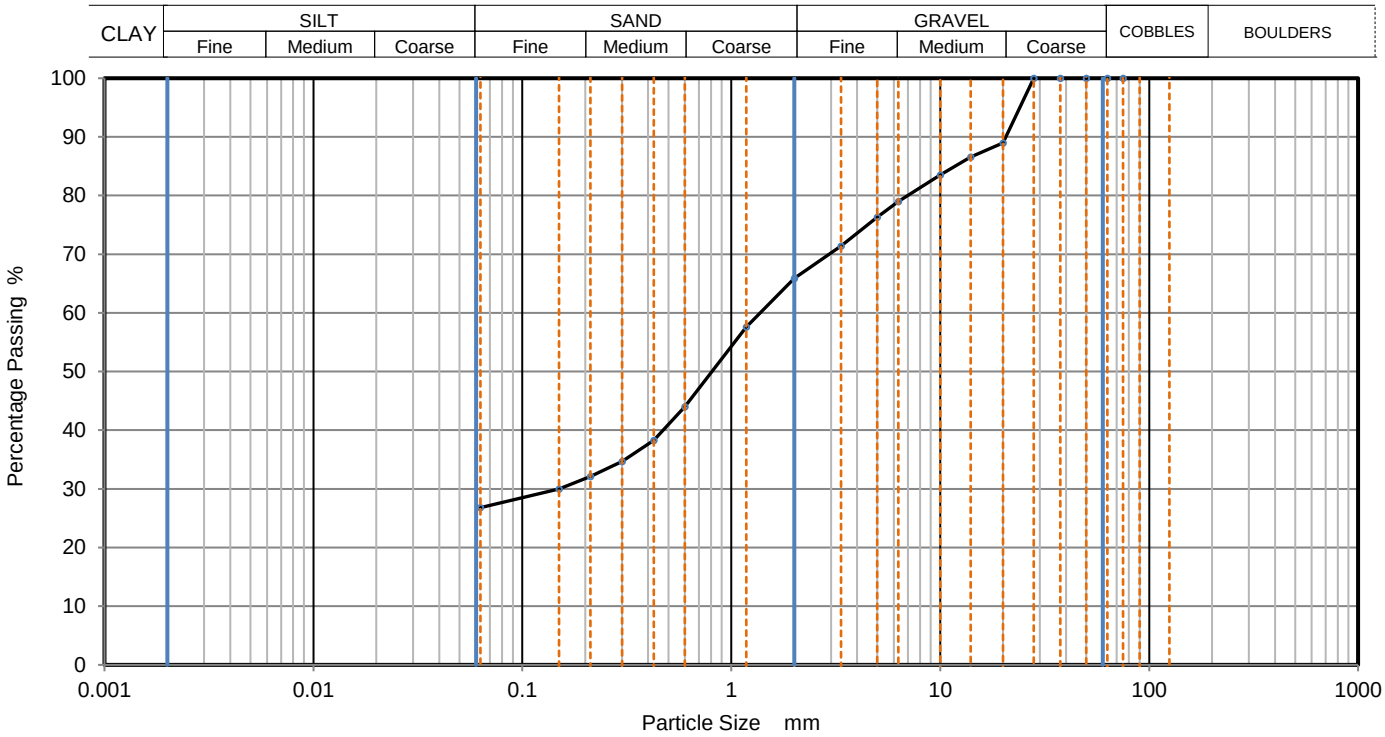
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT06
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Blackish-grey very silty coarse SAND and fine GRAVEL.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023062251



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	89		
14	87		
10	84		
6.3	79		
5	76		
3.35	71		
2	66		
1.18	58		
0.6	44		
0.425	38		
0.3	35		
0.212	32		
0.15	30		
0.063	27		

Dry Mass of sample, g: 850

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	39
Fines <0.063mm	27

Grading Analysis		
D100	mm	
D60	mm	1.38
D30	mm	0.151
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

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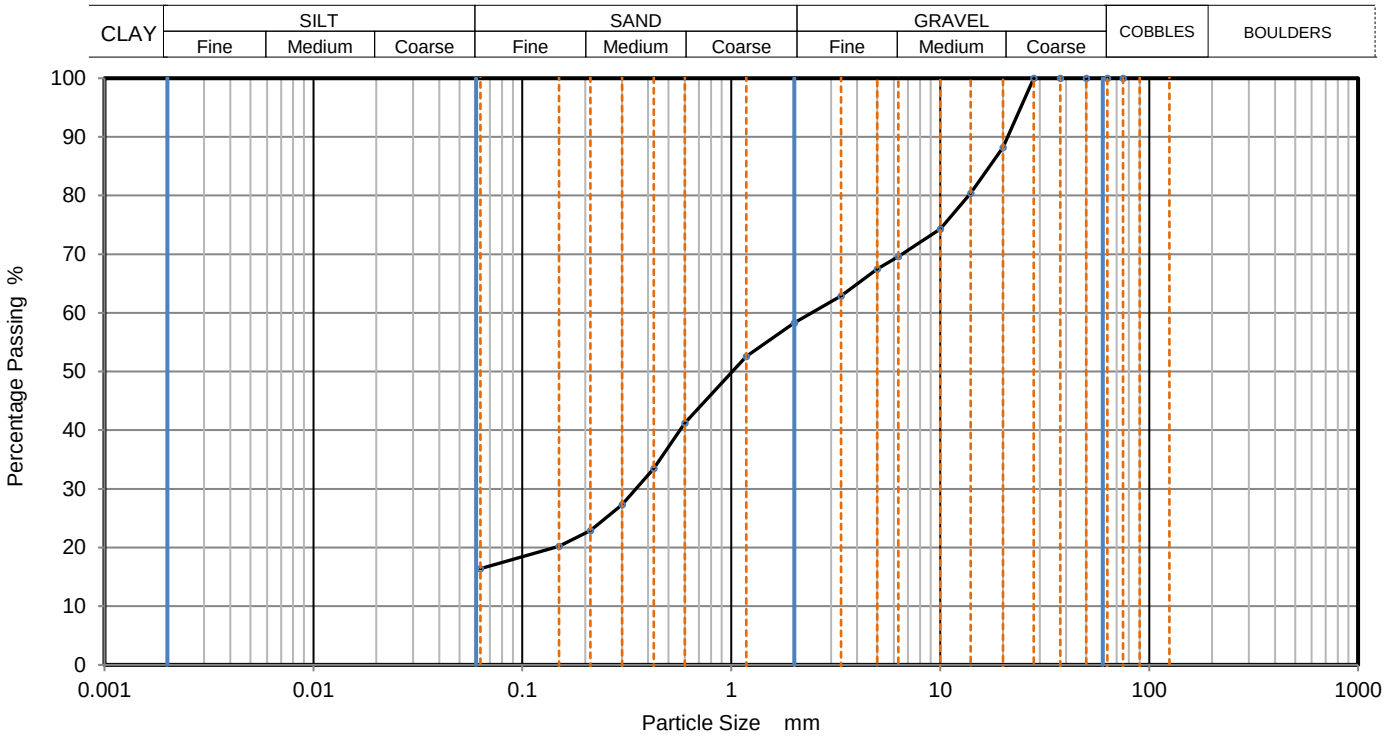
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT07
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Black and grey silty SAND and GRAVEL.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230607190



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	88		
14	80		
10	74		
6.3	70		
5	68		
3.35	63		
2	58		
1.18	53		
0.6	41		
0.425	34		
0.3	27		
0.212	23		
0.15	20		
0.063	16		

Dry Mass of sample, g	629

Sample Proportions	% dry mass
Very coarse	0
Gravel	42
Sand	42
Fines <0.063mm	16

Grading Analysis		
D100	mm	
D60	mm	2.43
D30	mm	0.349
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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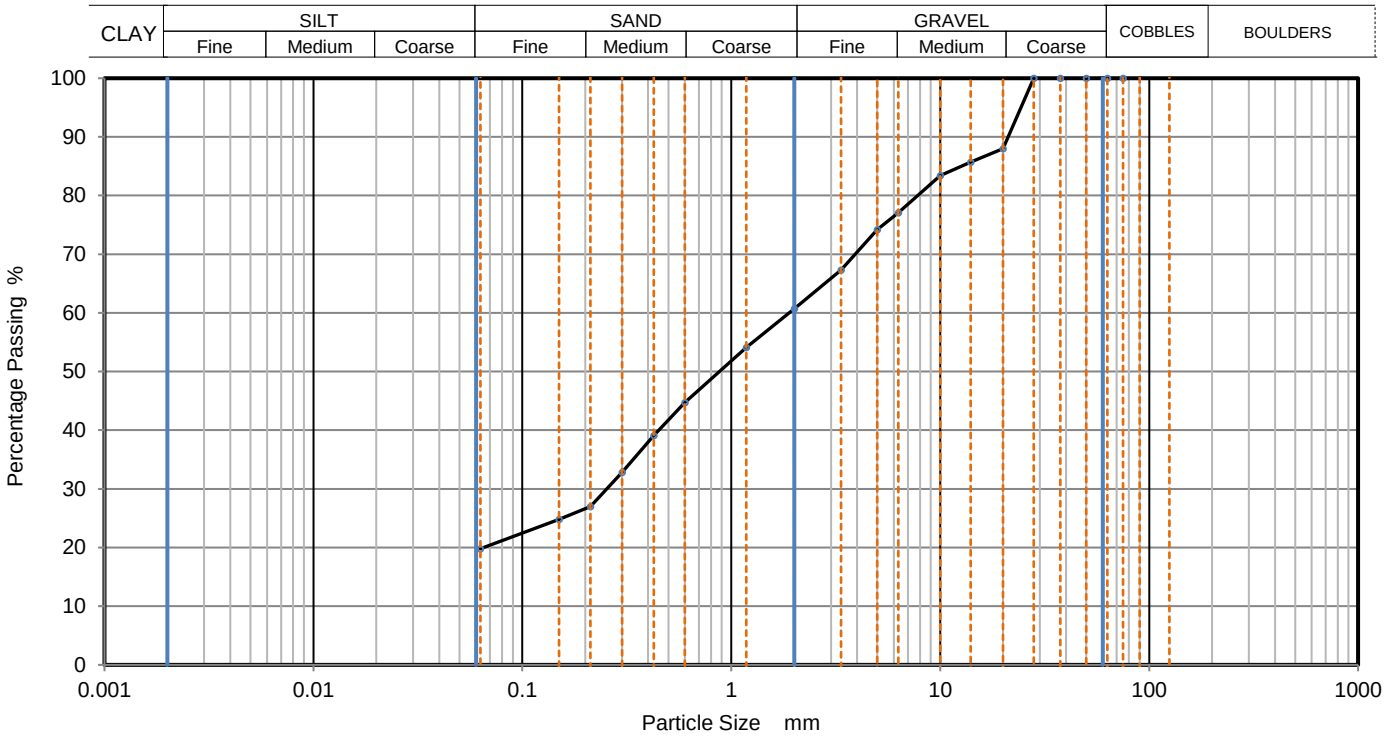
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT08
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-black very silty SAND and GRAVEL.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703120



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	88		
14	86		
10	83		
6.3	77		
5	74		
3.35	67		
2	61		
1.18	54		
0.6	45		
0.425	39		
0.3	33		
0.212	27		
0.15	25		
0.063	20		

Dry Mass of sample, g	477

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	41
Fines <0.063mm	20

Grading Analysis		
D100	mm	
D60	mm	1.89
D30	mm	0.254
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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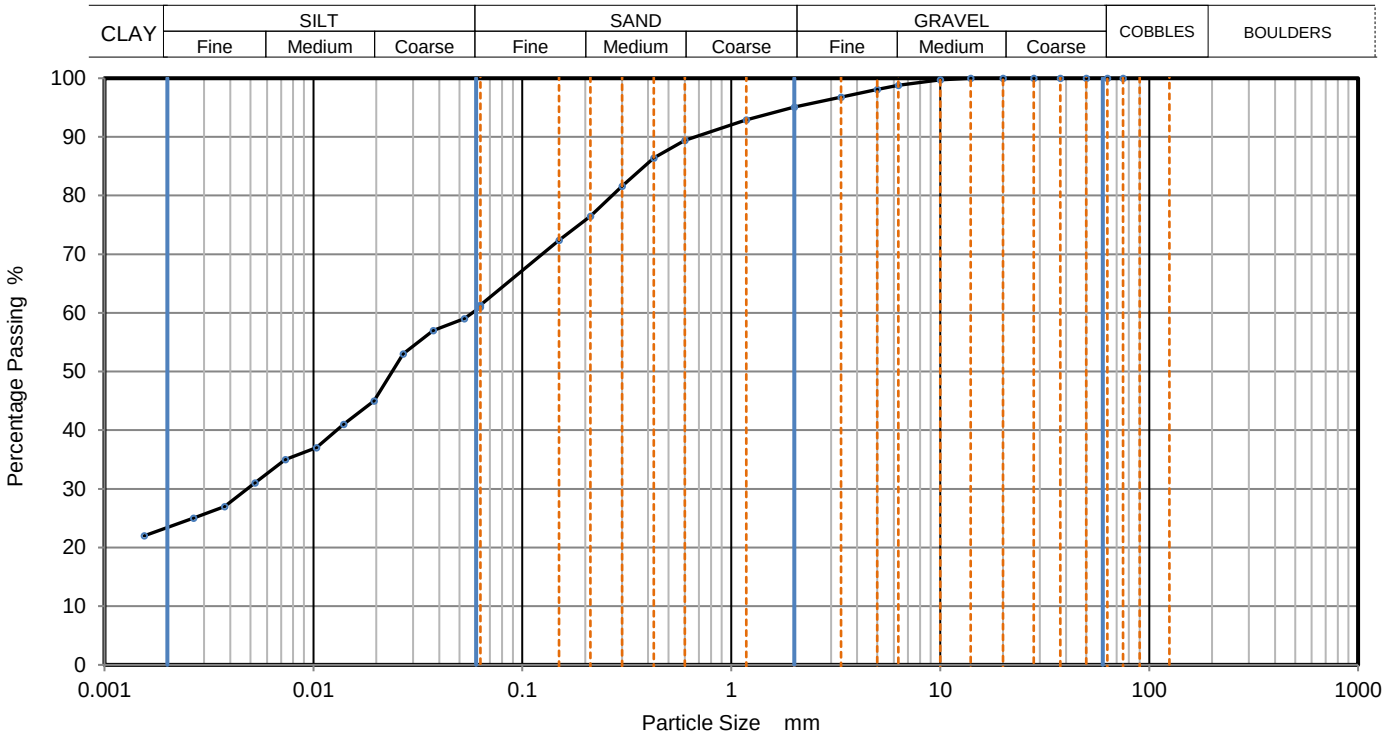
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT08
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greyish-brown slightly gravelly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230703123



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	61
		0.0527	59
75	100	0.0375	57
63	100	0.0269	53
50	100	0.0195	45
37.5	100	0.0140	41
28	100	0.0103	37
20	100	0.0073	35
14	100	0.0053	31
10	100	0.0038	27
6.3	99	0.0027	25
5	98	0.0015	22
3.35	97		
2	95		
1.18	93		
0.6	89	Particle density (assumed)	
0.425	86	2.65 Mg/m3	
0.3	82		
0.212	77		
0.15	72		
0.063	61		

Dry Mass of sample, g	794

Sample Proportions	% dry mass
Very coarse	0
Gravel	5
Sand	34
Silt	38
Clay	23

Grading Analysis		
D100	mm	
D60	mm	0.0562
D30	mm	0.00498
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

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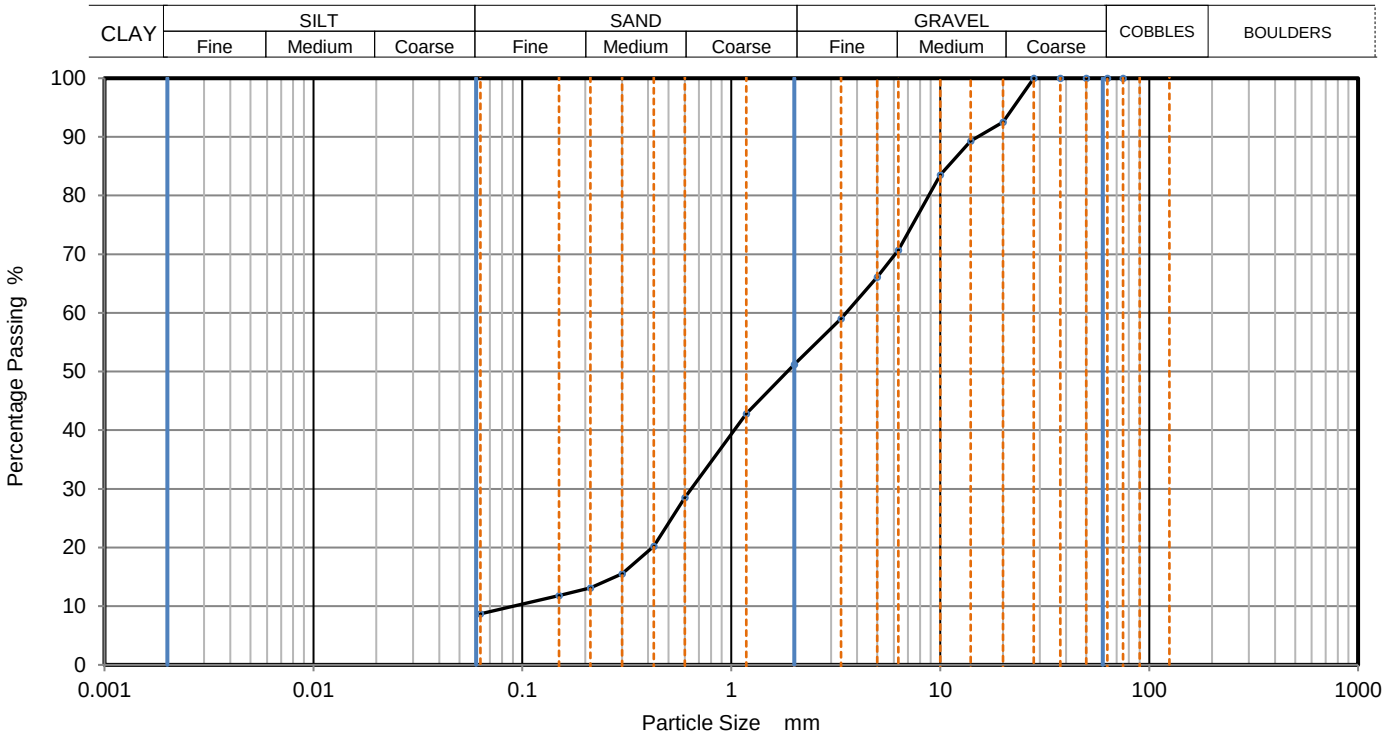
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT08
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Brownish-grey silty coarse SAND and fine-medium GRAVEL.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703126



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	89		
10	84		
6.3	71		
5	66		
3.35	59		
2	51		
1.18	43		
0.6	29		
0.425	20		
0.3	16		
0.212	13		
0.15	12		
0.063	9		

Dry Mass of sample, g: 976

Sample Proportions	% dry mass
Very coarse	0
Gravel	49
Sand	43
Fines <0.063mm	9

Grading Analysis		
D100	mm	
D60	mm	3.54
D30	mm	0.645
D10	mm	0.0915
Uniformity Coefficient		39
Curvature Coefficient		1.3

Remarks

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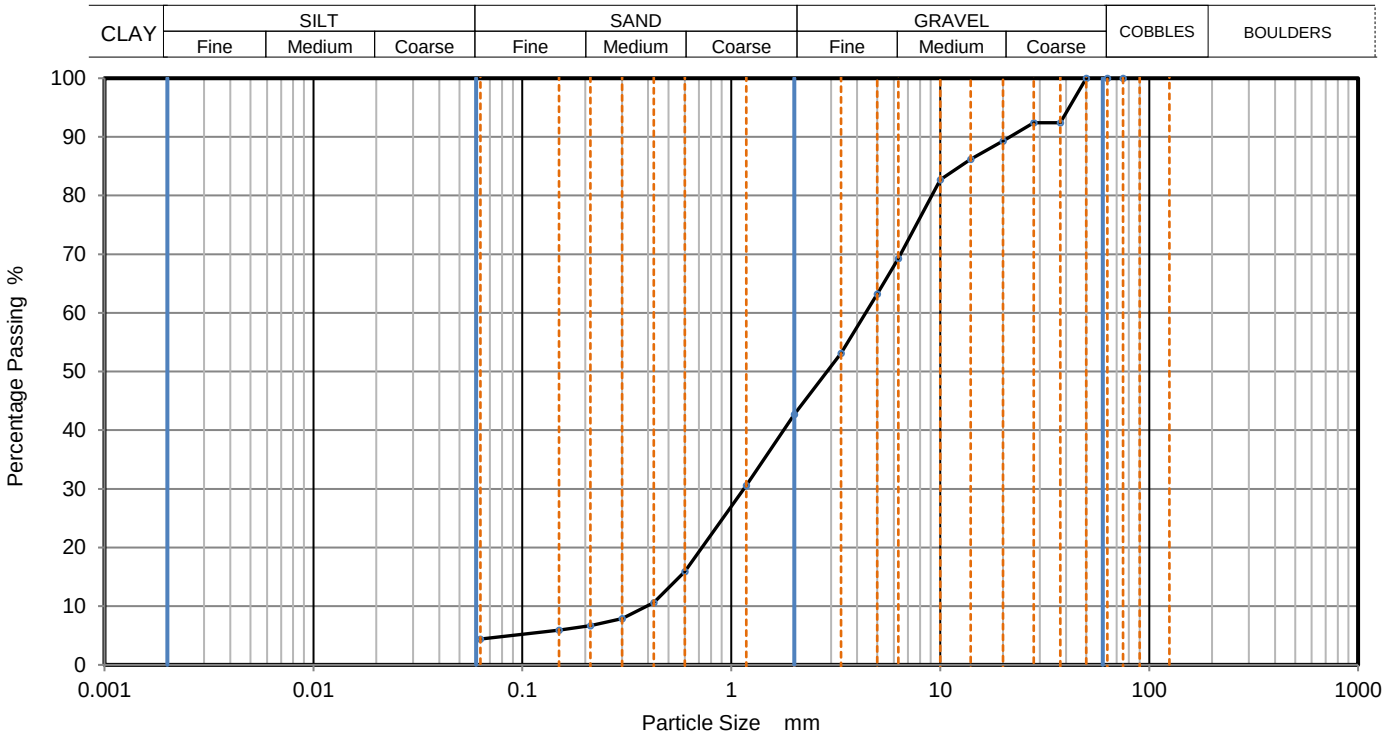
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT09
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Dark bluish-grey slighlty silty very sandy fine and medium GRAVEL.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230607218



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	92		
28	92		
20	89		
14	86		
10	83		
6.3	69		
5	63		
3.35	53		
2	43		
1.18	31		
0.6	16		
0.425	11		
0.3	8		
0.212	7		
0.15	6		
0.063	4		

Dry Mass of sample, g	1109

Sample Proportions	% dry mass
Very coarse	0
Gravel	57
Sand	38
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	4.41
D30	mm	1.15
D10	mm	0.394
Uniformity Coefficient		11
Curvature Coefficient		0.76

Remarks

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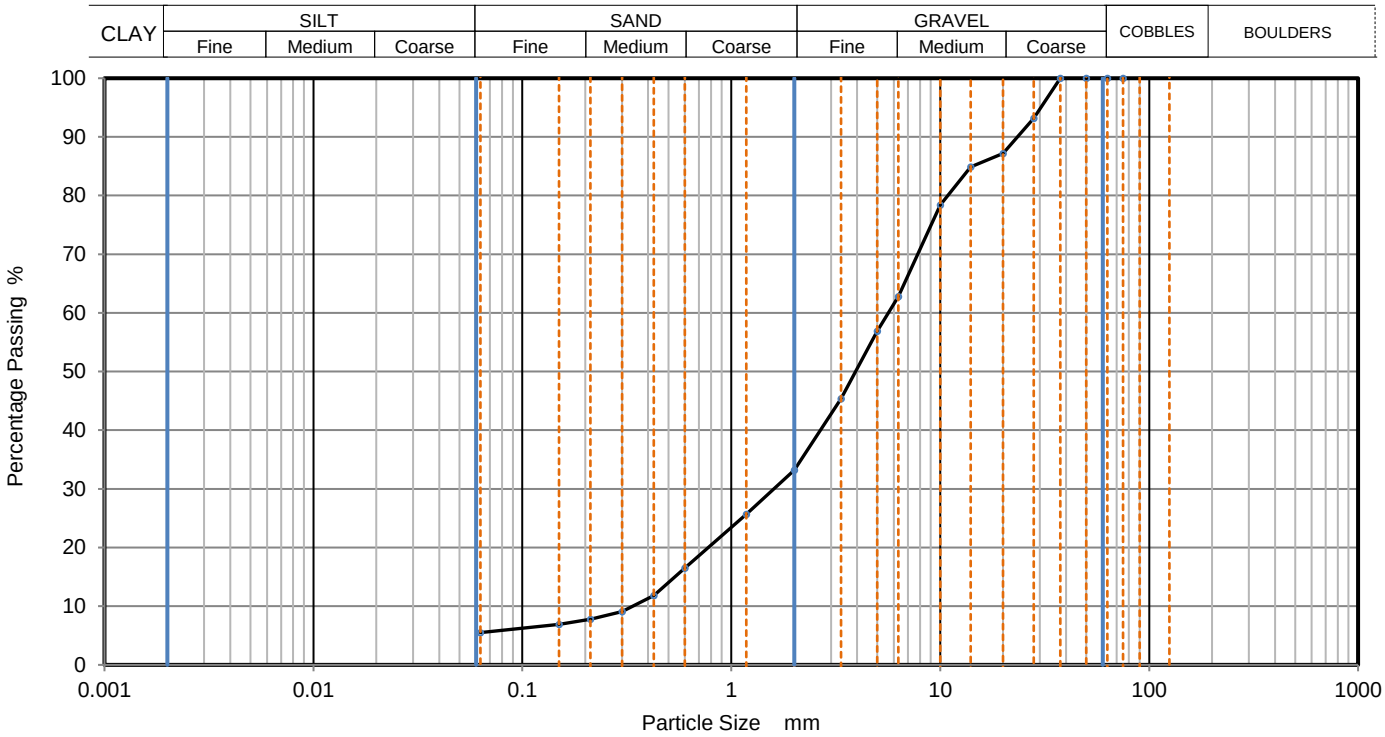
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT10
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Dark bluish-grey silty very sandy medium and fine GRAVEL.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023060725



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	87		
14	85		
10	78		
6.3	63		
5	57		
3.35	45		
2	33		
1.18	26		
0.6	17		
0.425	12		
0.3	9		
0.212	8		
0.15	7		
0.063	6		

Dry Mass of sample, g: 1013

Sample Proportions	% dry mass
Very coarse	0
Gravel	67
Sand	28
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	5.64
D30	mm	1.6
D10	mm	0.336
Uniformity Coefficient		17
Curvature Coefficient		1.3

Remarks

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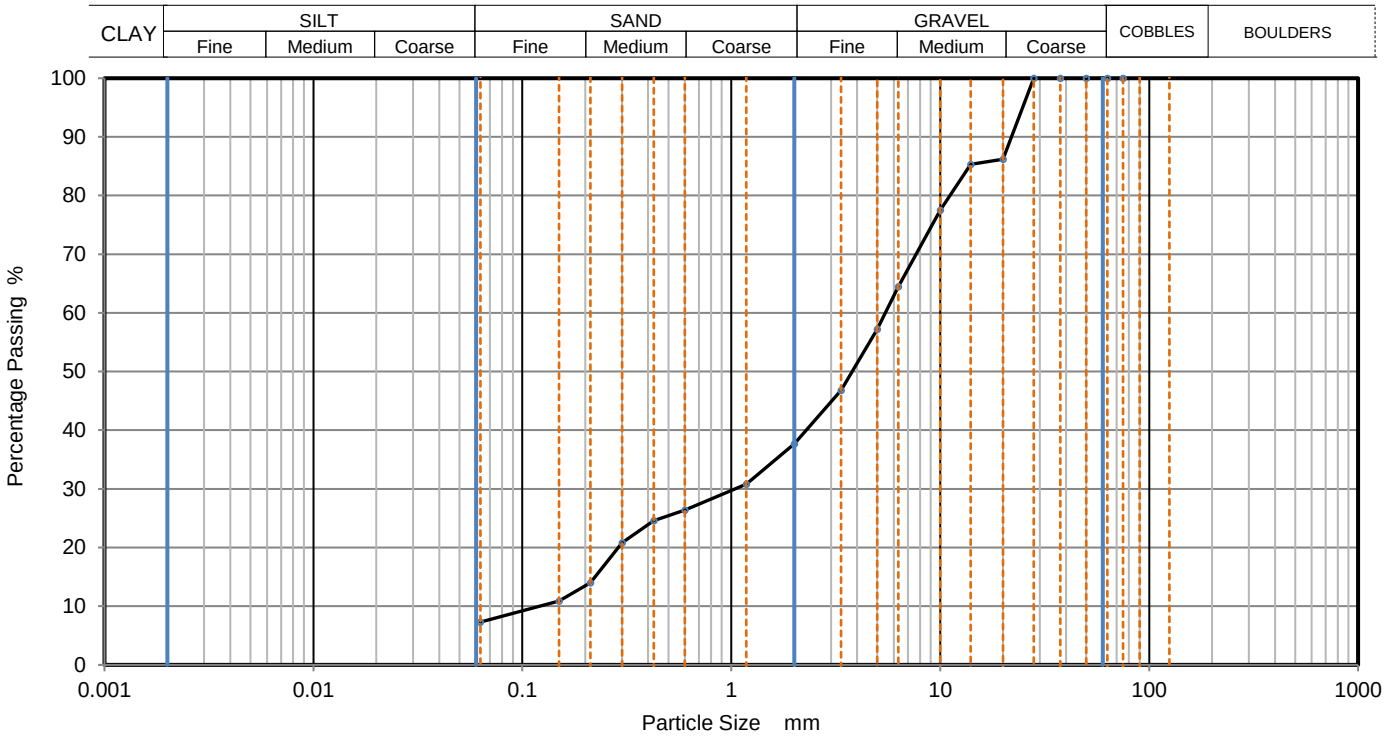
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT11
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Dark bluish-grey silty very sandy medium and fine GRAVEL.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023060749



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	86		
14	85		
10	78		
6.3	65		
5	57		
3.35	47		
2	38		
1.18	31		
0.6	26		
0.425	25		
0.3	21		
0.212	14		
0.15	11		
0.063	7		

Dry Mass of sample, g	923

Sample Proportions	% dry mass
Very coarse	0
Gravel	62
Sand	30
Fines <0.063mm	7

Grading Analysis		
D100	mm	
D60	mm	5.46
D30	mm	1.05
D10	mm	0.121
Uniformity Coefficient		45
Curvature Coefficient		1.7

Remarks

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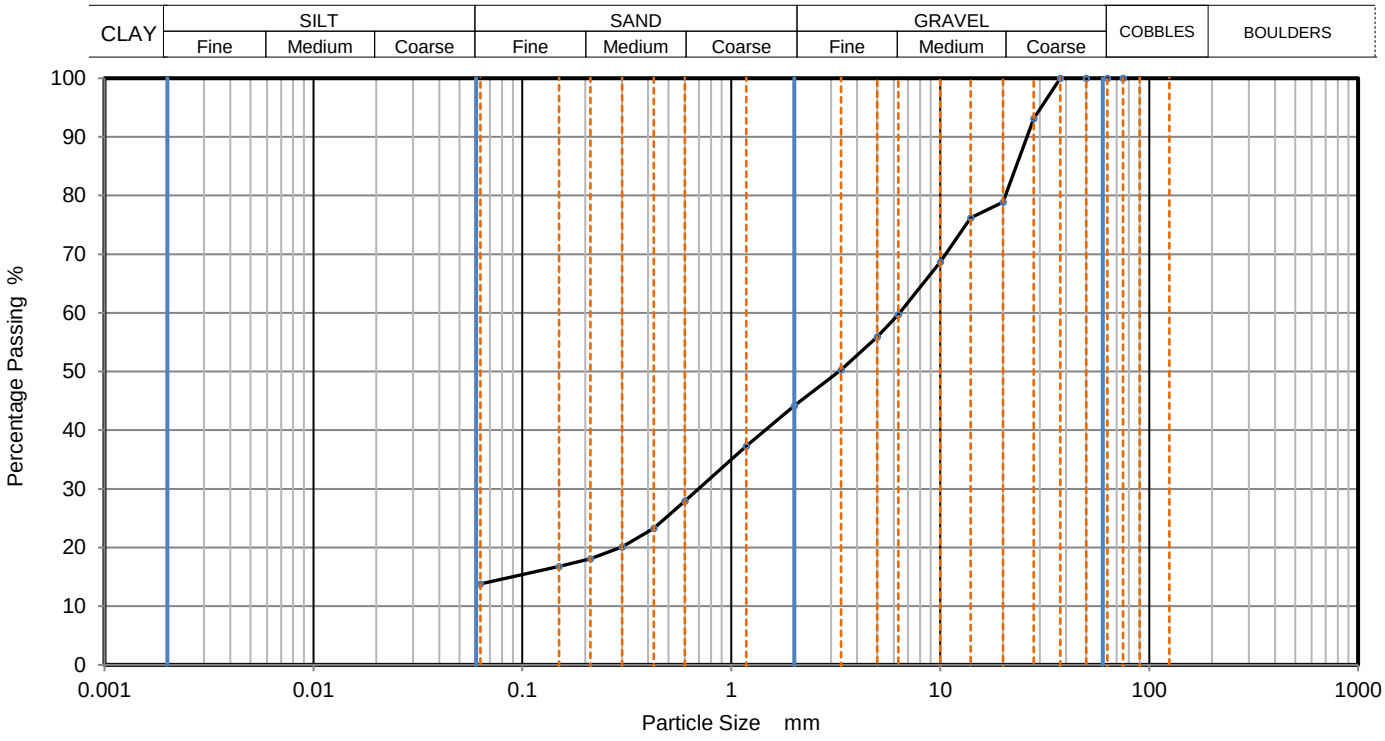
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT12
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Dark brownish-grey silty very sandy coarse GRAVEL.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023060765



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	79		
14	76		
10	69		
6.3	60		
5	56		
3.35	50		
2	44		
1.18	37		
0.6	28		
0.425	23		
0.3	20		
0.212	18		
0.15	17		
0.063	14		

Dry Mass of sample, g	816

Sample Proportions	% dry mass
Very coarse	0
Gravel	56
Sand	30
Fines <0.063mm	14

Grading Analysis		
D100	mm	
D60	mm	6.38
D30	mm	0.699
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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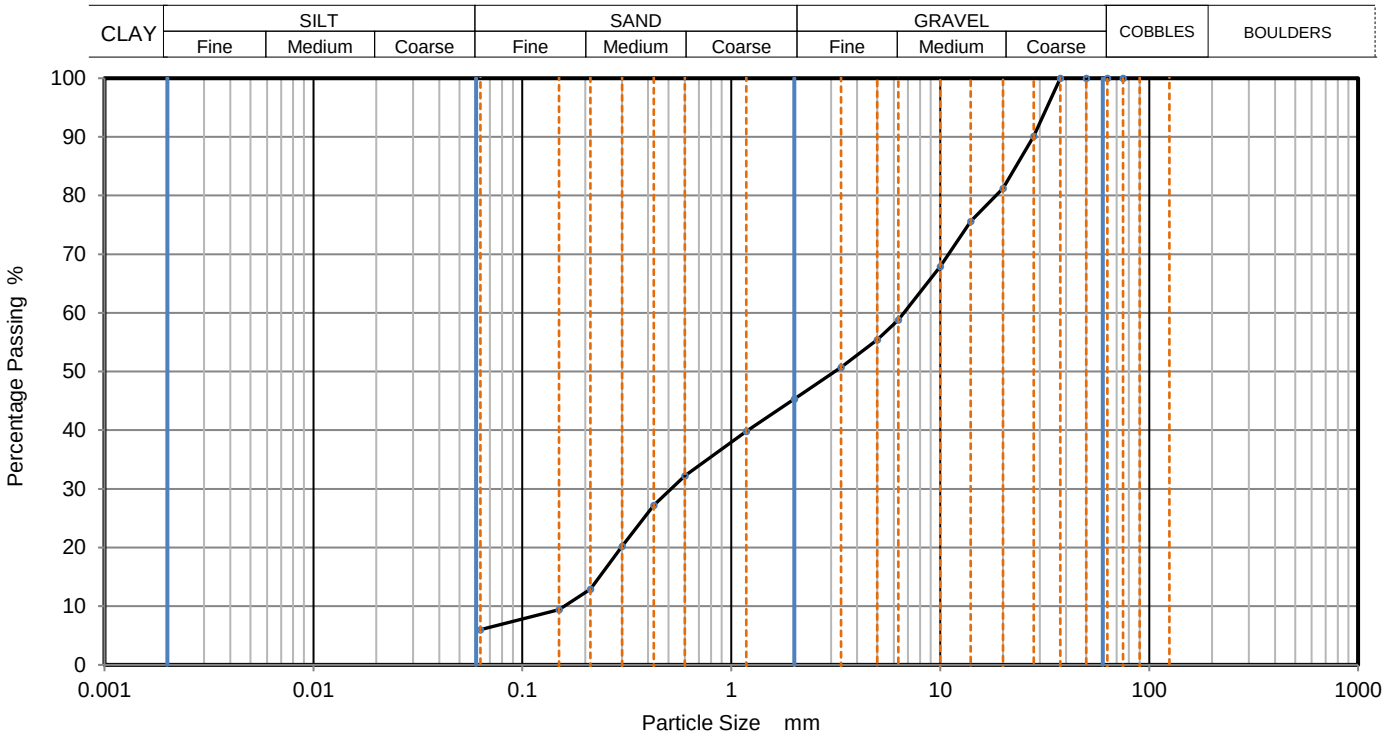
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT14
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Dark brownish-grey silty very sandy medium GRAVEL.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230607112



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	90		
20	81		
14	76		
10	68		
6.3	59		
5	55		
3.35	51		
2	45		
1.18	40		
0.6	32		
0.425	27		
0.3	20		
0.212	13		
0.15	9		
0.063	6		

Dry Mass of sample, g	1043

Sample Proportions	% dry mass
Very coarse	0
Gravel	55
Sand	39
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	6.69
D30	mm	0.515
D10	mm	0.159
Uniformity Coefficient		42
Curvature Coefficient		0.25

Remarks

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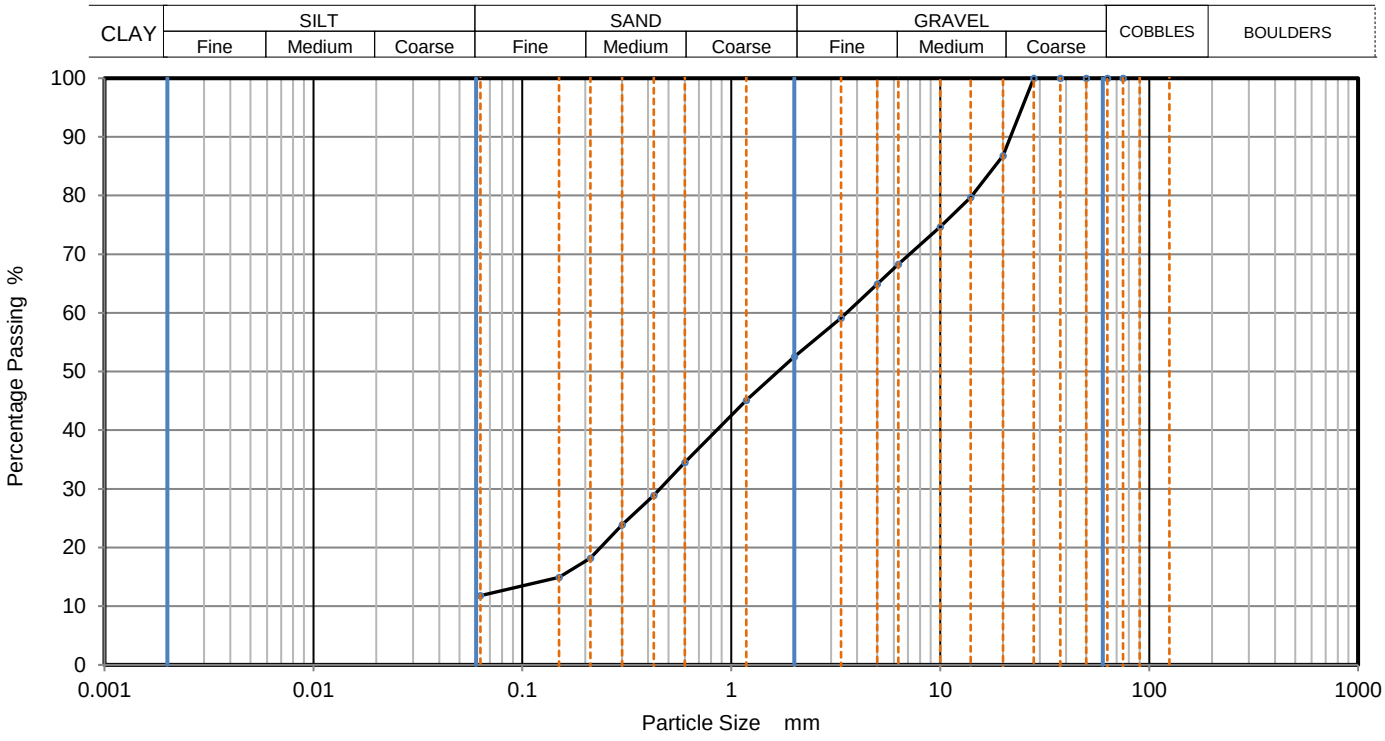
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT16
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Blackish-brown silty (peaty) SAND and GRAVEL.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703136



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	87		
14	80		
10	75		
6.3	68		
5	65		
3.35	59		
2	53		
1.18	45		
0.6	35		
0.425	29		
0.3	24		
0.212	18		
0.15	15		
0.063	12		

Dry Mass of sample, g	529

Sample Proportions	% dry mass
Very coarse	0
Gravel	48
Sand	41
Fines <0.063mm	12

Grading Analysis		
D100	mm	
D60	mm	3.57
D30	mm	0.454
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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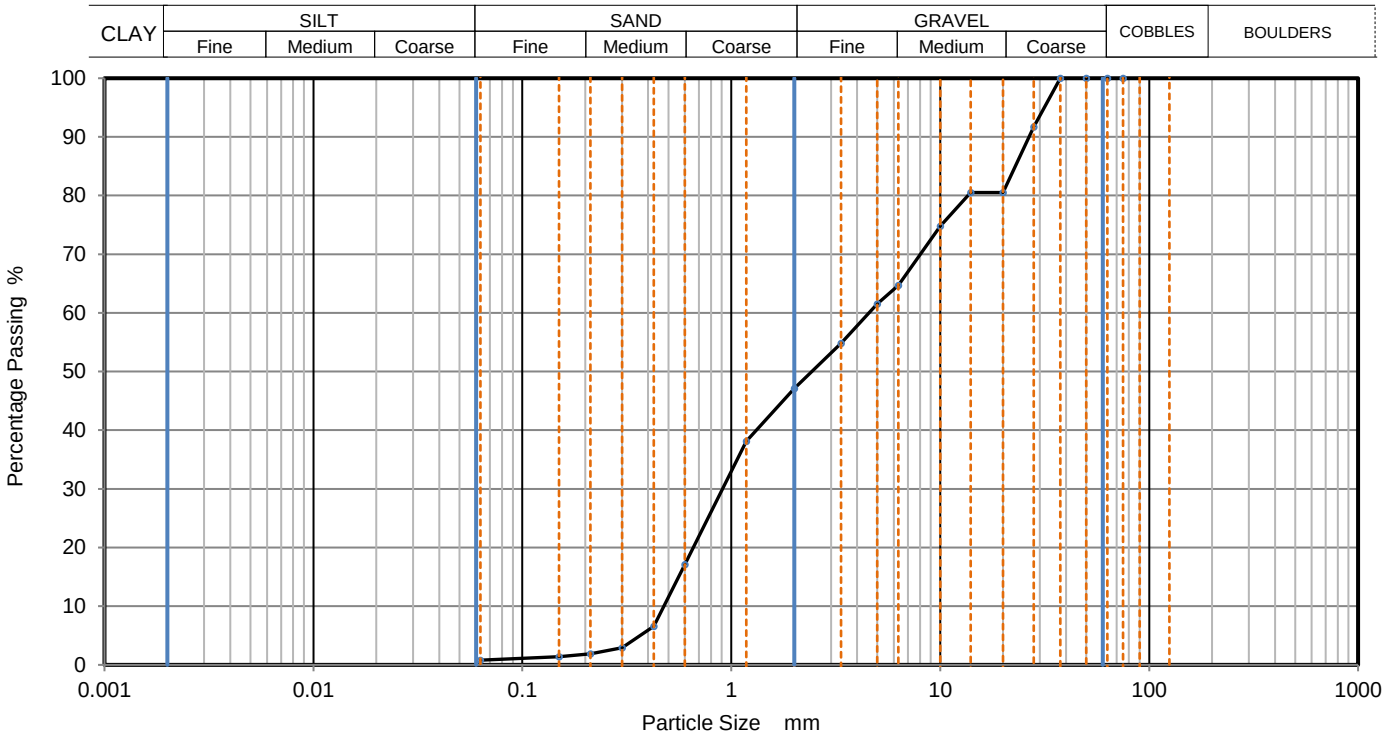
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT16
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Dark bluish-grey coarse SAND and GRAVEL.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703139



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	92		
20	81		
14	81		
10	75		
6.3	65		
5	62		
3.35	55		
2	47		
1.18	38		
0.6	17		
0.425	7		
0.3	3		
0.212	2		
0.15	1		
0.063	1		

Dry Mass of sample, g: 1030

Sample Proportions	% dry mass
Very coarse	0
Gravel	53
Sand	46
Fines <0.063mm	1

Grading Analysis		
D100	mm	
D60	mm	4.57
D30	mm	0.908
D10	mm	0.475
Uniformity Coefficient		9.6
Curvature Coefficient		0.38

Remarks

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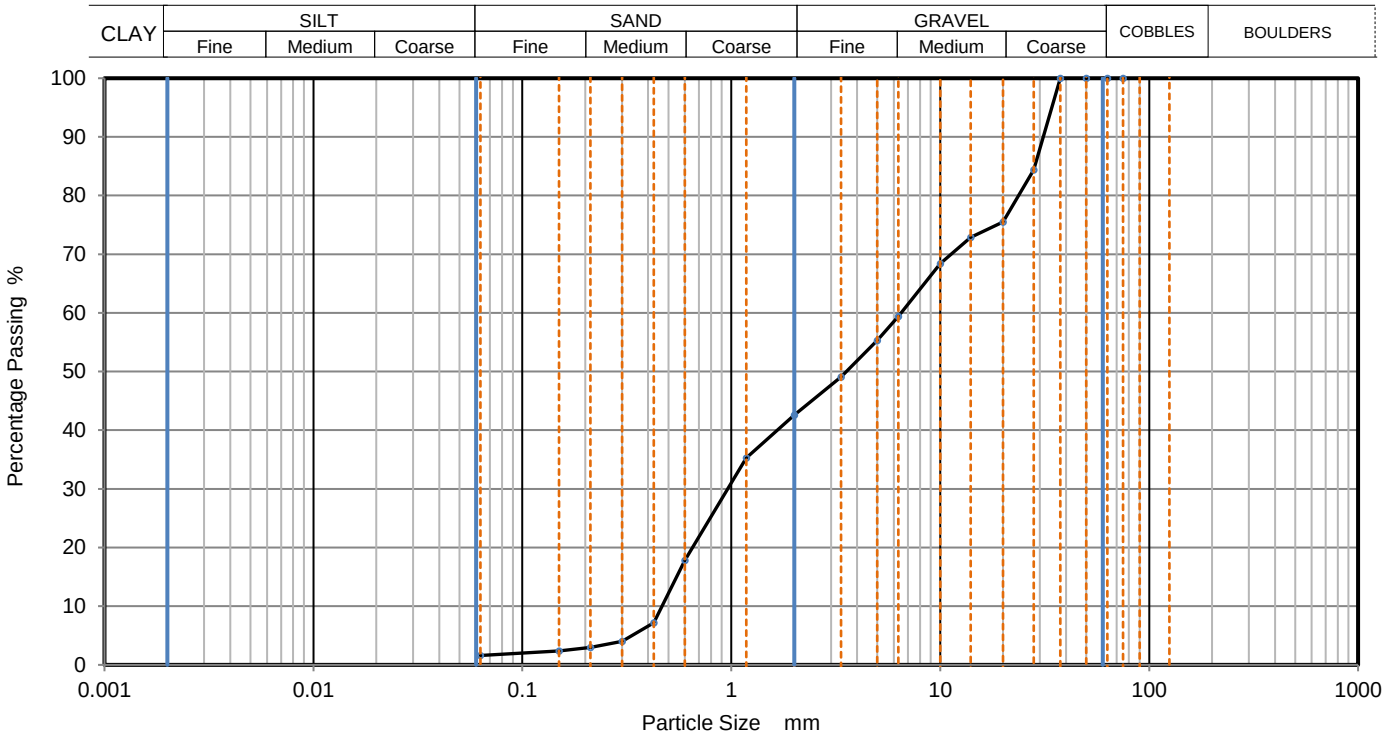
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT16
Site Name	Derrygreenagh Power	Sample No.	13
Soil Description	Bluish-grey slightly silty very sandy coarse GRAVEL. Sand is coarse.	Depth, m	4.00
Specimen Reference	Specimen Depth: m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703149



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	84		
20	76		
14	73		
10	68		
6.3	59		
5	55		
3.35	49		
2	43		
1.18	35		
0.6	18		
0.425	7		
0.3	4		
0.212	3		
0.15	2		
0.063	2		

Dry Mass of sample, g: 1062

Sample Proportions	% dry mass
Very coarse	0
Gravel	57
Sand	41
Fines <0.063mm	2

Grading Analysis		
D100	mm	
D60	mm	6.48
D30	mm	0.961
D10	mm	0.466
Uniformity Coefficient		14
Curvature Coefficient		0.31

Remarks

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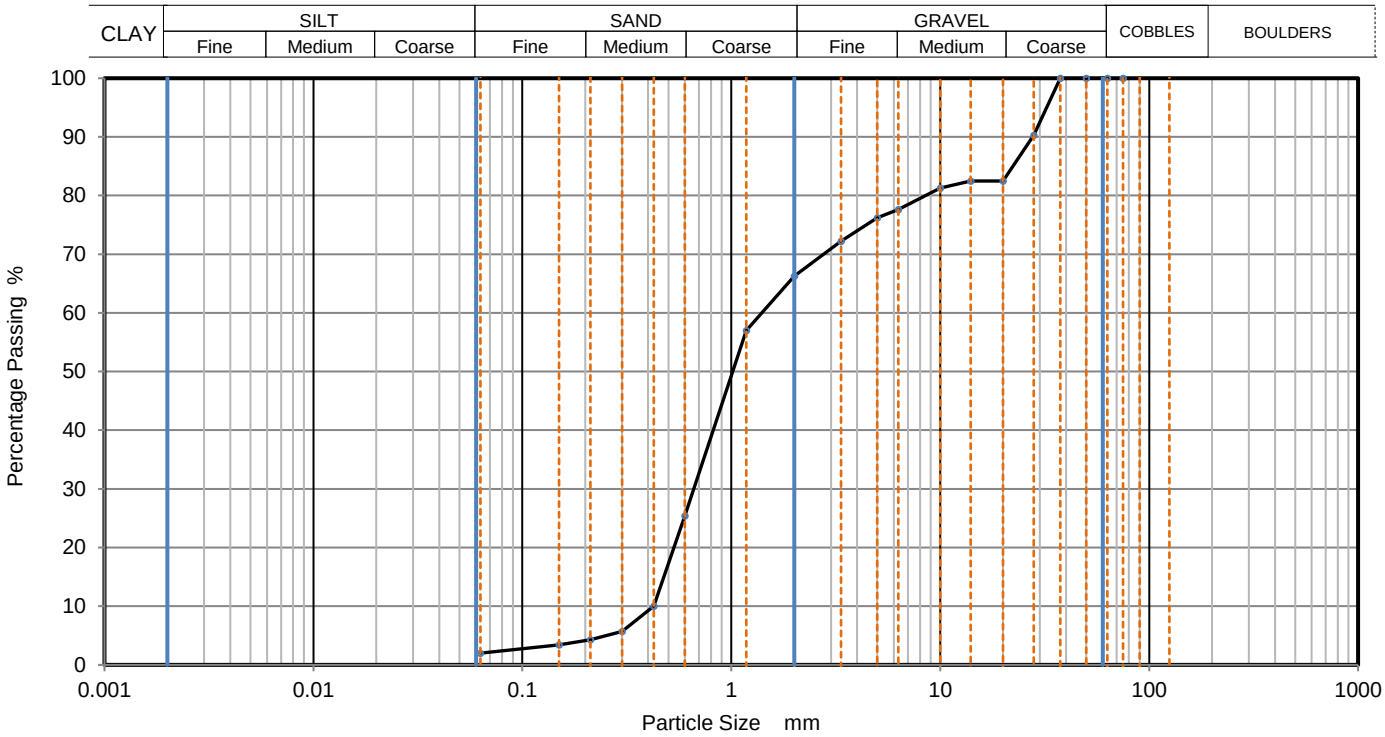
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT16
Site Name	Derrygreenagh Power	Sample No.	22
Soil Description	Bluish-grey very gravelly coarse SAND.	Depth, m	8.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703158



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	90		
20	83		
14	83		
10	81		
6.3	78		
5	76		
3.35	72		
2	66		
1.18	57		
0.6	25		
0.425	10		
0.3	6		
0.212	4		
0.15	3		
0.063	2		

Dry Mass of sample, g	893

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	64
Fines <0.063mm	2

Grading Analysis		
D100	mm	
D60	mm	1.4
D30	mm	0.662
D10	mm	0.425
Uniformity Coefficient		3.3
Curvature Coefficient		0.74

Remarks

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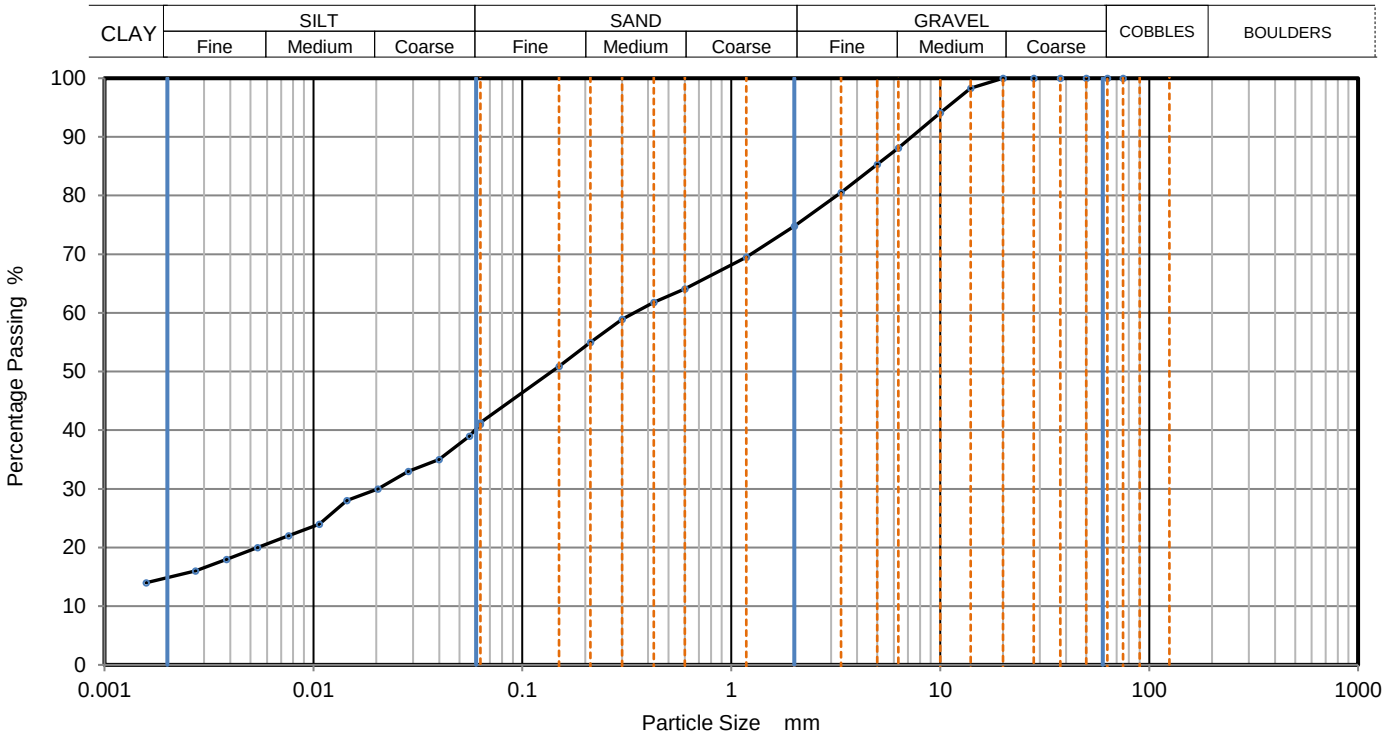
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT16A
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Dark greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202308080



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0558	39
75	100	0.0400	35
63	100	0.0284	33
50	100	0.0203	30
37.5	100	0.0145	28
28	100	0.0107	24
20	100	0.0076	22
14	98	0.0054	20
10	94	0.0038	18
6.3	88	0.0027	16
5	85	0.0016	14
3.35	81		
2	75		
1.18	70		
0.6	64	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	59		
0.212	55		
0.15	51		
0.063	41		

Dry Mass of sample, g	528

Sample Proportions	% dry mass
Very coarse	0
Gravel	25
Sand	34
Silt	27
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.343
D30	mm	0.0212
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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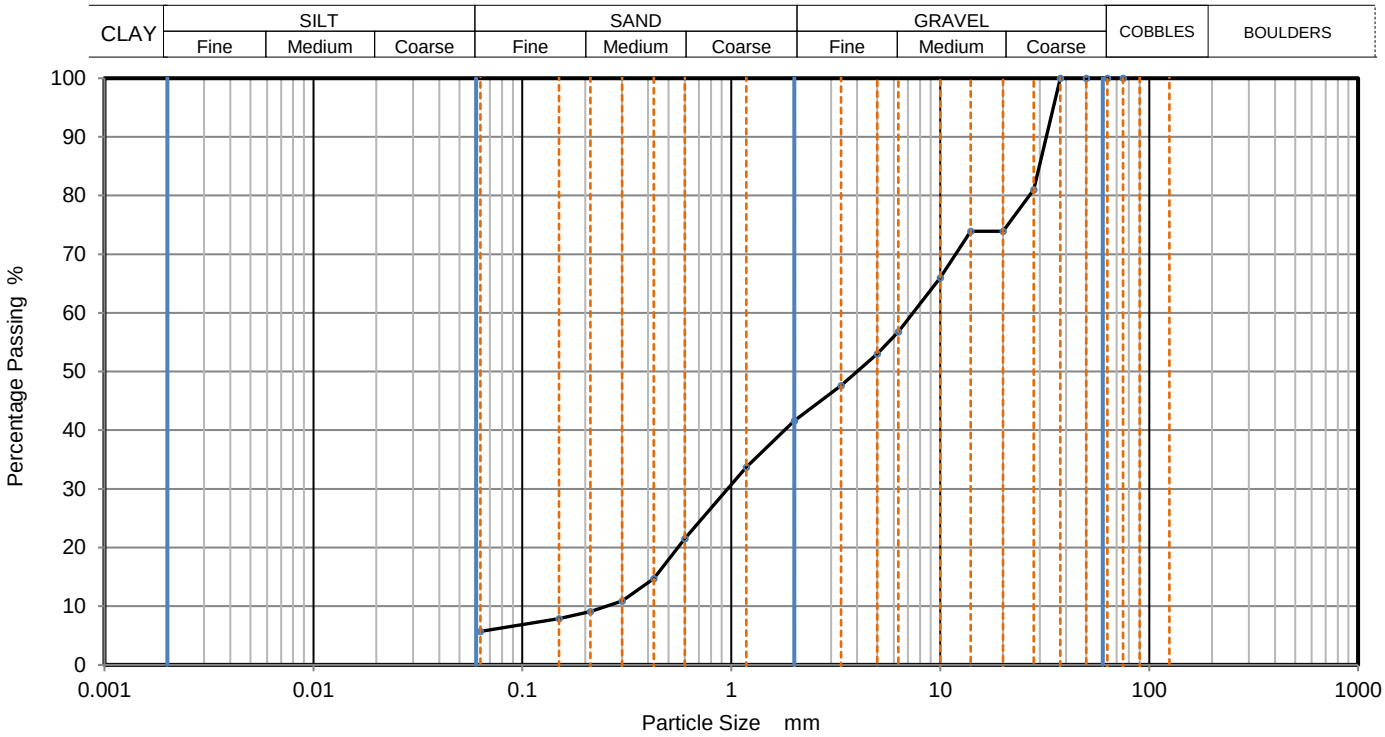
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT16A
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Dark brownish-grey silty very sandy coarse GRAVEL. Sand is coarse.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL1202308083



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	81		
20	74		
14	74		
10	66		
6.3	57		
5	53		
3.35	48		
2	42		
1.18	34		
0.6	22		
0.425	15		
0.3	11		
0.212	9		
0.15	8		
0.063	6		

Dry Mass of sample, g	779

Sample Proportions	% dry mass
Very coarse	0
Gravel	58
Sand	36
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	7.4
D30	mm	0.963
D10	mm	0.253
Uniformity Coefficient		29
Curvature Coefficient		0.49

Remarks

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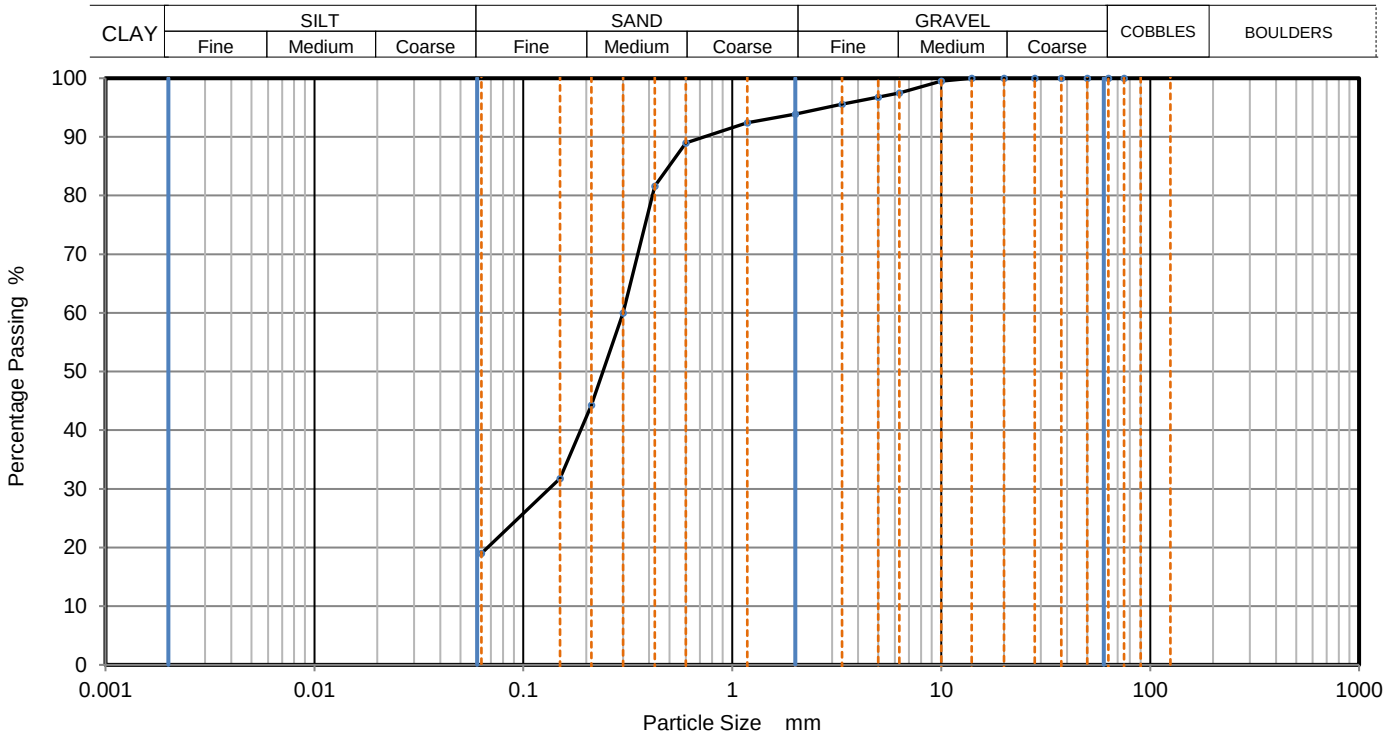
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT17
Site Name	Derrygreenagh Power	Sample No.	9
Soil Description	Dark bluish-grey gravelly silty medium SAND.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230607153



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	98		
5	97		
3.35	96		
2	94		
1.18	92		
0.6	89		
0.425	82		
0.3	60		
0.212	44		
0.15	32		
0.063	19		

Dry Mass of sample, g	965

Sample Proportions	% dry mass
Very coarse	0
Gravel	6
Sand	75
Fines <0.063mm	19

Grading Analysis		
D100	mm	
D60	mm	0.3
D30	mm	0.132
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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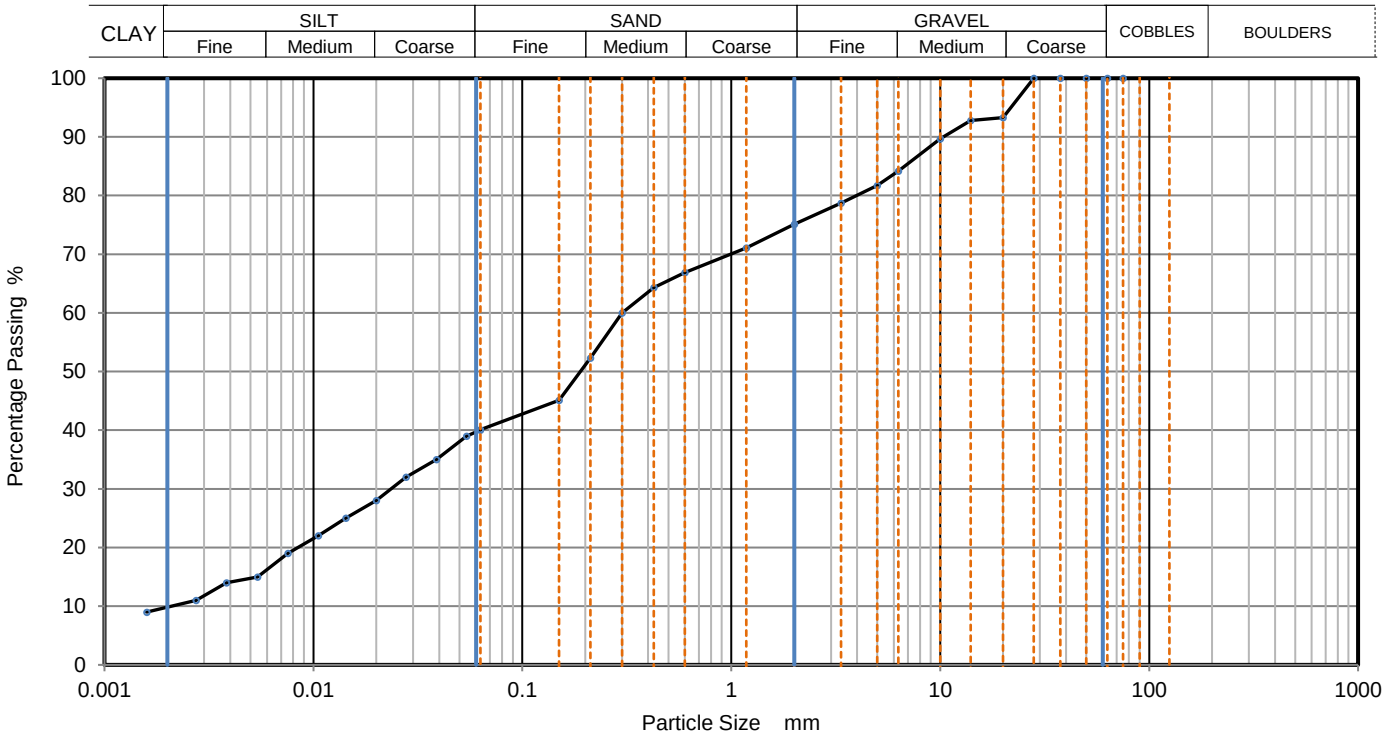
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Light grey slightly gravelly sandy SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023080813



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	40
		0.0541	39
75	100	0.0388	35
63	100	0.0278	32
50	100	0.0200	28
37.5	100	0.0143	25
28	100	0.0106	22
20	93	0.0076	19
14	93	0.0054	15
10	90	0.0038	14
6.3	84	0.0027	11
5	82	0.0016	9
3.35	79		
2	75		
1.18	71		
0.6	67	Particle density	(assumed)
0.425	64	2.65	Mg/m3
0.3	60		
0.212	52		
0.15	45		
0.063	40		

Dry Mass of sample, g	1063

Sample Proportions	% dry mass
Very coarse	0
Gravel	25
Sand	35
Silt	30
Clay	10

Grading Analysis		
D100	mm	
D60	mm	0.3
D30	mm	0.0234
D10	mm	0.00207
Uniformity Coefficient		140
Curvature Coefficient		0.88

Remarks

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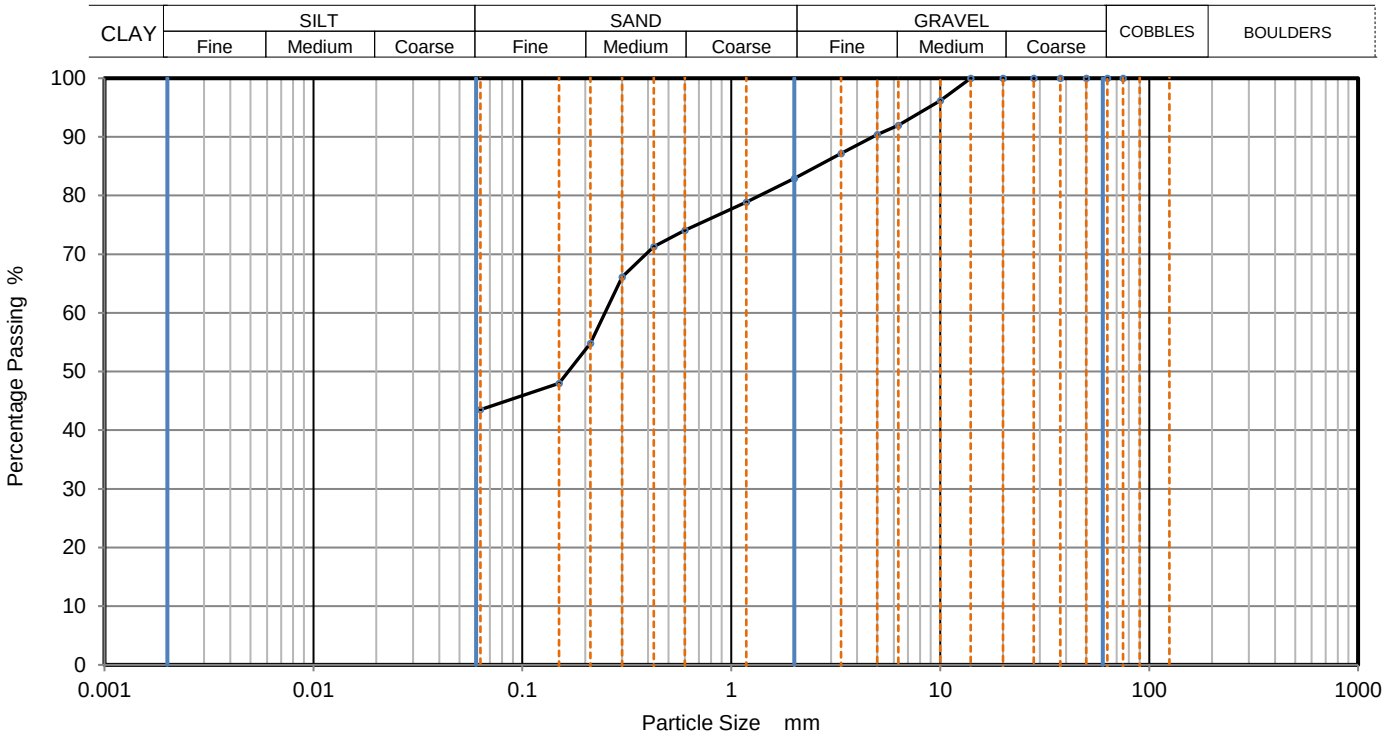
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Brownish-grey slightly gravelly sandy SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023080817



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	96		
6.3	92		
5	90		
3.35	87		
2	83		
1.18	79		
0.6	74		
0.425	71		
0.3	66		
0.212	55		
0.15	48		
0.063	44		

Dry Mass of sample, g: 884

Sample Proportions	% dry mass
Very coarse	0
Gravel	17
Sand	39
Fines <0.063mm	44

Grading Analysis		
D100	mm	
D60	mm	0.248
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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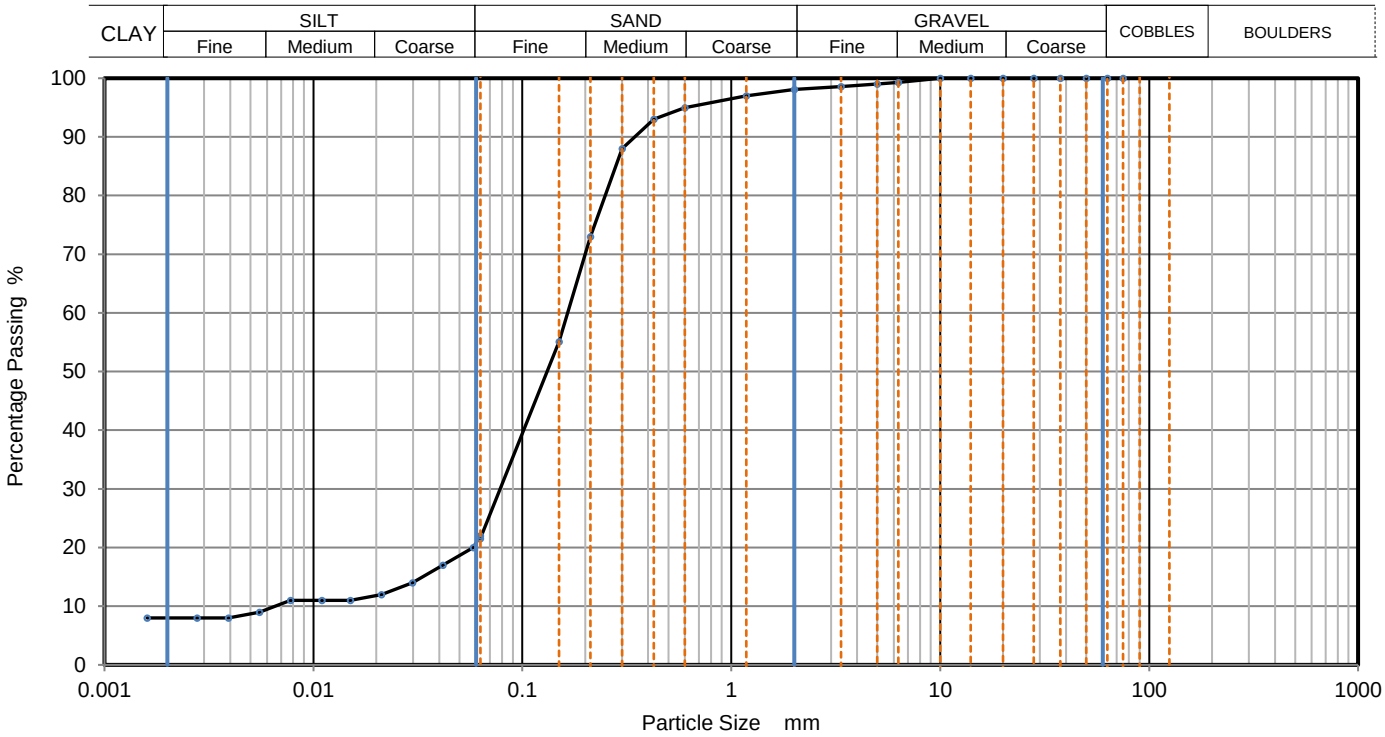
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT18A
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Grey slightly gravelly very silty fine SAND.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023080833



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	22
		0.0582	20
75	100	0.0416	17
63	100	0.0297	14
50	100	0.0211	12
37.5	100	0.0150	11
28	100	0.0110	11
20	100	0.0078	11
14	100	0.0055	9
10	100	0.0039	8
6.3	99	0.0028	8
5	99	0.0016	8
3.35	99		
2	98		
1.18	97		
0.6	95	Particle density	(assumed)
0.425	93	2.65	Mg/m3
0.3	88		
0.212	73		
0.15	55		
0.063	22		

Dry Mass of sample, g: 1152

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	77
Silt	14
Clay	8

Grading Analysis		
D100	mm	
D60	mm	0.165
D30	mm	0.0784
D10	mm	0.00657
Uniformity Coefficient		25
Curvature Coefficient		5.7

Remarks

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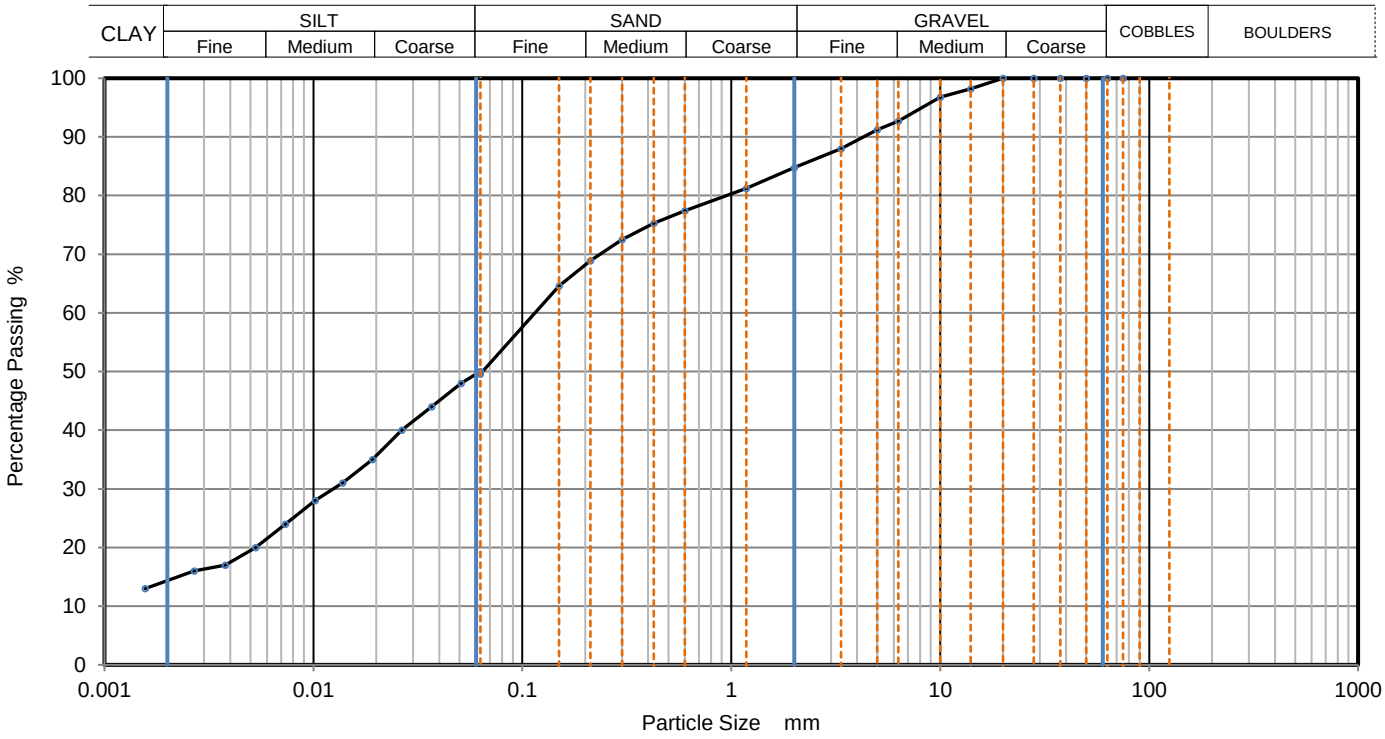
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT18A
Site Name	Derrygreenagh Power	Sample No.	16
Soil Description	Dark grey slightly gravelly sandy SILT. Sand is fine.	Depth, m	5.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023080839



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	50
		0.0509	48
75	100	0.0368	44
63	100	0.0265	40
50	100	0.0191	35
37.5	100	0.0138	31
28	100	0.0102	28
20	100	0.0073	24
14	98	0.0053	20
10	97	0.0038	17
6.3	93	0.0027	16
5	91	0.0016	13
3.35	88		
2	85		
1.18	81		
0.6	77	Particle density	(assumed)
0.425	75	2.65	Mg/m3
0.3	73		
0.212	69		
0.15	65		
0.063	50		

Dry Mass of sample, g: 983

Sample Proportions	% dry mass
Very coarse	0
Gravel	15
Sand	35
Silt	36
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.115
D30	mm	0.0122
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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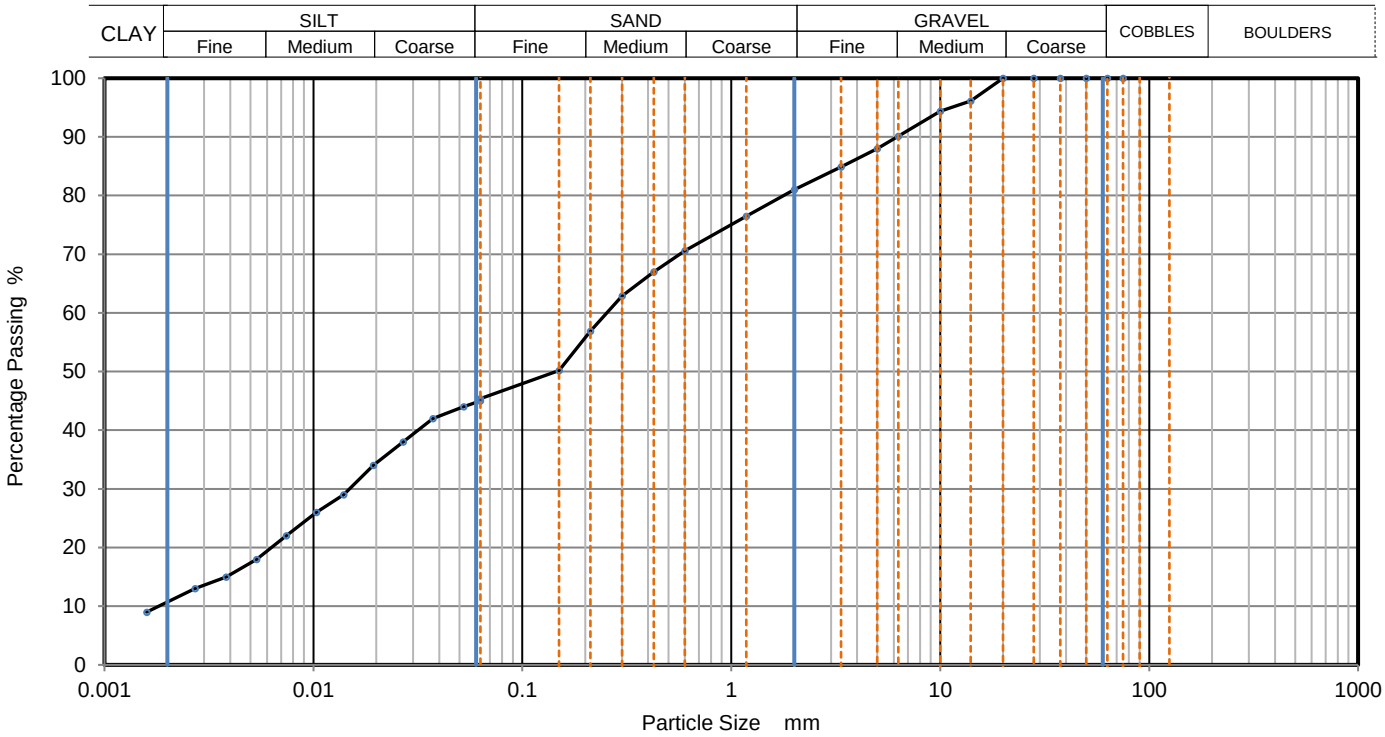
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP201
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Dark grey slightly gravelly sandy SILT.	Depth, m	2.80
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230505115



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0523	44
75	100	0.0373	42
63	100	0.0269	38
50	100	0.0194	34
37.5	100	0.0140	29
28	100	0.0103	26
20	100	0.0074	22
14	96	0.0053	18
10	94	0.0038	15
6.3	90	0.0027	13
5	88	0.0016	9
3.35	85		
2	81		
1.18	77		
0.6	71	Particle density	(assumed)
0.425	67	2.65	Mg/m3
0.3	63		
0.212	57		
0.15	50		
0.063	45		

Dry Mass of sample, g	745

Sample Proportions	% dry mass
Very coarse	0
Gravel	19
Sand	36
Silt	35
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.254
D30	mm	0.0147
D10	mm	0.00184
Uniformity Coefficient		140
Curvature Coefficient		0.46

Remarks

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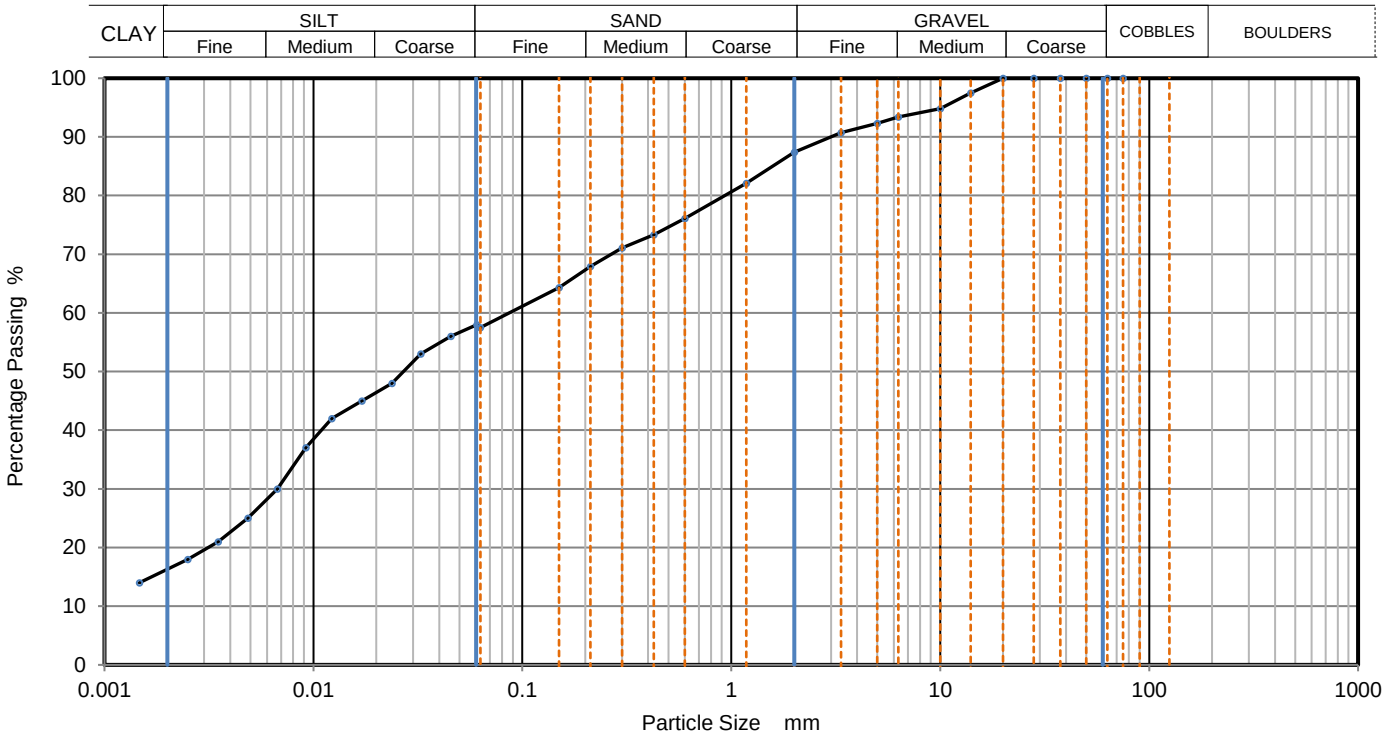
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP204
Site Name	Derrygreenagh Power	Sample No.	5
Soil Description	Greenish-grey slightly gravelly slightly sandy SILT.	Depth, m	2.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230505129



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0606	58
		0.0454	56
75	100	0.0326	53
63	100	0.0238	48
50	100	0.0171	45
37.5	100	0.0122	42
28	100	0.0092	37
20	100	0.0067	30
14	98	0.0049	25
10	95	0.0035	21
6.3	93	0.0025	18
5	92	0.0015	14
3.35	91		
2	87		
1.18	82		
0.6	76	Particle density (assumed)	
0.425	73	2.65 Mg/m3	
0.3	71		
0.212	68		
0.15	64		
0.063	58		

Dry Mass of sample, g	738

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	30
Silt	41
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.0868
D30	mm	0.00667
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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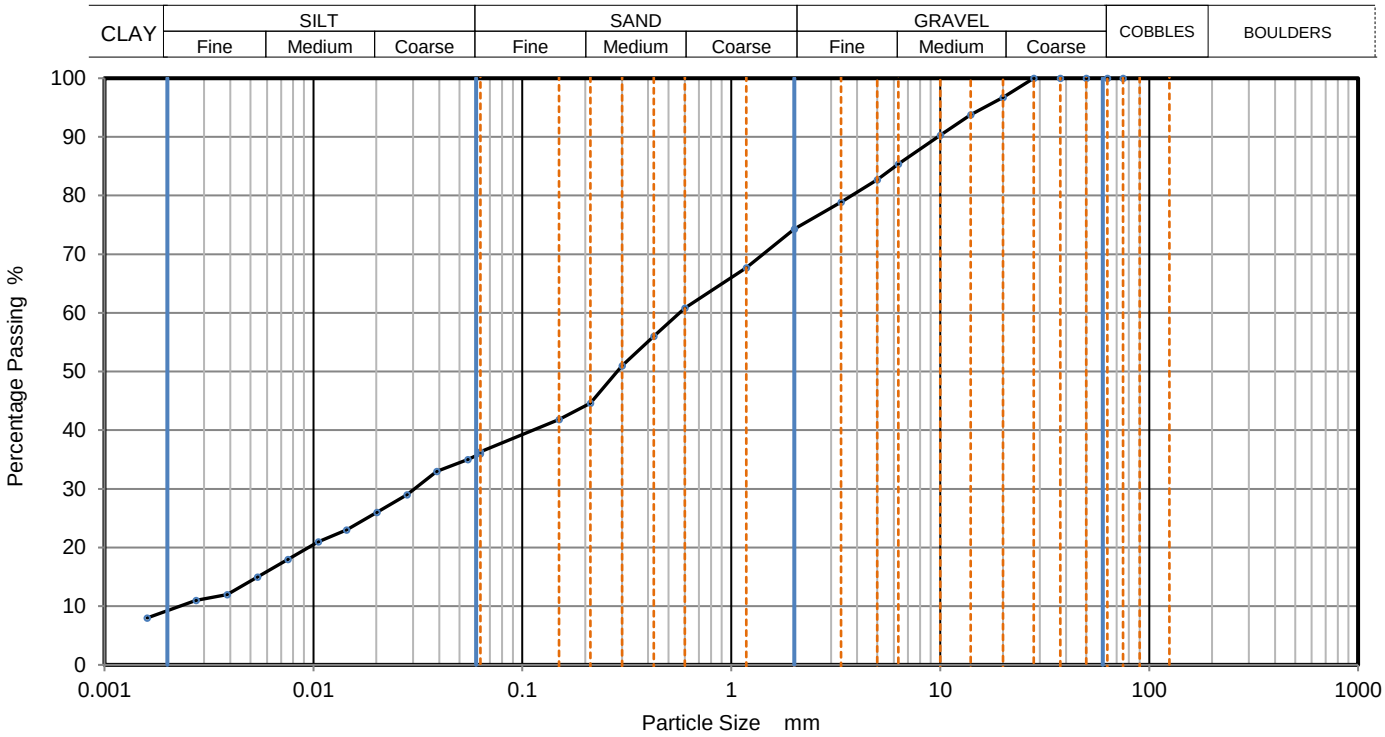
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP205
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Greenish-brown slightly sandy gravelly SILT.	Depth, m	2.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230505134



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	36
		0.0548	35
75	100	0.0390	33
63	100	0.0281	29
50	100	0.0201	26
37.5	100	0.0144	23
28	100	0.0106	21
20	97	0.0076	18
14	94	0.0054	15
10	90	0.0039	12
6.3	85	0.0027	11
5	83	0.0016	8
3.35	79		
2	74		
1.18	68		
0.6	61	Particle density	(assumed)
0.425	56	2.65	Mg/m3
0.3	51		
0.212	45		
0.15	42		
0.063	36		

Dry Mass of sample, g	745

Sample Proportions	% dry mass
Very coarse	0
Gravel	26
Sand	38
Silt	28
Clay	9

Grading Analysis		
D100	mm	
D60	mm	0.566
D30	mm	0.0308
D10	mm	0.00247
Uniformity Coefficient		230
Curvature Coefficient		0.68

Remarks

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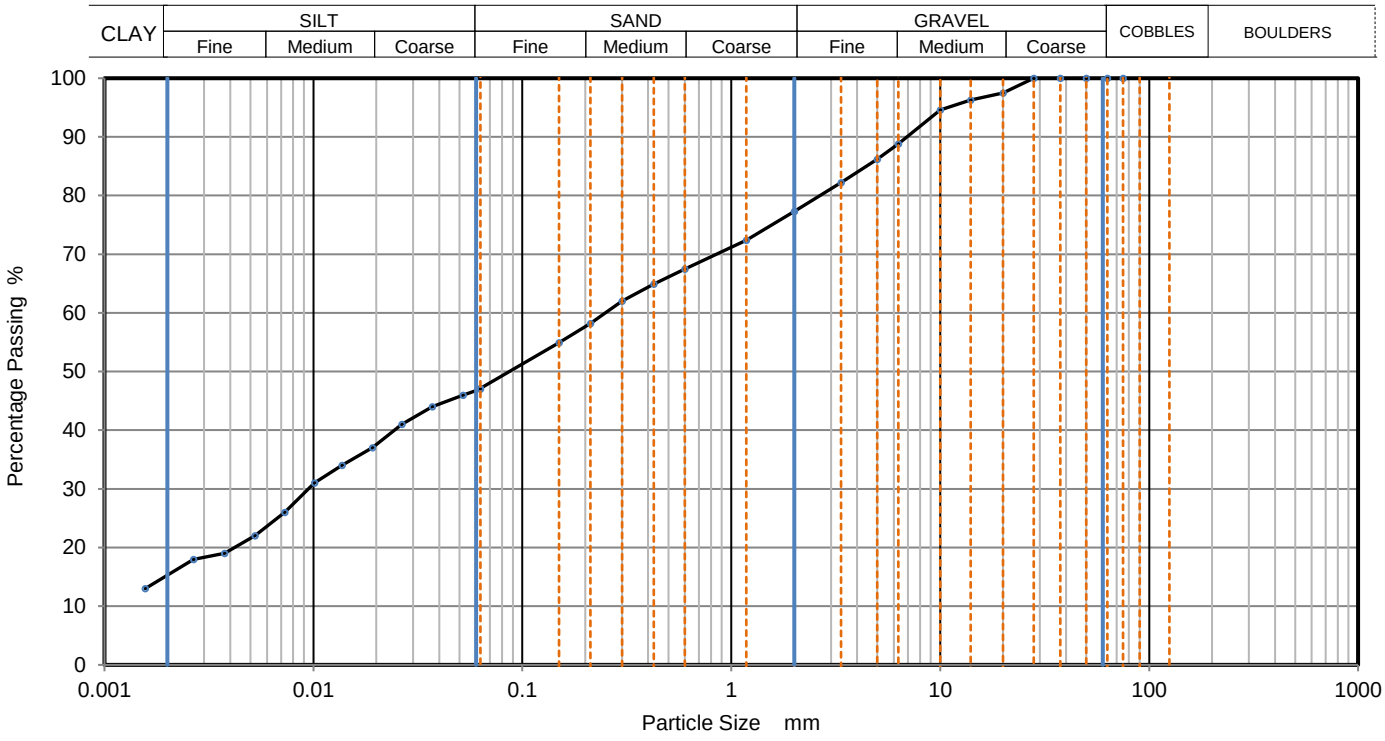
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP206A
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brown slightly gravelly slightly sandy SILT.	Depth, m	0.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202305170



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	47
		0.0520	46
75	100	0.0370	44
63	100	0.0265	41
50	100	0.0191	37
37.5	100	0.0137	34
28	100	0.0101	31
20	98	0.0073	26
14	96	0.0053	22
10	95	0.0038	19
6.3	89	0.0027	18
5	86	0.0016	13
3.35	82		
2	77		
1.18	72		
0.6	68	Particle density	(assumed)
0.425	65	2.65	Mg/m3
0.3	62		
0.212	58		
0.15	55		
0.063	47		

Dry Mass of sample, g	667

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	30
Silt	32
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.25
D30	mm	0.00947
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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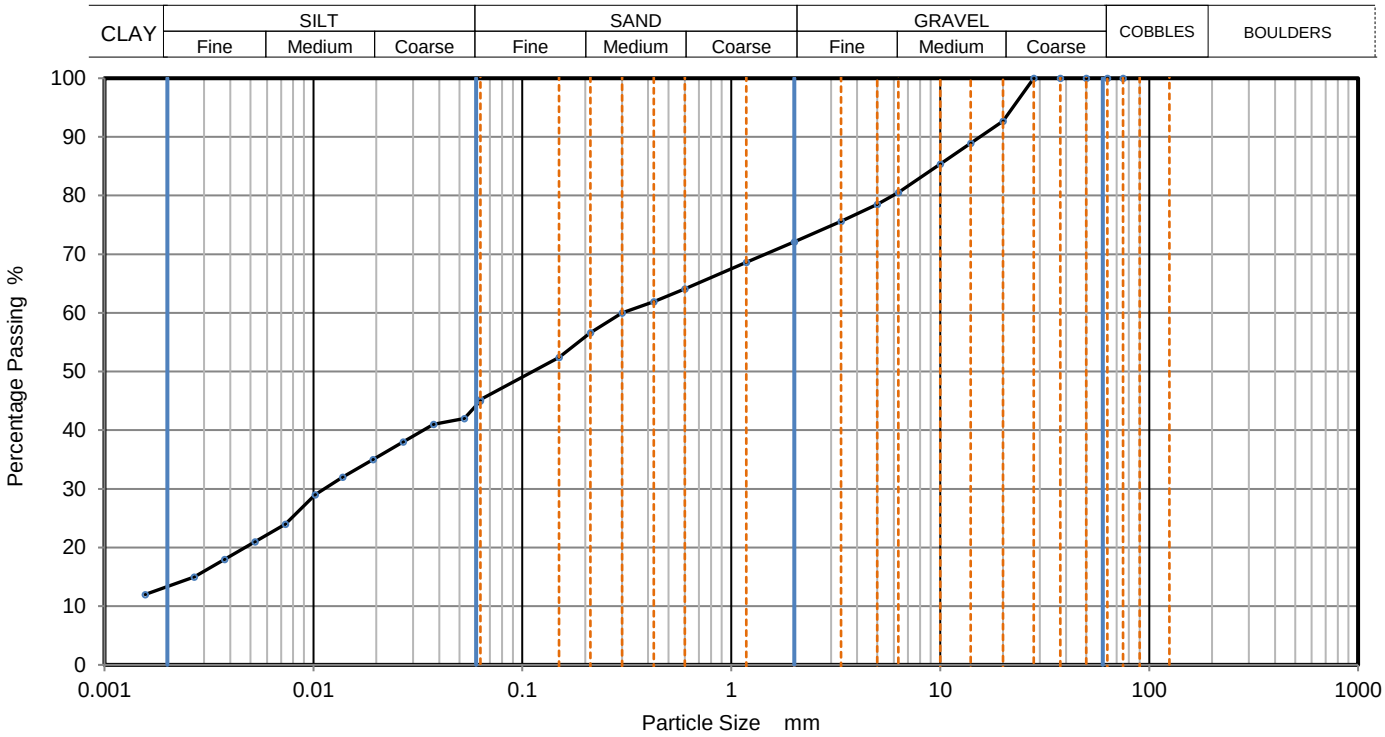
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP207
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Greenish-grey slightly sandy slightly gravelly SILT.	Depth, m	1.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230505142



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0527	42
75	100	0.0375	41
63	100	0.0269	38
50	100	0.0193	35
37.5	100	0.0138	32
28	100	0.0102	29
20	93	0.0073	24
14	89	0.0052	21
10	85	0.0038	18
6.3	81	0.0027	15
5	79	0.0016	12
3.35	76		
2	72		
1.18	69		
0.6	64	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	60		
0.212	57		
0.15	52		
0.063	45		

Dry Mass of sample, g	1061

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	27
Silt	32
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.299
D30	mm	0.0117
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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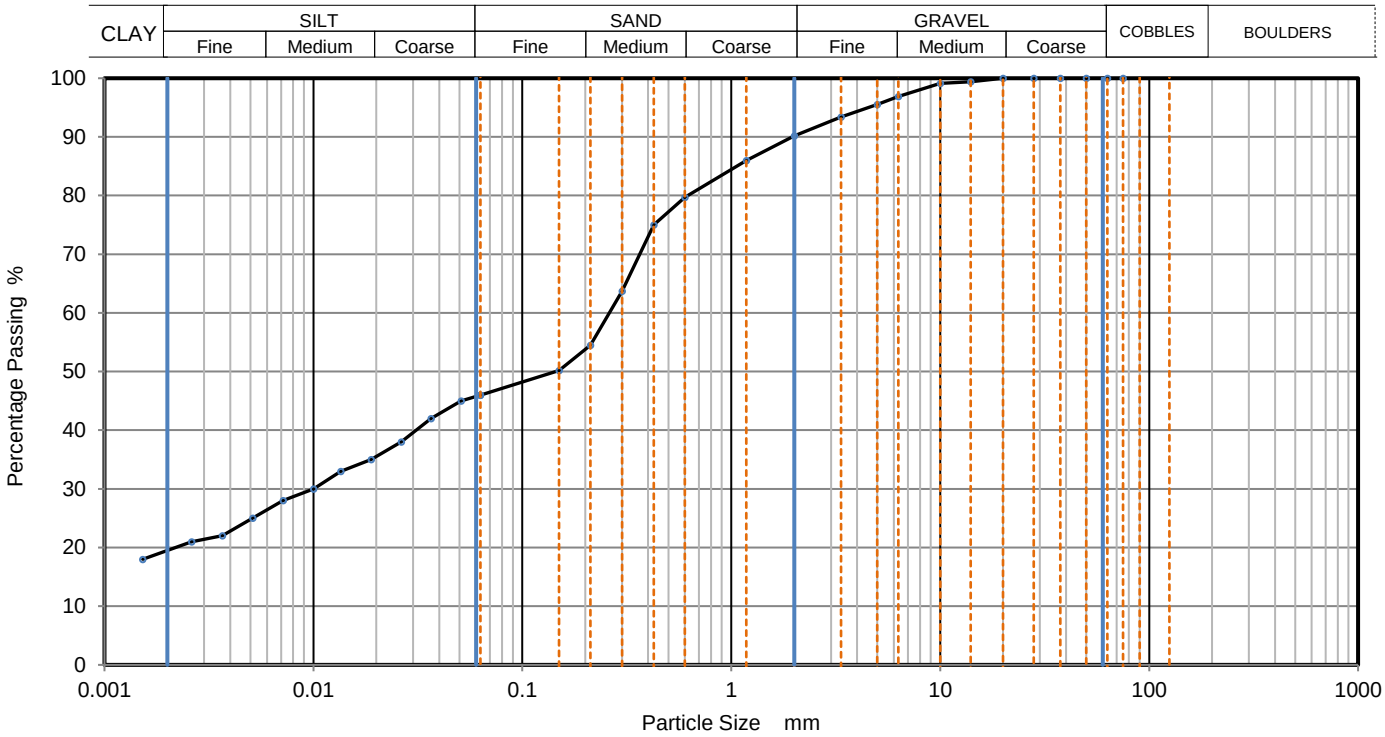
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Dark brown slightly gravelly sandy SILT. Sand is medium.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202308162



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	46
		0.0509	45
75	100	0.0365	42
63	100	0.0264	38
50	100	0.0189	35
37.5	100	0.0135	33
28	100	0.0100	30
20	100	0.0072	28
14	99	0.0051	25
10	99	0.0037	22
6.3	97	0.0026	21
5	96	0.0015	18
3.35	93		
2	90		
1.18	86		
0.6	80	Particle density (assumed)	
0.425	75	2.65 Mg/m3	
0.3	64		
0.212	55		
0.15	50		
0.063	46		

Dry Mass of sample, g	577

Sample Proportions	% dry mass
Very coarse	0
Gravel	10
Sand	44
Silt	26
Clay	20

Grading Analysis		
D100	mm	
D60	mm	0.261
D30	mm	0.00972
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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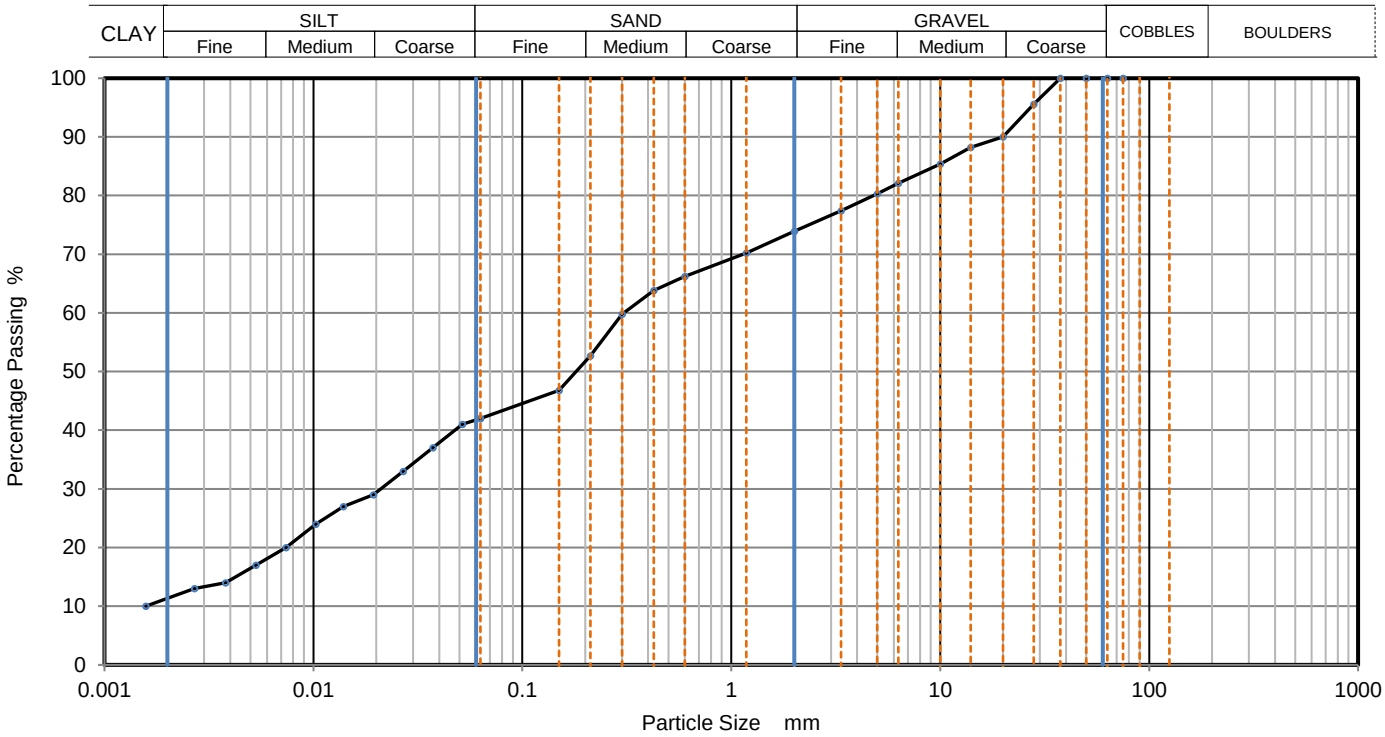
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Light brown slightly gravelly slightly sandy SILT.	Depth, m	2.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202308165



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	42
		0.0516	41
75	100	0.0373	37
63	100	0.0269	33
50	100	0.0194	29
37.5	100	0.0139	27
28	96	0.0103	24
20	90	0.0074	20
14	88	0.0053	17
10	85	0.0038	14
6.3	82	0.0027	13
5	80	0.0016	10
3.35	77		
2	74		
1.18	70		
0.6	66	Particle density (assumed)	
0.425	64	2.65 Mg/m3	
0.3	60		
0.212	53		
0.15	47		
0.063	42		

Dry Mass of sample, g	1070

Sample Proportions	% dry mass
Very coarse	0
Gravel	26
Sand	32
Silt	31
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.306
D30	mm	0.0206
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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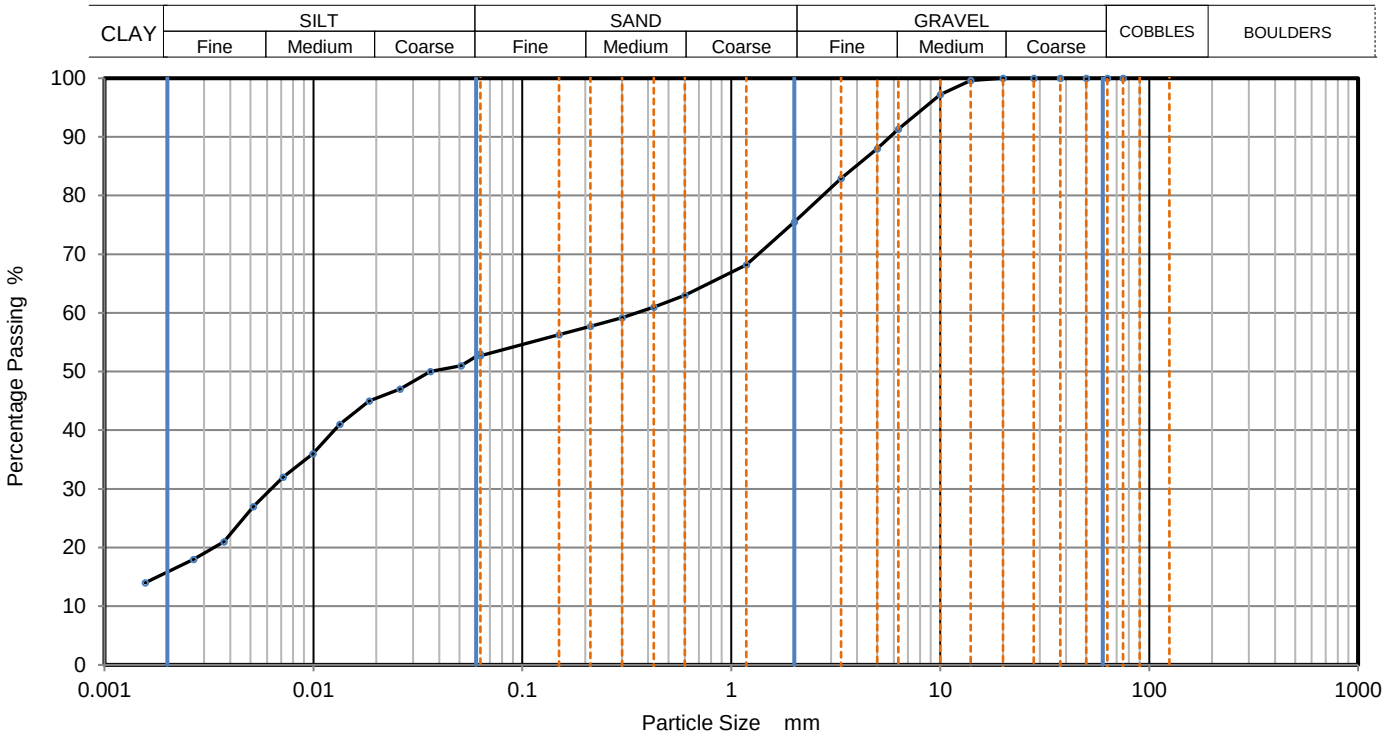
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP209
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	1.30
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051711



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	53
		0.0509	51
75	100	0.0362	50
63	100	0.0260	47
50	100	0.0185	45
37.5	100	0.0134	41
28	100	0.0099	36
20	100	0.0072	32
14	100	0.0052	27
10	97	0.0037	21
6.3	91	0.0027	18
5	88	0.0016	14
3.35	83		
2	76		
1.18	68		
0.6	63	Particle density	(assumed)
0.425	61	2.65	Mg/m3
0.3	59		
0.212	58		
0.15	56		
0.063	53		

Dry Mass of sample, g	738

Sample Proportions	% dry mass
Very coarse	0
Gravel	25
Sand	23
Silt	37
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.351
D30	mm	0.00637
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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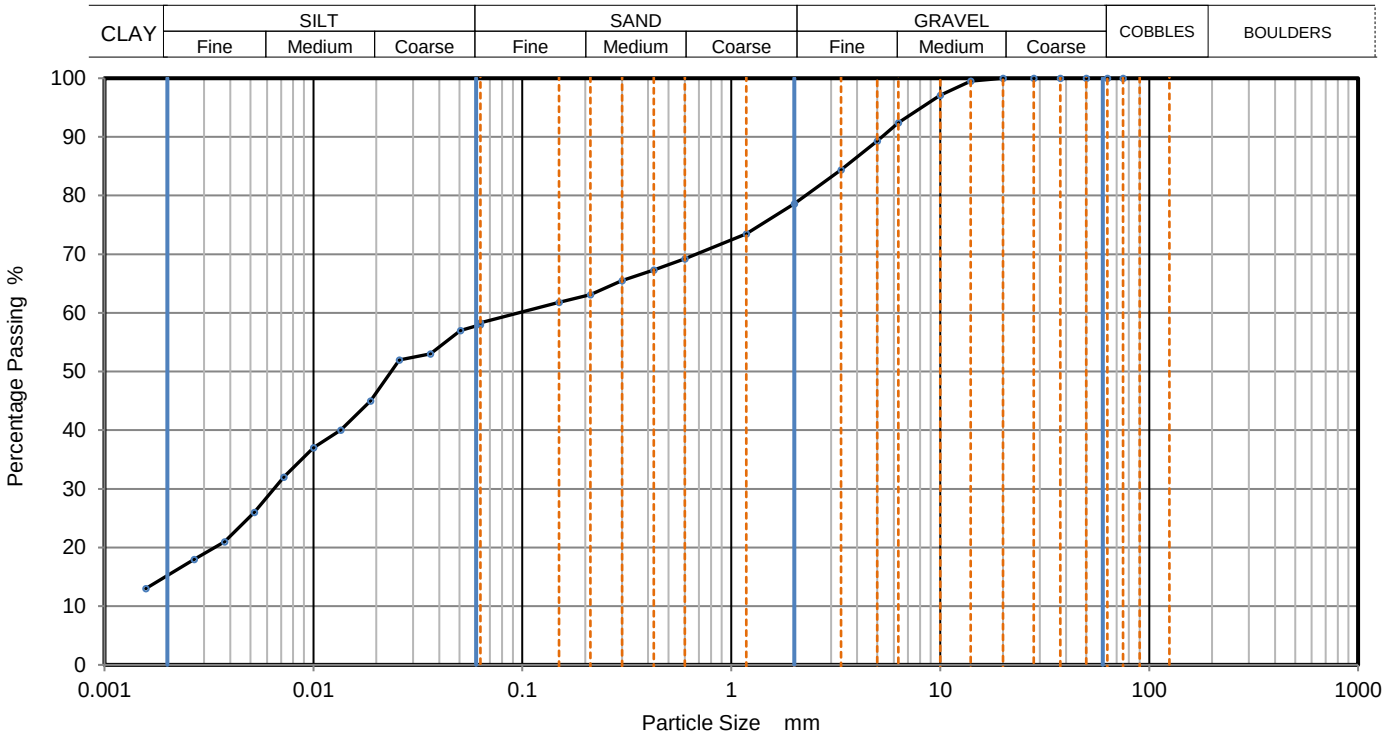
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP210
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Light brown slightly sandy slightly gravelly SILT.	Depth, m	0.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051715



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	58
		0.0505	57
75	100	0.0362	53
63	100	0.0258	52
50	100	0.0188	45
37.5	100	0.0135	40
28	100	0.0100	37
20	100	0.0072	32
14	100	0.0052	26
10	97	0.0038	21
6.3	92	0.0027	18
5	89	0.0016	13
3.35	84		
2	79		
1.18	74		
0.6	69	Particle density (assumed)	
0.425	67	2.65 Mg/m3	
0.3	66		
0.212	63		
0.15	62		
0.063	58		

Dry Mass of sample, g	611

Sample Proportions	% dry mass
Very coarse	0
Gravel	21
Sand	20
Silt	43
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.096
D30	mm	0.0064
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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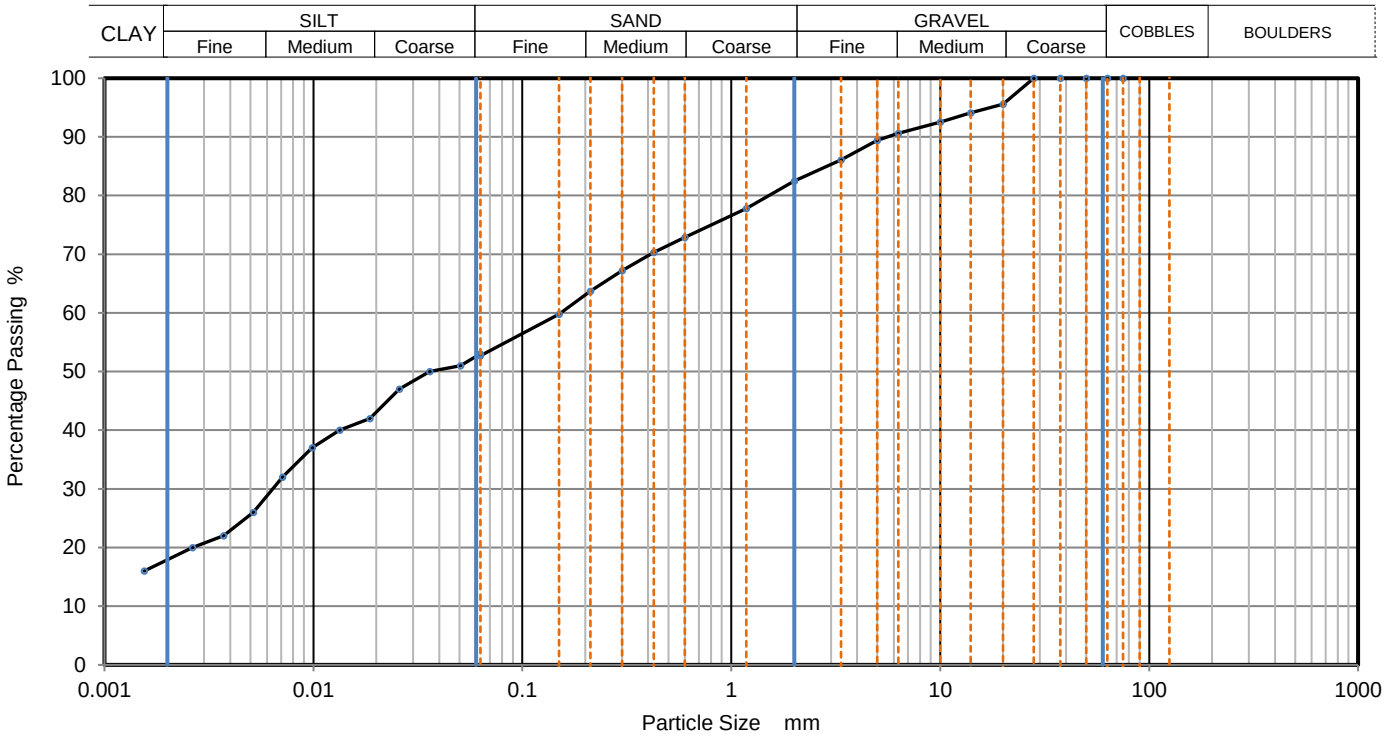
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP211
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Brown slightly gravelly slightly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051723



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	53
		0.0505	51
75	100	0.0360	50
63	100	0.0258	47
50	100	0.0186	42
37.5	100	0.0134	40
28	100	0.0099	37
20	96	0.0071	32
14	94	0.0052	26
10	93	0.0037	22
6.3	91	0.0026	20
5	89	0.0015	16
3.35	86		
2	83		
1.18	78		
0.6	73	Particle density (assumed)	
0.425	70	2.65 Mg/m3	
0.3	67		
0.212	64		
0.15	60		
0.063	53		

Dry Mass of sample, g	729

Sample Proportions	% dry mass
Very coarse	0
Gravel	18
Sand	30
Silt	35
Clay	18

Grading Analysis		
D100	mm	
D60	mm	0.153
D30	mm	0.00631
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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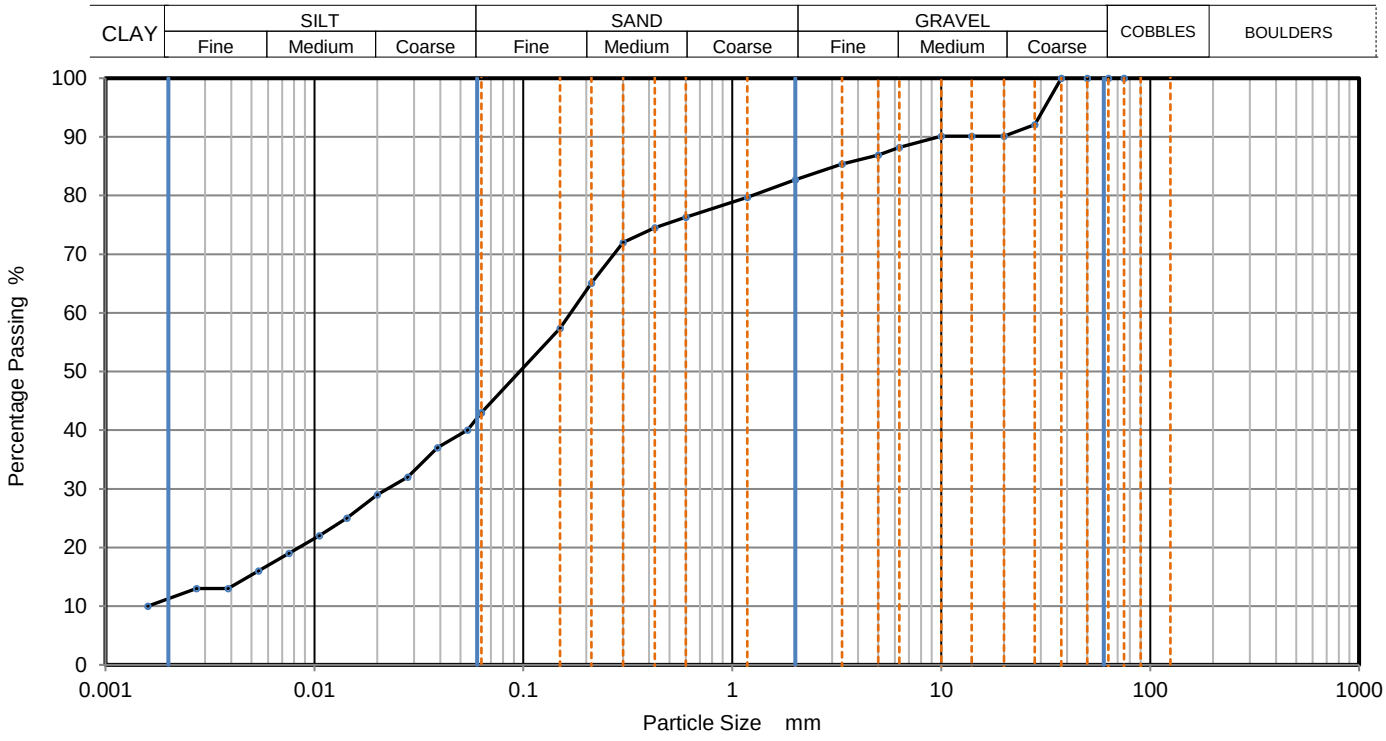
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP212
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Brown slightly gravelly sandy SILT. Sand is fine.	Depth, m	1.10
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051732



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	43
		0.0541	40
75	100	0.0388	37
63	100	0.0279	32
50	100	0.0200	29
37.5	100	0.0143	25
28	92	0.0106	22
20	90	0.0076	19
14	90	0.0054	16
10	90	0.0039	13
6.3	88	0.0027	13
5	87	0.0016	10
3.35	85		
2	83		
1.18	80		
0.6	76	Particle density	(assumed)
0.425	75	2.65	Mg/m3
0.3	72		
0.212	65		
0.15	57		
0.063	43		

Dry Mass of sample, g	730

Sample Proportions	% dry mass
Very coarse	0
Gravel	17
Sand	40
Silt	32
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.169
D30	mm	0.023
D10	mm	0.00172
Uniformity Coefficient		98
Curvature Coefficient		1.8

Remarks

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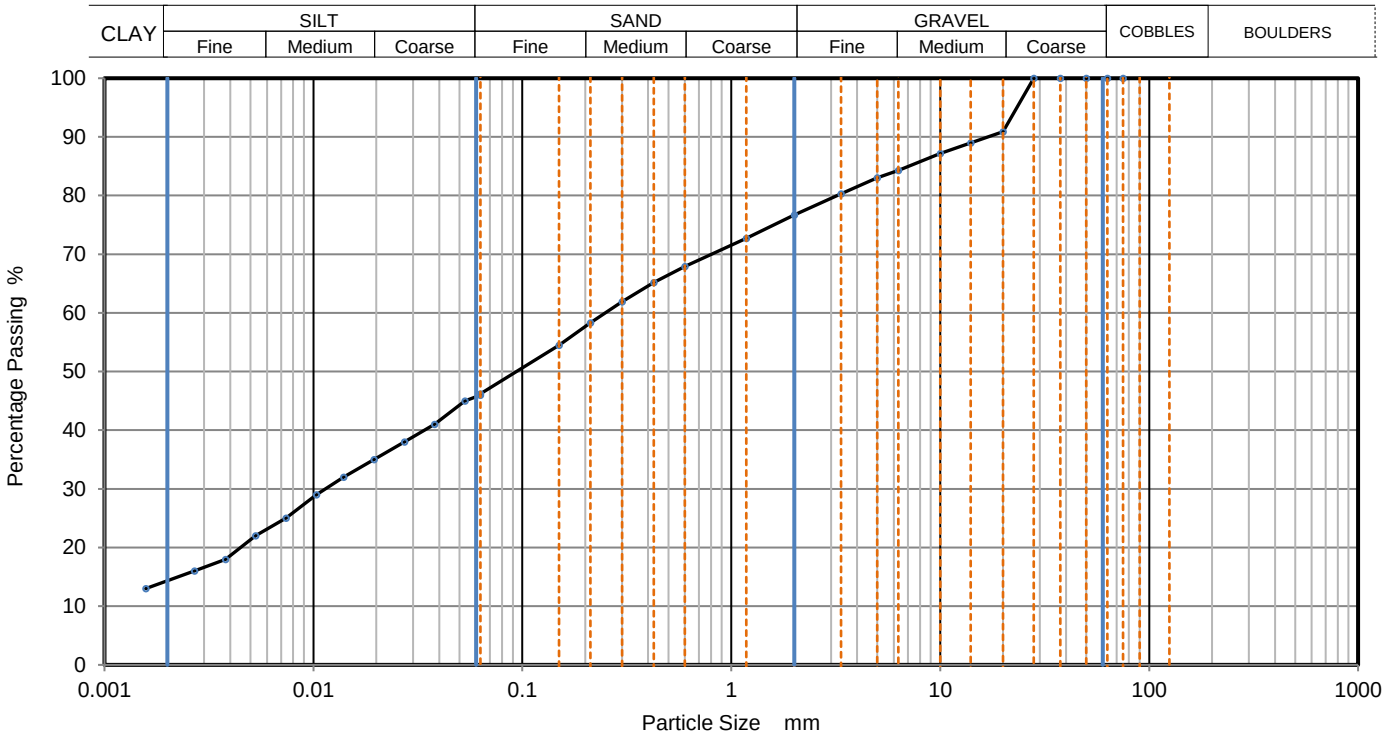
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP214
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Light grey slightly gravelly slightly sandy SILT.	Depth, m	1.70
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202305232



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	46
		0.0531	45
75	100	0.0380	41
63	100	0.0272	38
50	100	0.0195	35
37.5	100	0.0140	32
28	100	0.0103	29
20	91	0.0074	25
14	89	0.0053	22
10	87	0.0038	18
6.3	84	0.0027	16
5	83	0.0016	13
3.35	80		
2	77		
1.18	73		
0.6	68	Particle density (assumed)	
0.425	65	2.65 Mg/m3	
0.3	62		
0.212	58		
0.15	55		
0.063	46		

Dry Mass of sample, g	1020

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	31
Silt	32
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.249
D30	mm	0.0117
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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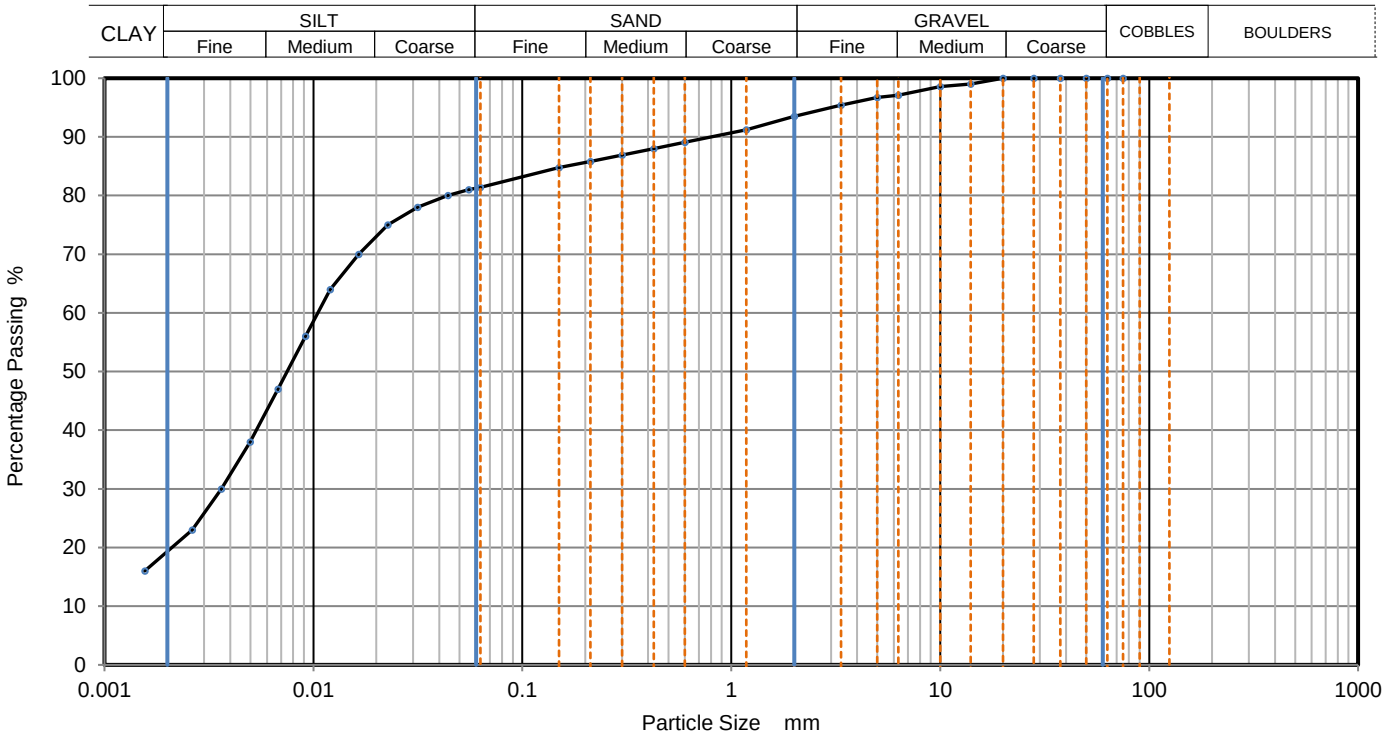
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP215
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Orange-brown slightly gravelly slightly sandy SILT.	Depth, m	1.60
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202305238



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0553	81
		0.0441	80
75	100	0.0315	78
63	100	0.0227	75
50	100	0.0165	70
37.5	100	0.0120	64
28	100	0.0092	56
20	100	0.0068	47
14	99	0.0050	38
10	99	0.0036	30
6.3	97	0.0026	23
5	97	0.0016	16
3.35	95		
2	94		
1.18	91		
0.6	89	Particle density	(assumed)
0.425	88	2.65	Mg/m3
0.3	87		
0.212	86		
0.15	85		
0.063	81		

Dry Mass of sample, g	859

Sample Proportions	% dry mass
Very coarse	0
Gravel	7
Sand	12
Silt	62
Clay	19

Grading Analysis		
D100	mm	
D60	mm	0.0104
D30	mm	0.00366
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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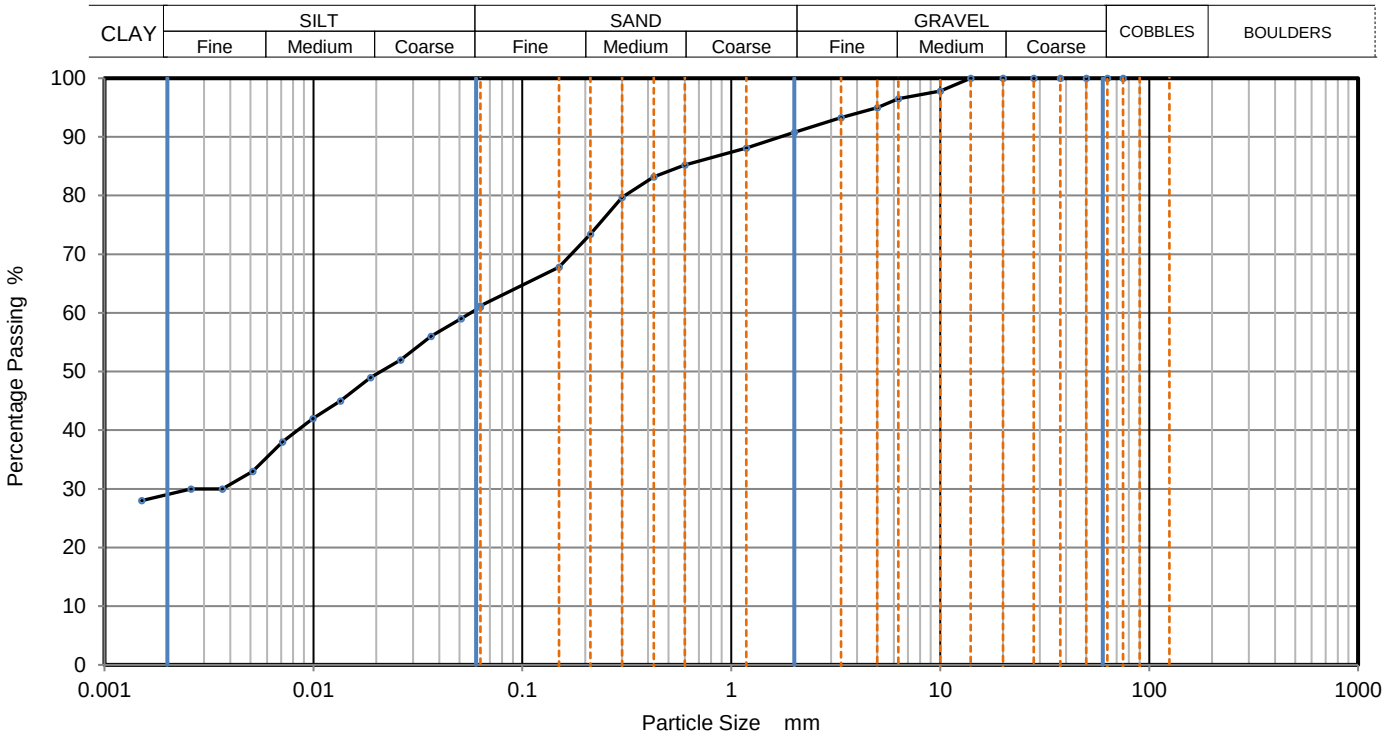
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP216
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brown slightly gravelly sandy SILT.	Depth, m	0.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051738



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	61
		0.0509	59
75	100	0.0365	56
63	100	0.0262	52
50	100	0.0188	49
37.5	100	0.0134	45
28	100	0.0099	42
20	100	0.0071	38
14	100	0.0051	33
10	98	0.0037	30
6.3	97	0.0026	30
5	95	0.0015	28
3.35	93		
2	91		
1.18	88		
0.6	85	Particle density	(assumed)
0.425	83	2.65	Mg/m3
0.3	80		
0.212	73		
0.15	68		
0.063	61		

Dry Mass of sample, g	644

Sample Proportions	% dry mass
Very coarse	0
Gravel	9
Sand	30
Silt	32
Clay	29

Grading Analysis		
D100	mm	
D60	mm	0.0544
D30	mm	0.00377
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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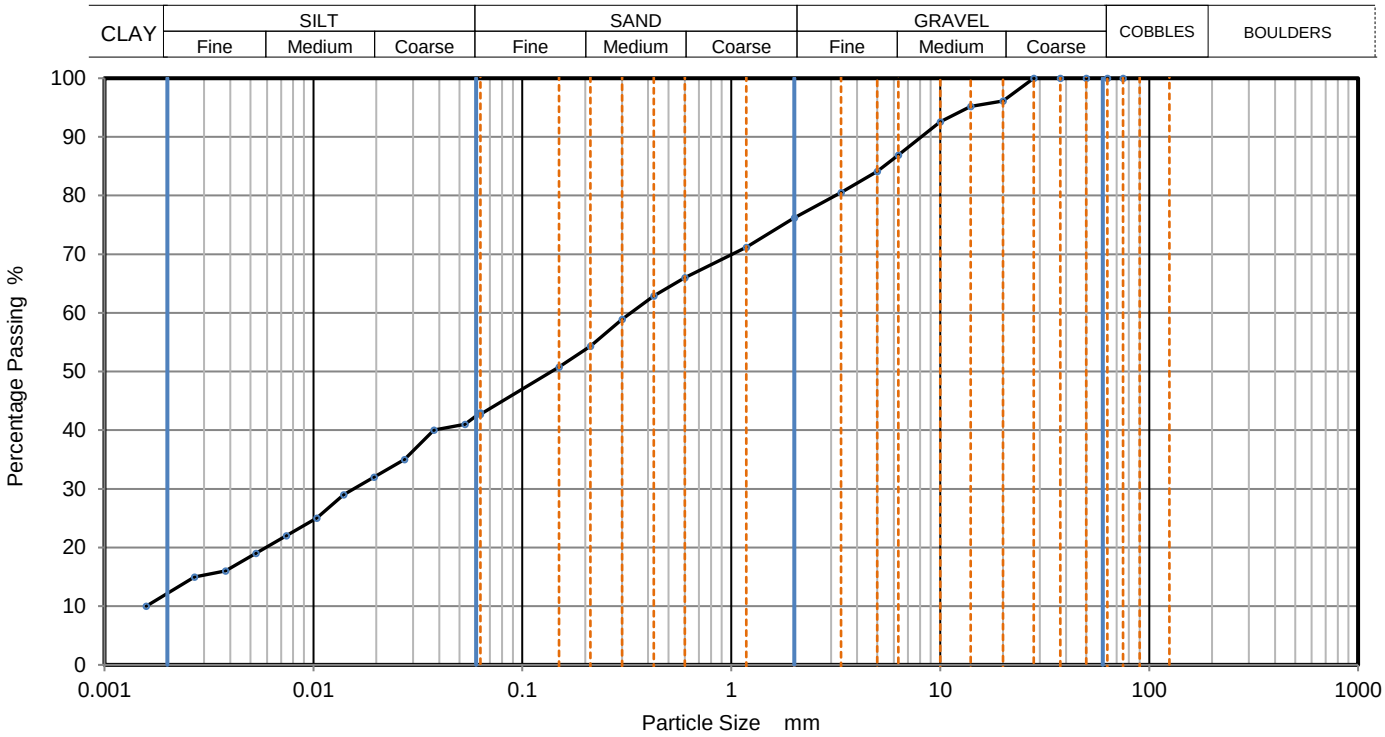
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP217
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greyish-brown slightly gravelly sandy SILT.	Depth, m	1.60
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051747



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	43
		0.0531	41
75	100	0.0378	40
63	100	0.0272	35
50	100	0.0195	32
37.5	100	0.0140	29
28	100	0.0104	25
20	96	0.0074	22
14	95	0.0053	19
10	93	0.0038	16
6.3	87	0.0027	15
5	84	0.0016	10
3.35	81		
2	76		
1.18	71		
0.6	66	Particle density	(assumed)
0.425	63	2.65	Mg/m3
0.3	59		
0.212	54		
0.15	51		
0.063	43		

Dry Mass of sample, g	709

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	34
Silt	31
Clay	12

Grading Analysis		
D100	mm	
D60	mm	0.329
D30	mm	0.0149
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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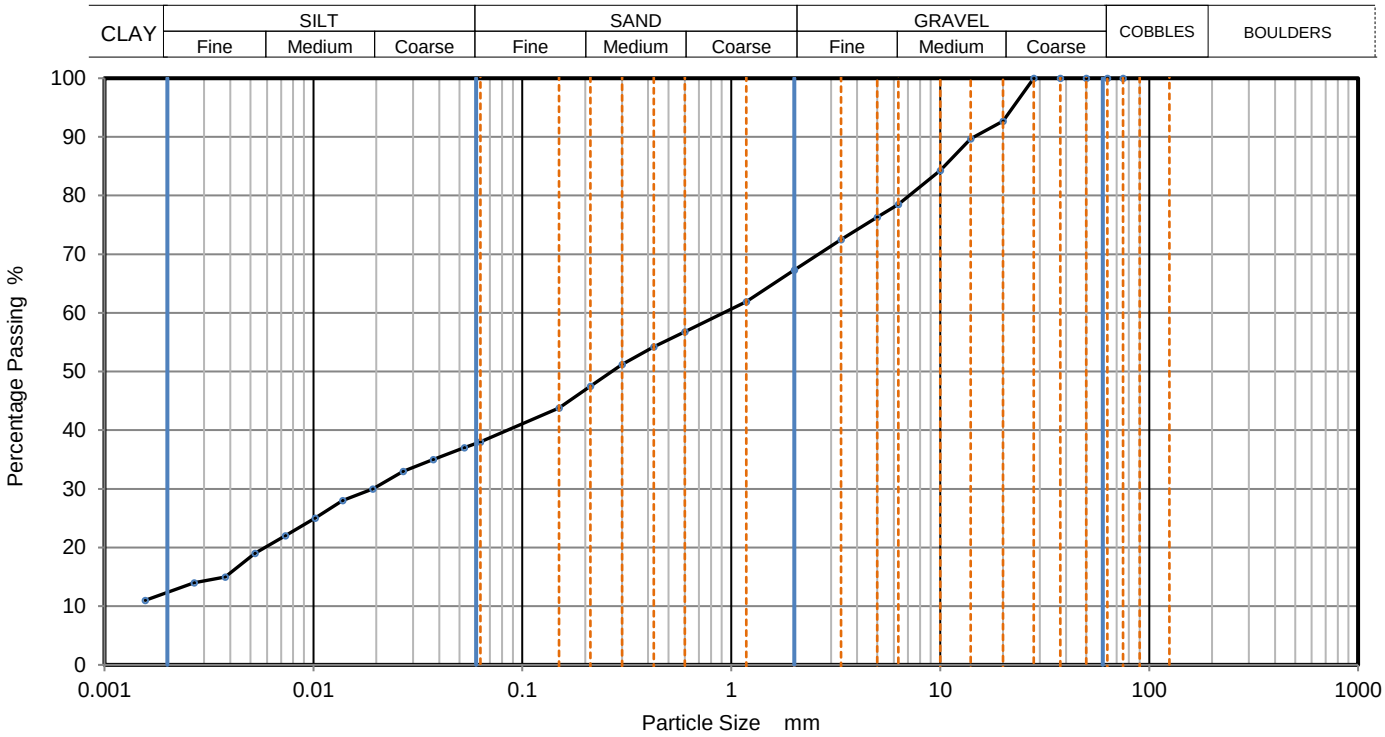
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP218
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brown slightly sandy slightly gravelly SILT.	Depth, m	0.60
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051753



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	38
		0.0527	37
75	100	0.0375	35
63	100	0.0269	33
50	100	0.0193	30
37.5	100	0.0138	28
28	100	0.0102	25
20	93	0.0073	22
14	90	0.0053	19
10	84	0.0038	15
6.3	79	0.0027	14
5	76	0.0016	11
3.35	73		
2	67		
1.18	62		
0.6	57	Particle density	(assumed)
0.425	54	2.65	Mg/m3
0.3	51		
0.212	48		
0.15	44		
0.063	38		

Dry Mass of sample, g	547

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	29
Silt	26
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.917
D30	mm	0.0183
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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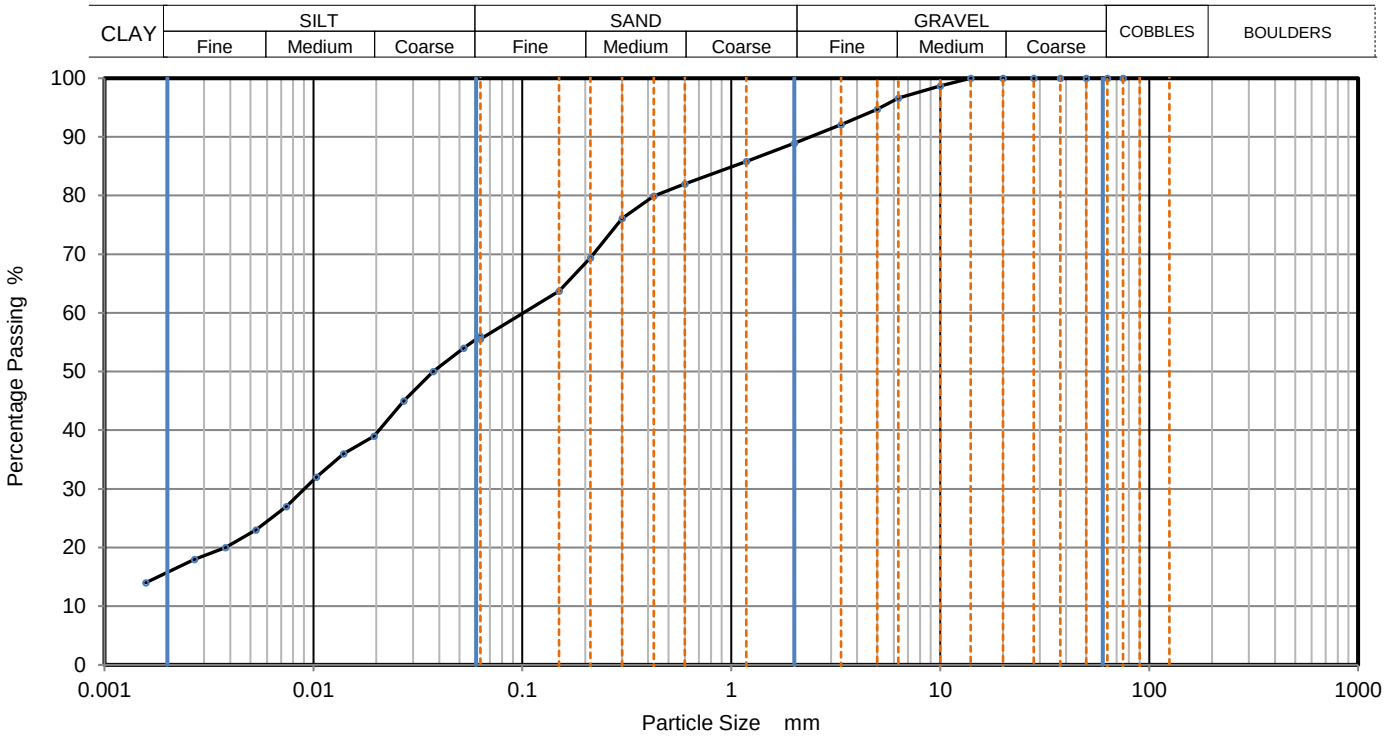
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP219
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brown slightly gravelly slightly sandy SILT.	Depth, m	0.60
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051761



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	56
		0.0523	54
75	100	0.0375	50
63	100	0.0271	45
50	100	0.0195	39
37.5	100	0.0140	36
28	100	0.0103	32
20	100	0.0074	27
14	100	0.0053	23
10	99	0.0038	20
6.3	97	0.0027	18
5	95	0.0016	14
3.35	92		
2	89		
1.18	86		
0.6	82	Particle density (assumed)	
0.425	80	2.65 Mg/m3	
0.3	76		
0.212	69		
0.15	64		
0.063	56		

Dry Mass of sample, g: 726

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	33
Silt	40
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.101
D30	mm	0.009
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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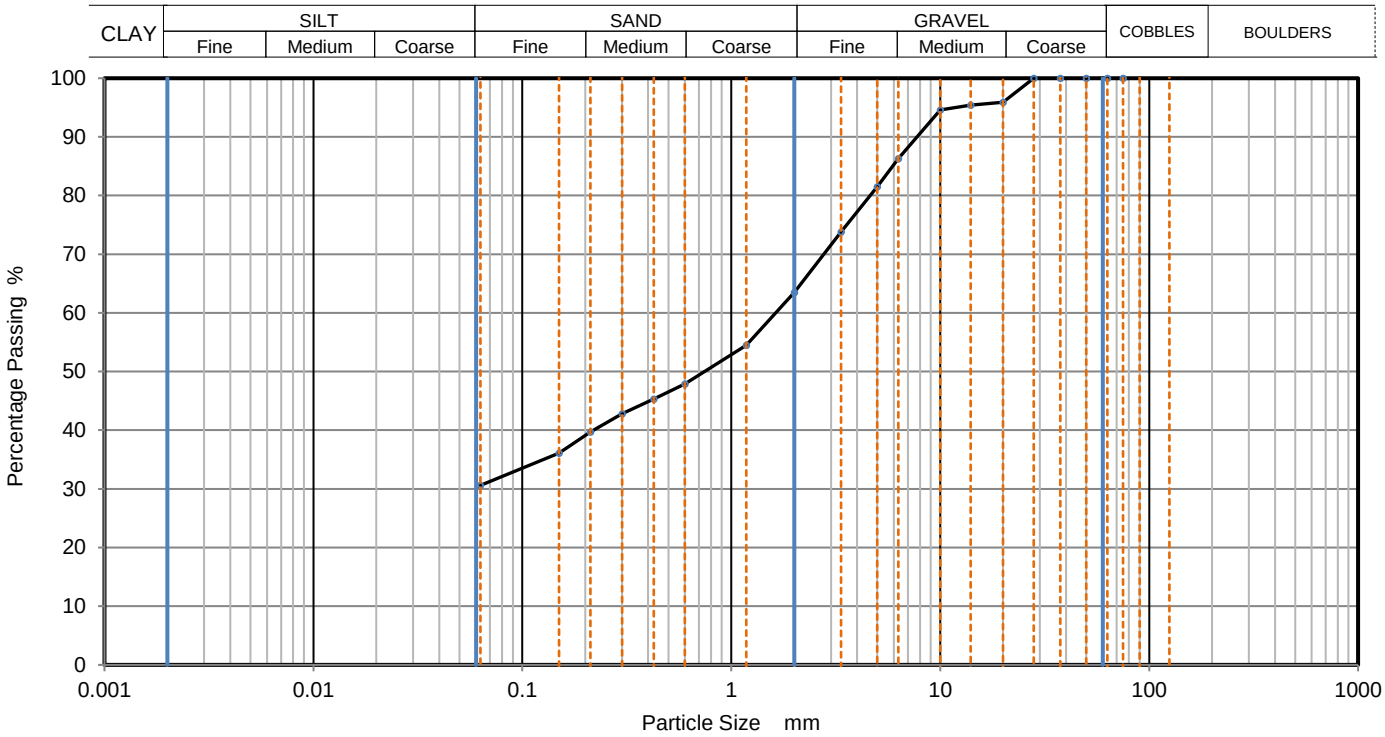
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP220
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greyish-brown very silty SAND and GRAVEL.	Depth, m	2.40
Specimen Reference	Specimen Depth: m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023051771



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	95		
10	95		
6.3	86		
5	82		
3.35	74		
2	64		
1.18	55		
0.6	48		
0.425	45		
0.3	43		
0.212	40		
0.15	36		
0.063	31		

Dry Mass of sample, g	780

Sample Proportions	% dry mass
Very coarse	0
Gravel	37
Sand	33
Fines <0.063mm	31

Grading Analysis		
D100	mm	
D60	mm	1.62
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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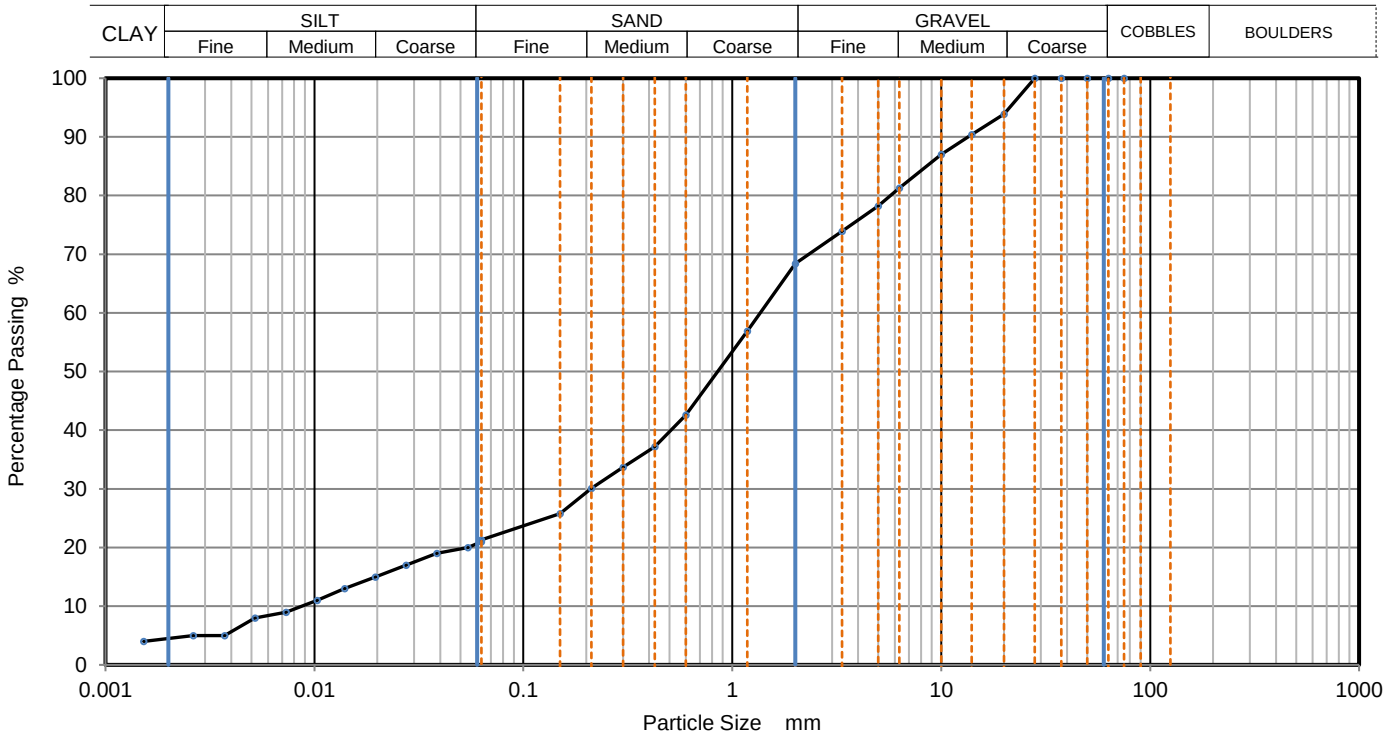
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP221
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown very silty very gravelly coarse SAND.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202306221



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	21
		0.0542	20
75	100	0.0386	19
63	100	0.0274	17
50	100	0.0196	15
37.5	100	0.0139	13
28	100	0.0103	11
20	94	0.0073	9
14	90	0.0052	8
10	87	0.0037	5
6.3	81	0.0026	5
5	78	0.0015	4
3.35	74		
2	68		
1.18	57		
0.6	43	Particle density	(assumed)
0.425	37	2.65	Mg/m3
0.3	34		
0.212	30		
0.15	26		
0.063	21		

Dry Mass of sample, g	738

Sample Proportions	% dry mass
Very coarse	0
Gravel	32
Sand	47
Silt	17
Clay	5

Grading Analysis		
D100	mm	
D60	mm	1.36
D30	mm	0.21
D10	mm	0.00871
Uniformity Coefficient		160
Curvature Coefficient		3.7

Remarks

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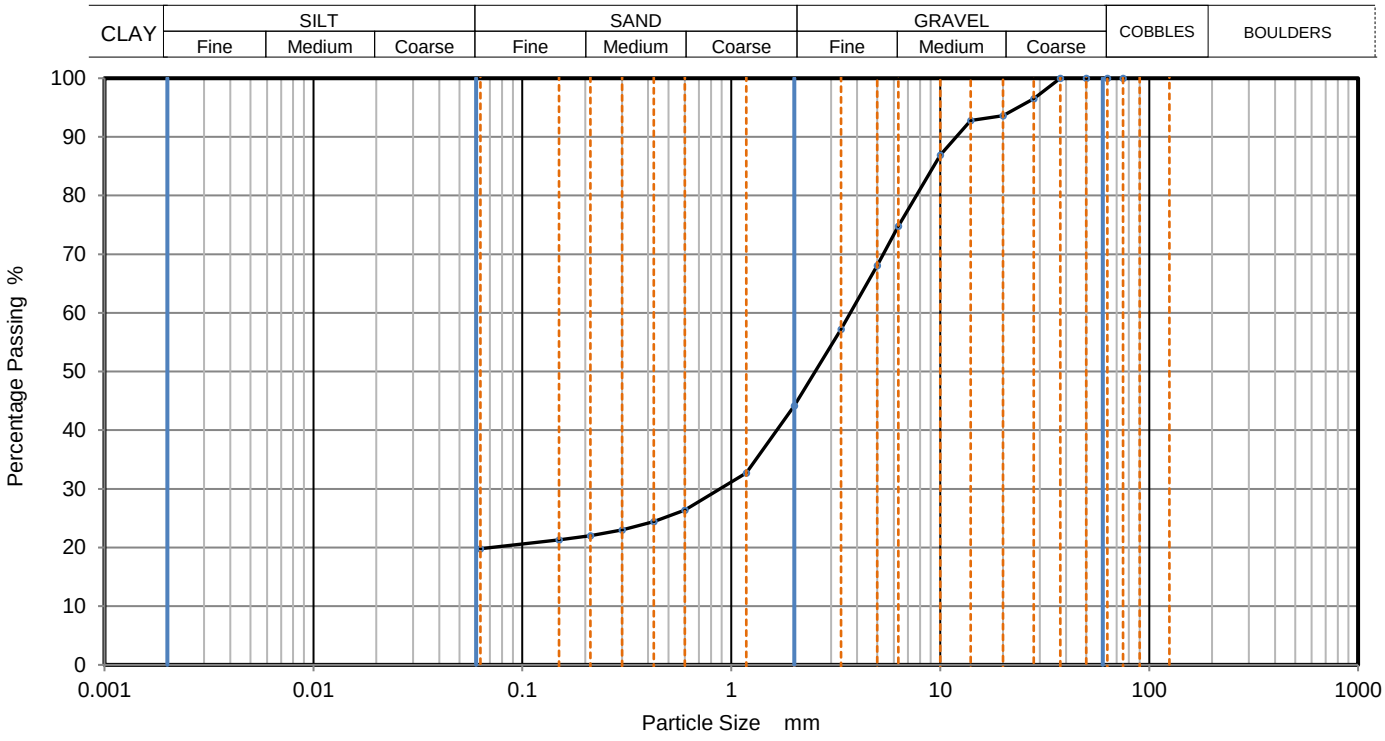
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP222
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Greyish-black very silty very sandy fine GRAVEL.	Depth, m	2.70
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL1202306224



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	97		
20	94		
14	93		
10	87		
6.3	75		
5	68		
3.35	57		
2	44		
1.18	33		
0.6	26		
0.425	24		
0.3	23		
0.212	22		
0.15	21		
0.063	20		

Dry Mass of sample, g	876

Sample Proportions	% dry mass
Very coarse	0
Gravel	56
Sand	24
Fines <0.063mm	20

Grading Analysis		
D100	mm	
D60	mm	3.71
D30	mm	0.881
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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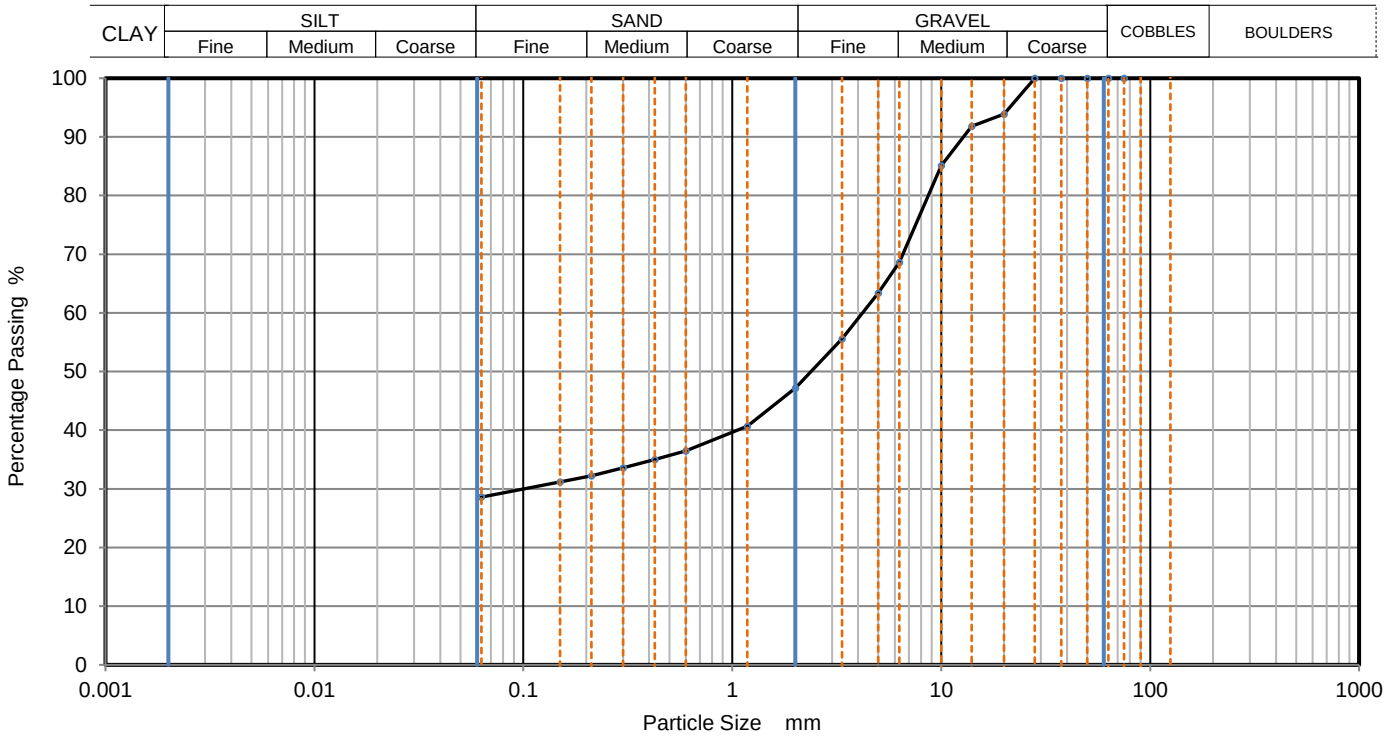
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP224
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Dark brown sandy very silty fine and medium GRAVEL.	Depth, m	2.30
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL1202306228



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	94		
14	92		
10	85		
6.3	69		
5	63		
3.35	56		
2	47		
1.18	41		
0.6	37		
0.425	35		
0.3	34		
0.212	32		
0.15	31		
0.063	29		

Dry Mass of sample, g: 1028

Sample Proportions	% dry mass
Very coarse	0
Gravel	53
Sand	19
Fines <0.063mm	29

Grading Analysis		
D100	mm	
D60	mm	4.2
D30	mm	0.1
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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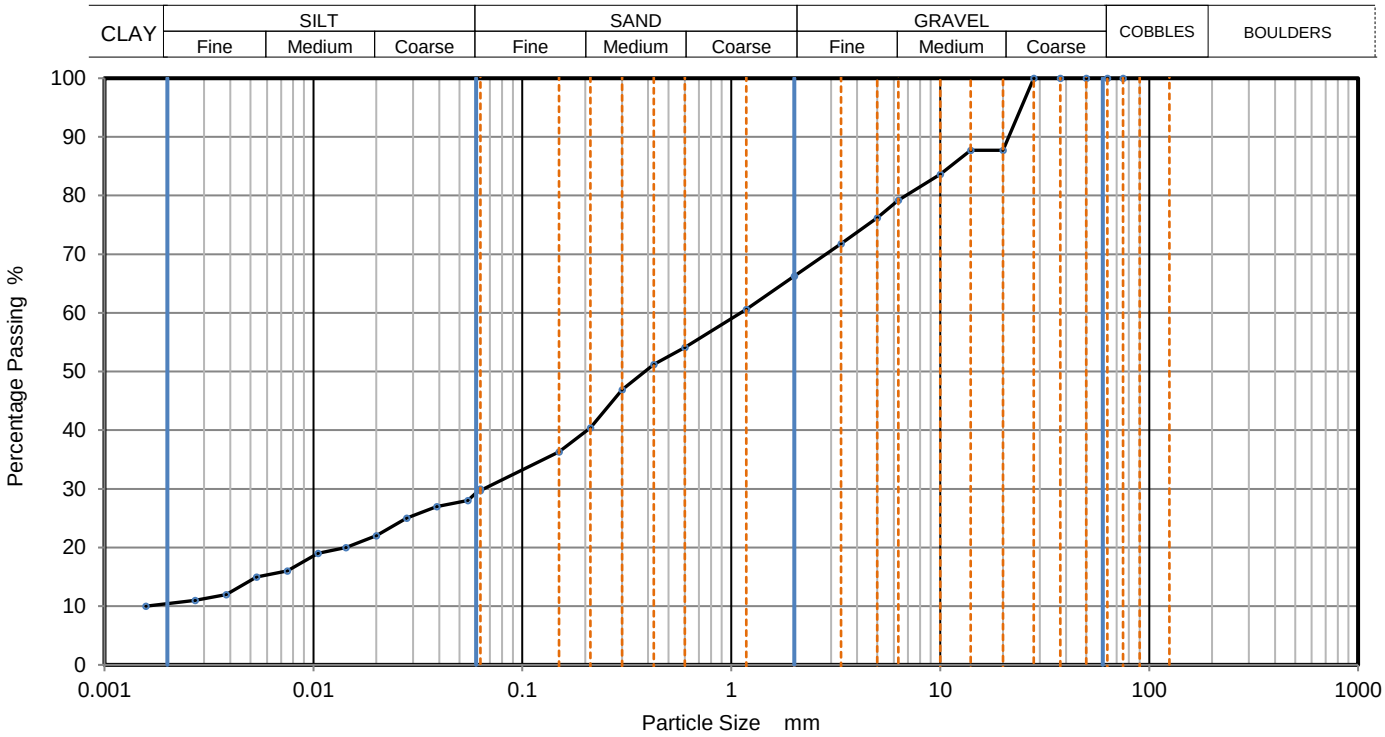
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP302
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Blackish-brown very silty SAND and GRAVEL.	Depth, m	0.90
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023053011



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	30
		0.0548	28
75	100	0.0390	27
63	100	0.0279	25
50	100	0.0200	22
37.5	100	0.0143	20
28	100	0.0105	19
20	88	0.0075	16
14	88	0.0053	15
10	84	0.0038	12
6.3	79	0.0027	11
5	76	0.0016	10
3.35	72		
2	66		
1.18	61		
0.6	54	Particle density	(assumed)
0.425	51	2.65	Mg/m3
0.3	47		
0.212	40		
0.15	36		
0.063	30		

Dry Mass of sample, g: 527

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	37
Silt	19
Clay	10

Grading Analysis		
D100	mm	
D60	mm	1.11
D30	mm	0.0657
D10	mm	0.00165
Uniformity Coefficient		670
Curvature Coefficient		2.4

Remarks

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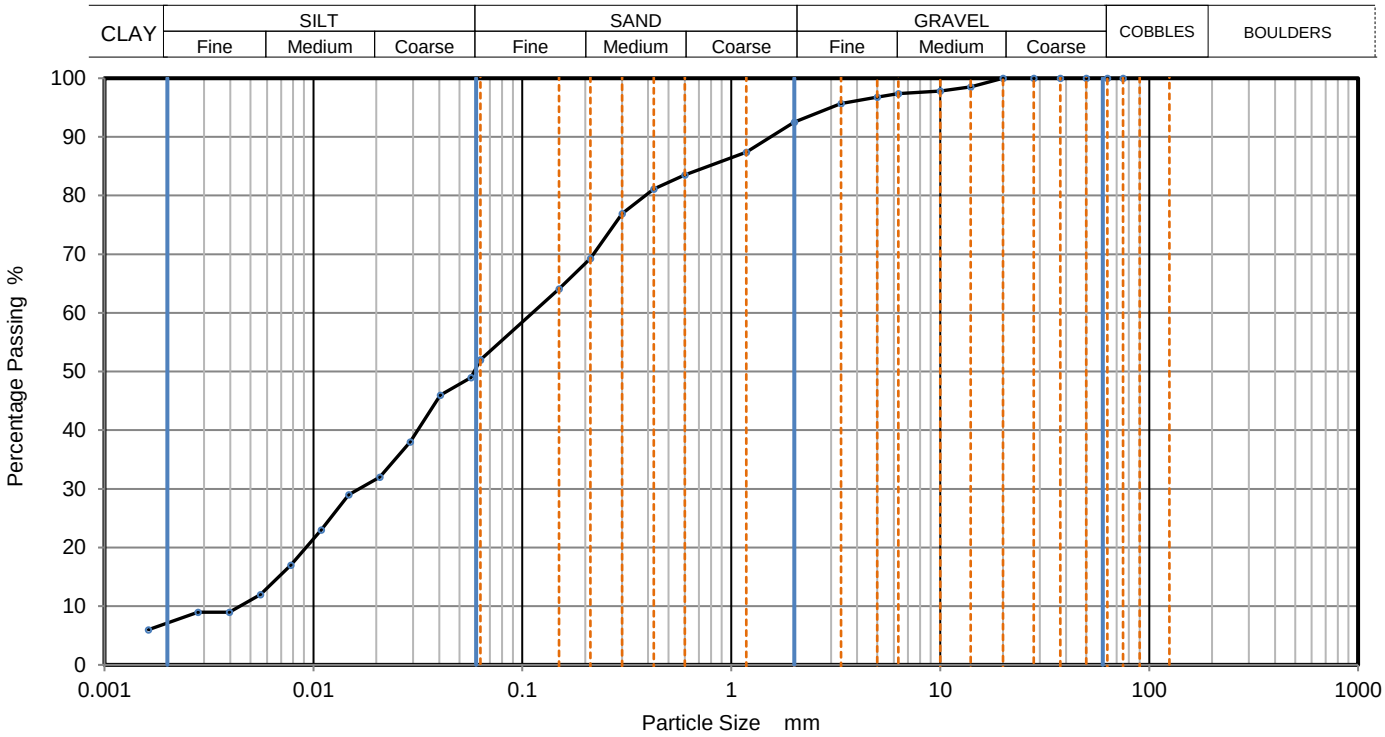
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP303
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Black-brown PEAT, with sand sized particles.	Depth, m	2.20
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023053019



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	52
		0.0569	49
75	100	0.0404	46
63	100	0.0291	38
50	100	0.0208	32
37.5	100	0.0148	29
28	100	0.0109	23
20	100	0.0078	17
14	99	0.0056	12
10	98	0.0040	9
6.3	97	0.0028	9
5	97	0.0016	6
3.35	96		
2	93		
1.18	87		
0.6	84	Particle density	(assumed)
0.425	81	2.65	Mg/m3
0.3	77		
0.212	69		
0.15	64		
0.063	52		

Dry Mass of sample, g	396

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	41
Silt	45
Clay	7

Grading Analysis		
D100	mm	
D60	mm	0.112
D30	mm	0.0169
D10	mm	0.00464
Uniformity Coefficient		24
Curvature Coefficient		0.55

Remarks

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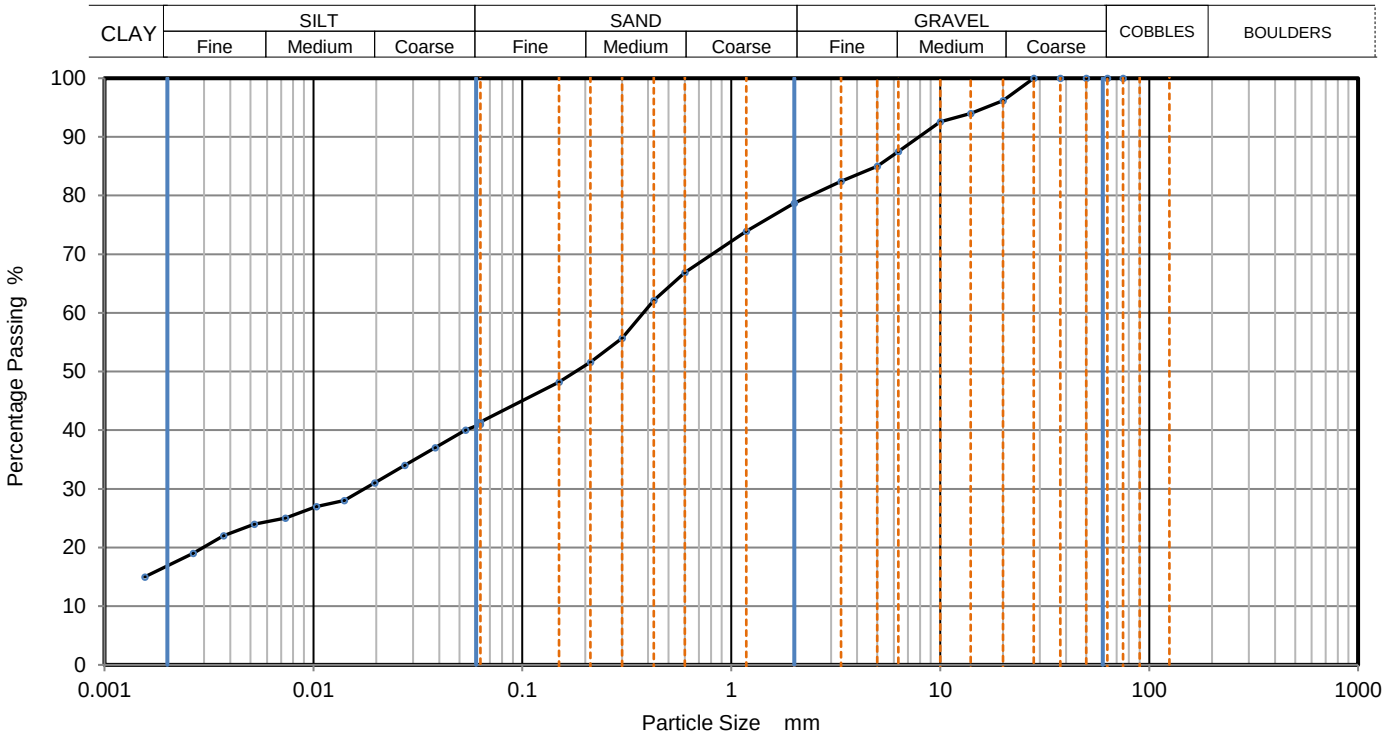
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP305
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown slightly gravelly sandy SILT.	Depth, m	0.80
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023053031



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0534	40
75	100	0.0383	37
63	100	0.0274	34
50	100	0.0196	31
37.5	100	0.0140	28
28	100	0.0103	27
20	96	0.0073	25
14	94	0.0052	24
10	93	0.0037	22
6.3	88	0.0027	19
5	85	0.0016	15
3.35	82		
2	79		
1.18	74		
0.6	67	Particle density (assumed)	
0.425	62	2.65 Mg/m3	
0.3	56		
0.212	52		
0.15	48		
0.063	41		

Dry Mass of sample, g	699

Sample Proportions	% dry mass
Very coarse	0
Gravel	21
Sand	37
Silt	25
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.38
D30	mm	0.0174
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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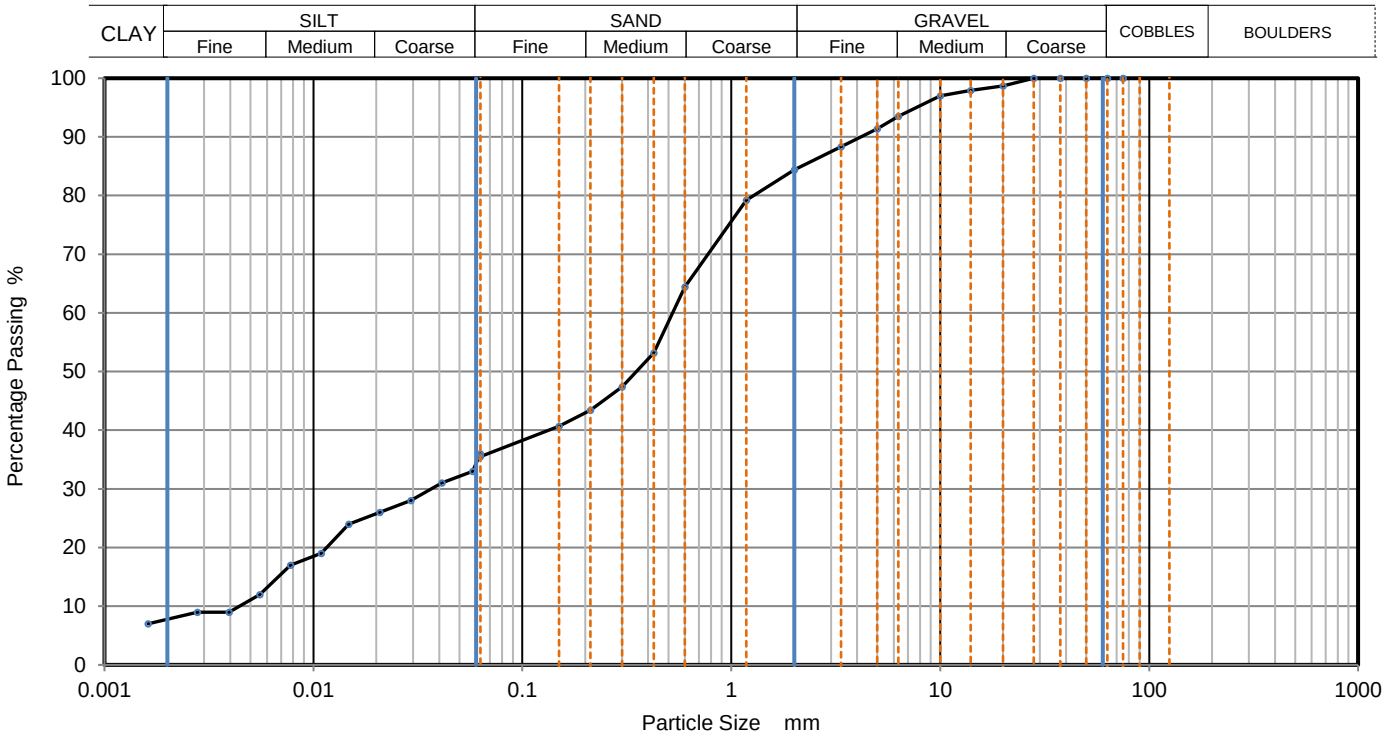
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP308
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Brownish-grey slightly gravelly sandy SILT.	Depth, m	1.30
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060224



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	36
		0.0578	33
75	100	0.0411	31
63	100	0.0292	28
50	100	0.0208	26
37.5	100	0.0148	24
28	100	0.0109	19
20	99	0.0078	17
14	98	0.0055	12
10	97	0.0039	9
6.3	94	0.0028	9
5	91	0.0016	7
3.35	88		
2	84		
1.18	79		
0.6	64	Particle density	(assumed)
0.425	53	2.65	Mg/m3
0.3	47		
0.212	43		
0.15	41		
0.063	36		

Dry Mass of sample, g	653

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	49
Silt	28
Clay	8

Grading Analysis		
D100	mm	
D60	mm	0.524
D30	mm	0.0368
D10	mm	0.00425
Uniformity Coefficient		120
Curvature Coefficient		0.61

Remarks

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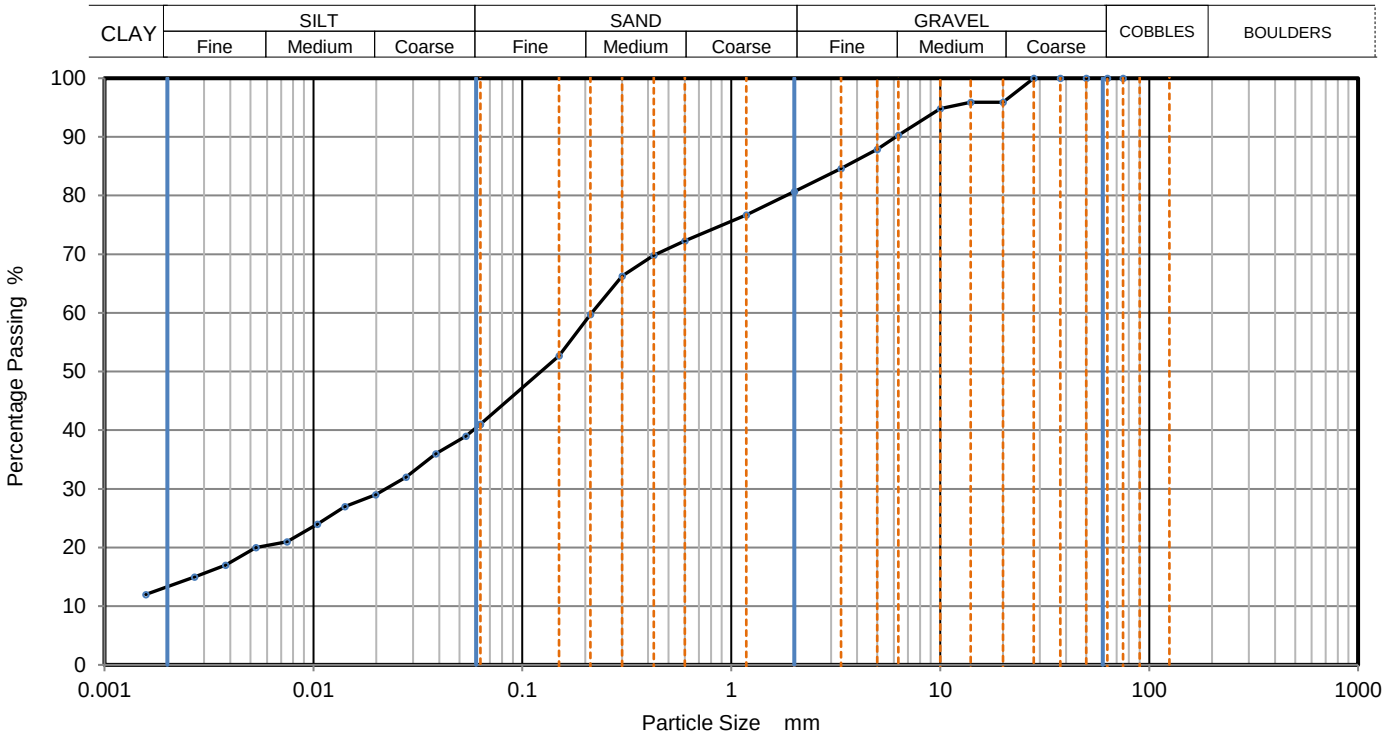
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP312
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Brownish-grey slightly gravelly sandy SILT.	Depth, m	1.20
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202306091



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0538	39
75	100	0.0385	36
63	100	0.0278	32
50	100	0.0199	29
37.5	100	0.0141	27
28	100	0.0104	24
20	96	0.0075	21
14	96	0.0053	20
10	95	0.0038	17
6.3	90	0.0027	15
5	88	0.0016	12
3.35	85		
2	81		
1.18	77		
0.6	72	Particle density	(assumed)
0.425	70	2.65	Mg/m3
0.3	66		
0.212	60		
0.15	53		
0.063	41		

Dry Mass of sample, g	861

Sample Proportions	% dry mass
Very coarse	0
Gravel	19
Sand	40
Silt	28
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.216
D30	mm	0.0225
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

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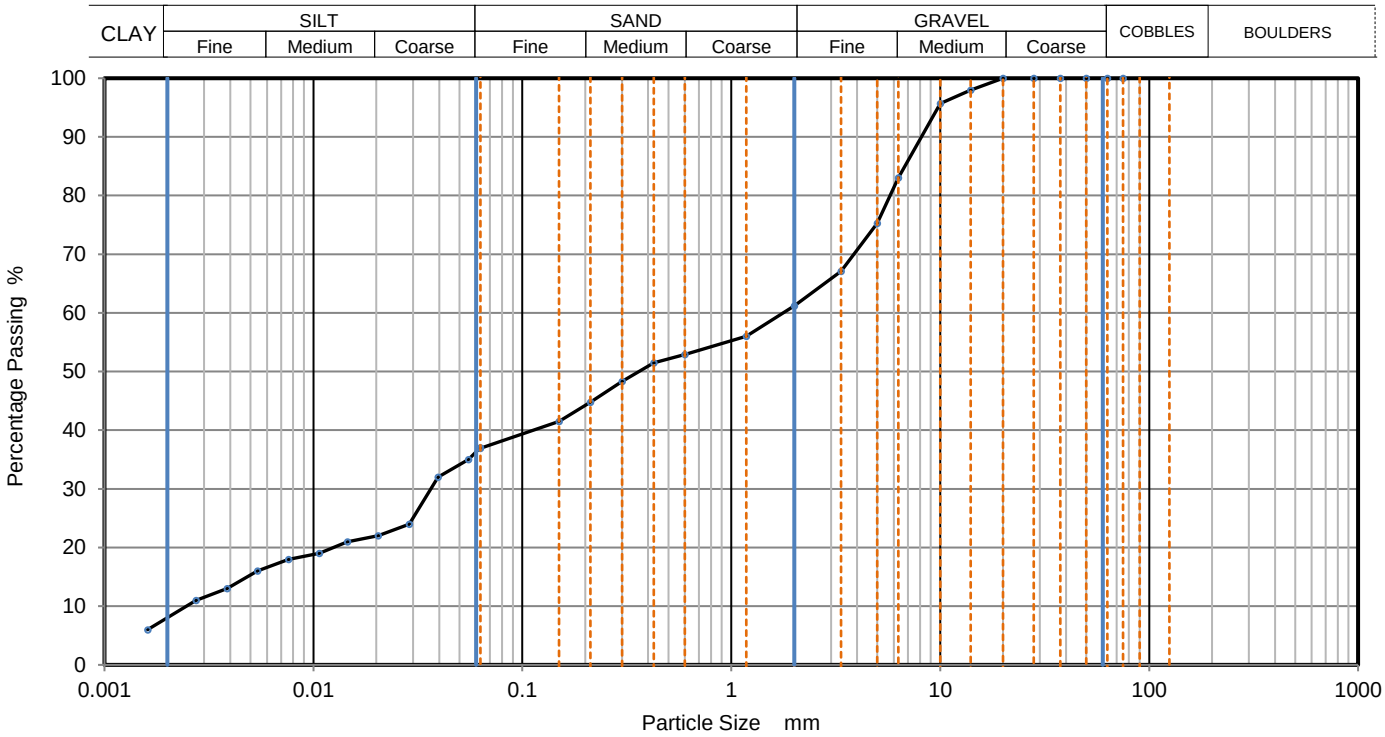
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPBP01
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Dark blackish-brown slightly sandy gravelly SILT.	Depth, m	1.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060257



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	37
		0.0552	35
75	100	0.0395	32
63	100	0.0288	24
50	100	0.0205	22
37.5	100	0.0145	21
28	100	0.0107	19
20	100	0.0076	18
14	98	0.0054	16
10	96	0.0039	13
6.3	83	0.0027	11
5	75	0.0016	6
3.35	67		
2	61		
1.18	56		
0.6	53	Particle density	(assumed)
0.425	52	2.65	Mg/m3
0.3	48		
0.212	45		
0.15	42		
0.063	37		

Dry Mass of sample, g	381

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	24
Silt	29
Clay	8

Grading Analysis		
D100	mm	
D60	mm	1.77
D30	mm	0.0364
D10	mm	0.00239
Uniformity Coefficient		740
Curvature Coefficient		0.31

Remarks

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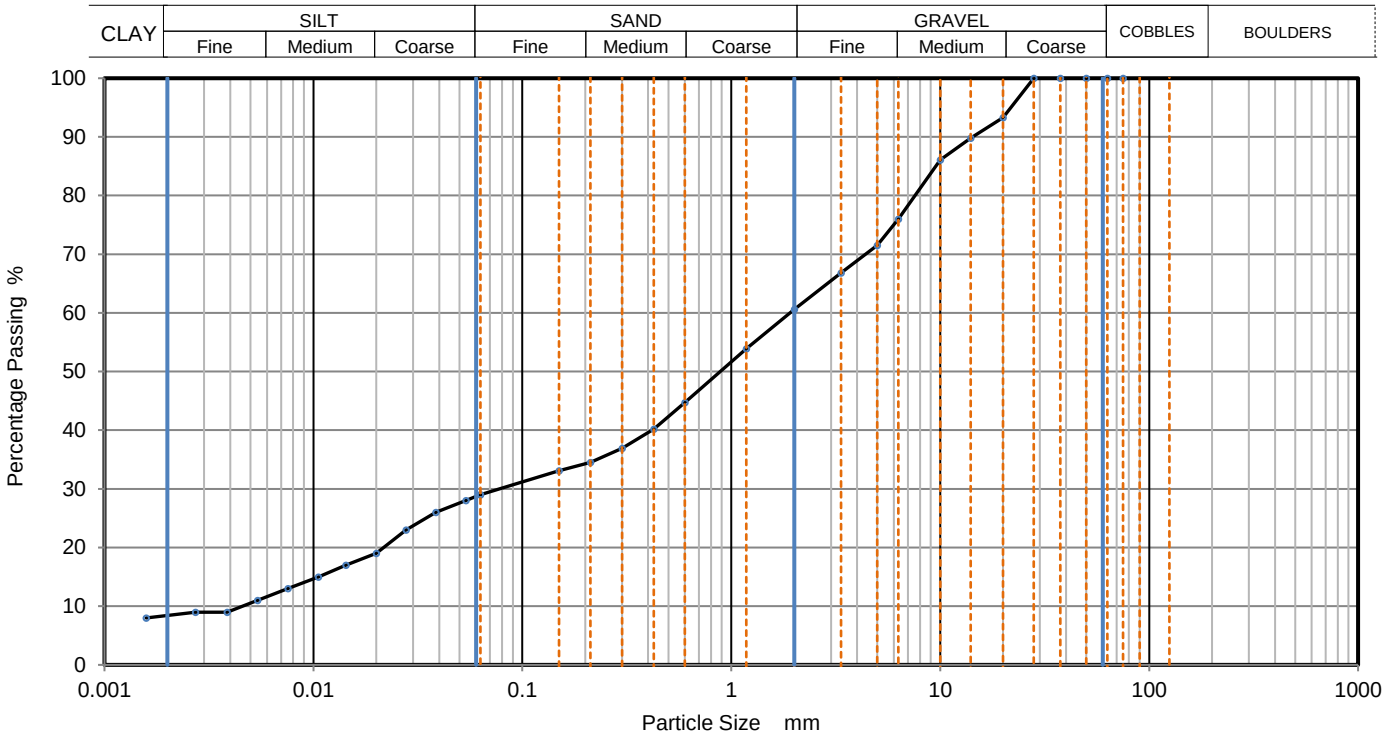
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPBP06
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Brownish-grey very silty very sandy GRAVEL.	Depth, m	1.20
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060283



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	29
		0.0538	28
75	100	0.0385	26
63	100	0.0278	23
50	100	0.0200	19
37.5	100	0.0143	17
28	100	0.0106	15
20	93	0.0076	13
14	90	0.0054	11
10	86	0.0039	9
6.3	76	0.0027	9
5	72	0.0016	8
3.35	67		
2	61		
1.18	54		
0.6	45	Particle density	(assumed)
0.425	40	2.65	Mg/m3
0.3	37		
0.212	35		
0.15	33		
0.063	29		

Dry Mass of sample, g	1092

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	32
Silt	21
Clay	8

Grading Analysis		
D100	mm	
D60	mm	1.91
D30	mm	0.0783
D10	mm	0.00481
Uniformity Coefficient		400
Curvature Coefficient		0.67

Remarks

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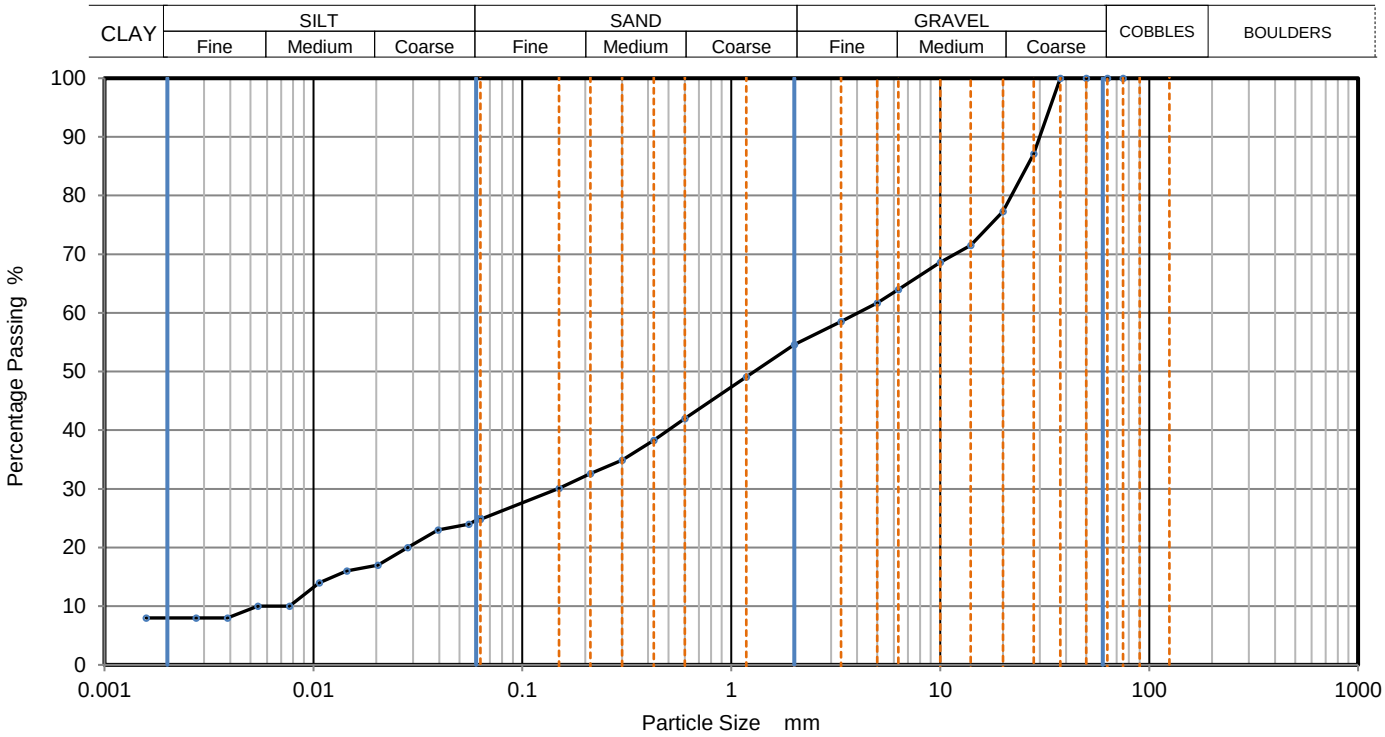
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPBP08
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brownish-black vey silty very sandy coarse GRAVEL.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060292



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	25
		0.0555	24
75	100	0.0395	23
63	100	0.0283	20
50	100	0.0203	17
37.5	100	0.0145	16
28	87	0.0107	14
20	77	0.0077	10
14	72	0.0054	10
10	69	0.0039	8
6.3	64	0.0027	8
5	62	0.0016	8
3.35	59		
2	55		
1.18	49		
0.6	42	Particle density	(assumed)
0.425	38	2.65	Mg/m3
0.3	35		
0.212	33		
0.15	30		
0.063	25		

Dry Mass of sample, g	608

Sample Proportions	% dry mass
Very coarse	0
Gravel	45
Sand	30
Silt	17
Clay	8

Grading Analysis		
D100	mm	
D60	mm	4.04
D30	mm	0.148
D10	mm	0.00531
Uniformity Coefficient		760
Curvature Coefficient		1

Remarks

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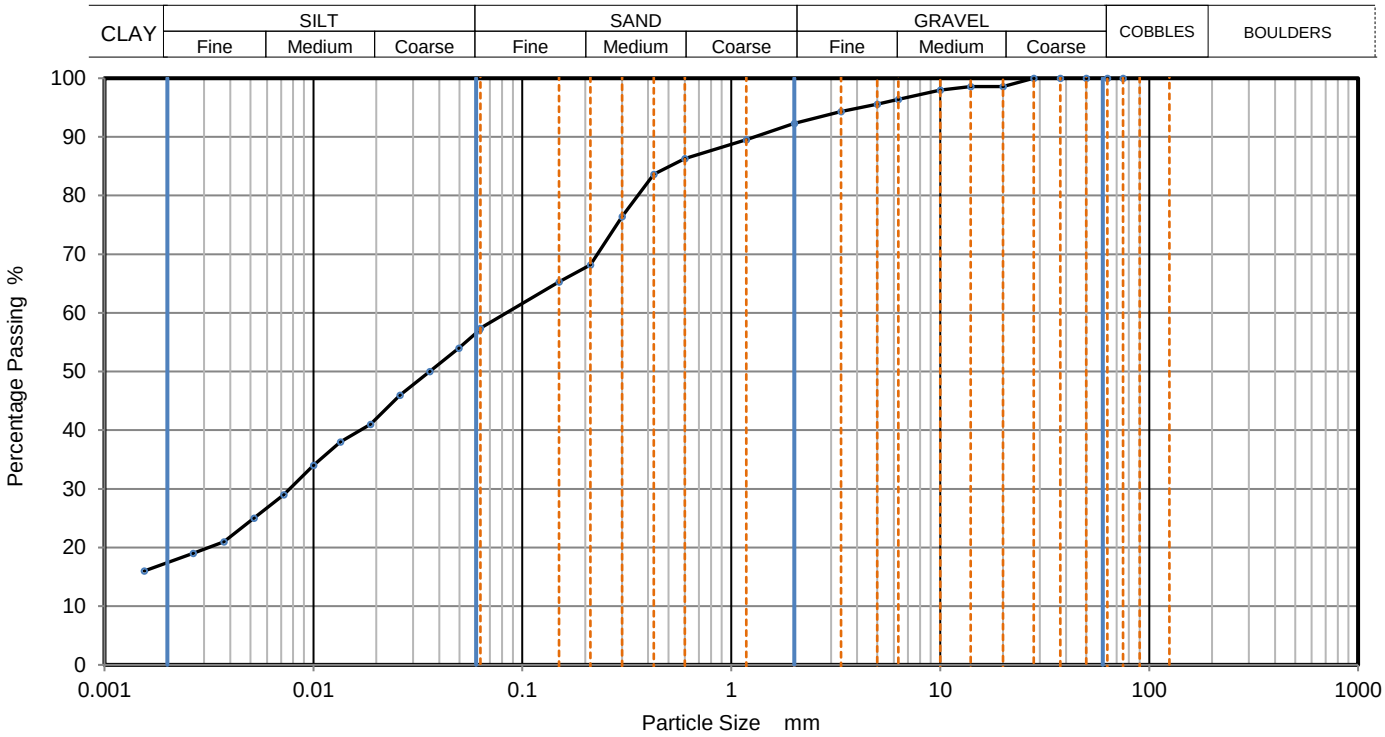
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPC02
Site Name	Derrygreenagh Power	Sample No.	5
Soil Description	Dark grey slightly gravelly sandy SILT.	Depth, m	2.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060924



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0621	57
		0.0497	54
75	100	0.0360	50
63	100	0.0260	46
50	100	0.0188	41
37.5	100	0.0134	38
28	100	0.0100	34
20	99	0.0072	29
14	99	0.0052	25
10	98	0.0037	21
6.3	96	0.0027	19
5	96	0.0015	16
3.35	94		
2	92		
1.18	90		
0.6	86	Particle density	(assumed)
0.425	84	2.65	Mg/m3
0.3	76		
0.212	68		
0.15	65		
0.063	57		

Dry Mass of sample, g	763

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	35
Silt	40
Clay	18

Grading Analysis		
D100	mm	
D60	mm	0.084
D30	mm	0.00752
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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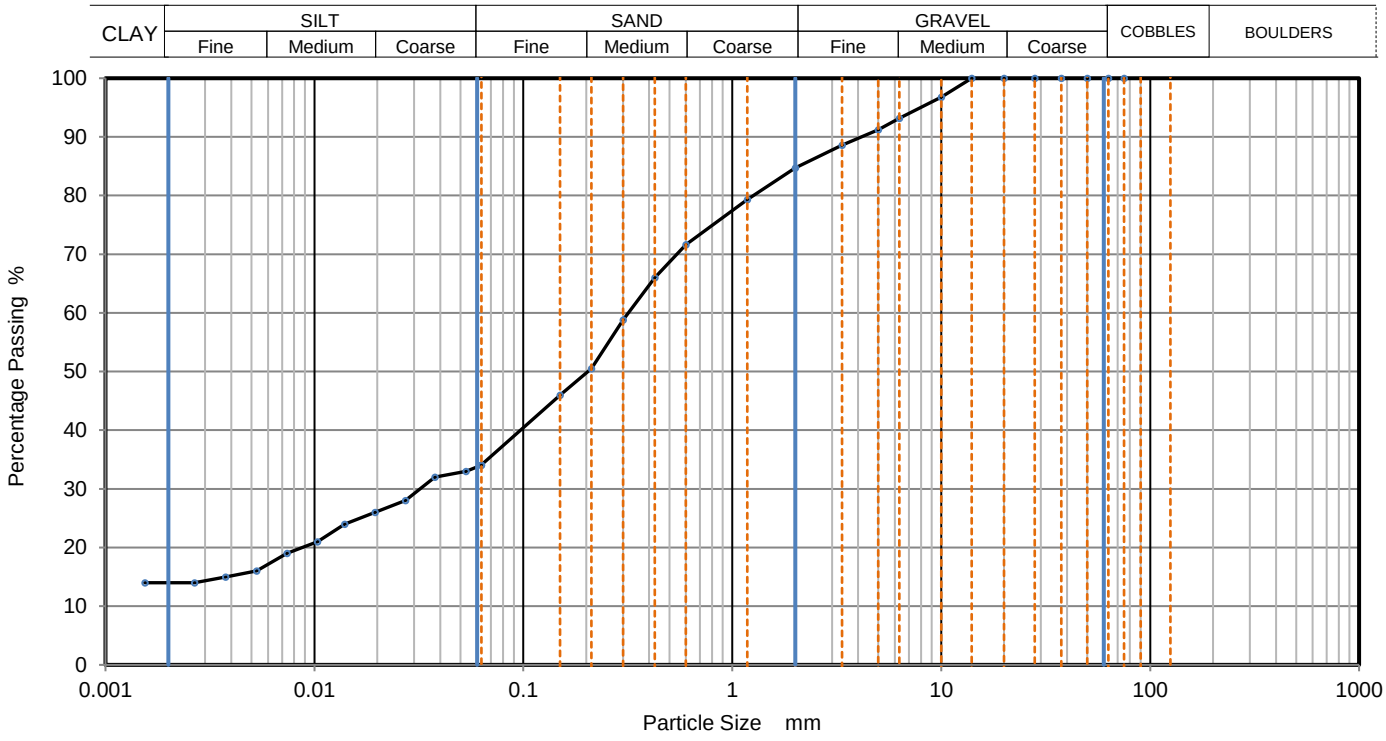
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPC04
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Dark greenish-grey gravelly very silty medium SAND.	Depth, m	1.60
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060942



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	34
		0.0531	33
75	100	0.0378	32
63	100	0.0272	28
50	100	0.0195	26
37.5	100	0.0140	24
28	100	0.0103	21
20	100	0.0074	19
14	100	0.0053	16
10	97	0.0038	15
6.3	93	0.0027	14
5	91	0.0015	14
3.35	89		
2	85		
1.18	79		
0.6	72	Particle density	(assumed)
0.425	66	2.65	Mg/m3
0.3	59		
0.212	51		
0.15	46		
0.063	34		

Dry Mass of sample, g: 775

Sample Proportions	% dry mass
Very coarse	0
Gravel	15
Sand	51
Silt	20
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.318
D30	mm	0.0321
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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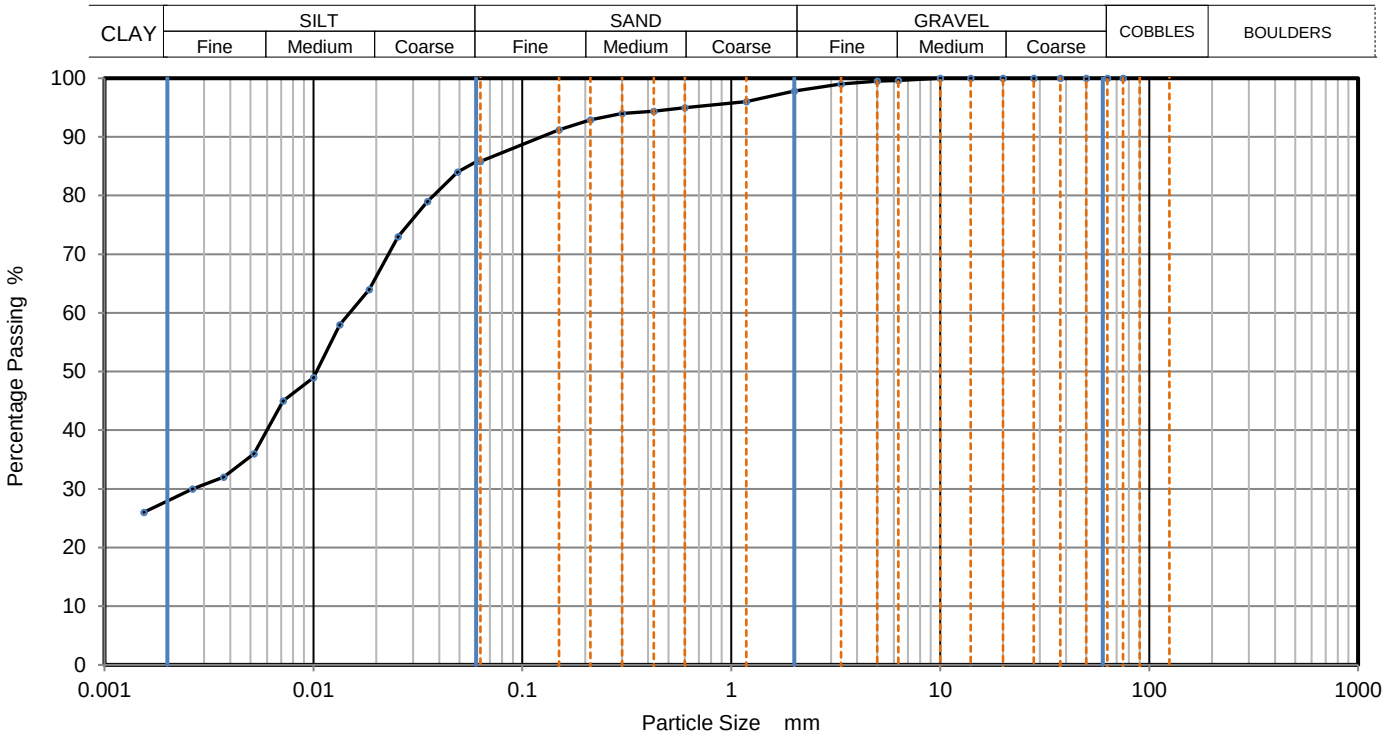
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPC06
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Black and greeenish-grey slightly gravelly slightly sandy SILT.	Depth, m	2.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060957



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0616	86
		0.0490	84
75	100	0.0352	79
63	100	0.0254	73
50	100	0.0185	64
37.5	100	0.0134	58
28	100	0.0100	49
20	100	0.0072	45
14	100	0.0052	36
10	100	0.0037	32
6.3	100	0.0026	30
5	100	0.0015	26
3.35	99		
2	98		
1.18	96		
0.6	95	Particle density	(assumed)
0.425	94	2.65	Mg/m3
0.3	94		
0.212	93		
0.15	91		
0.063	86		

Dry Mass of sample, g: 555

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	12
Silt	58
Clay	28

Grading Analysis		
D100	mm	
D60	mm	0.0148
D30	mm	0.00263
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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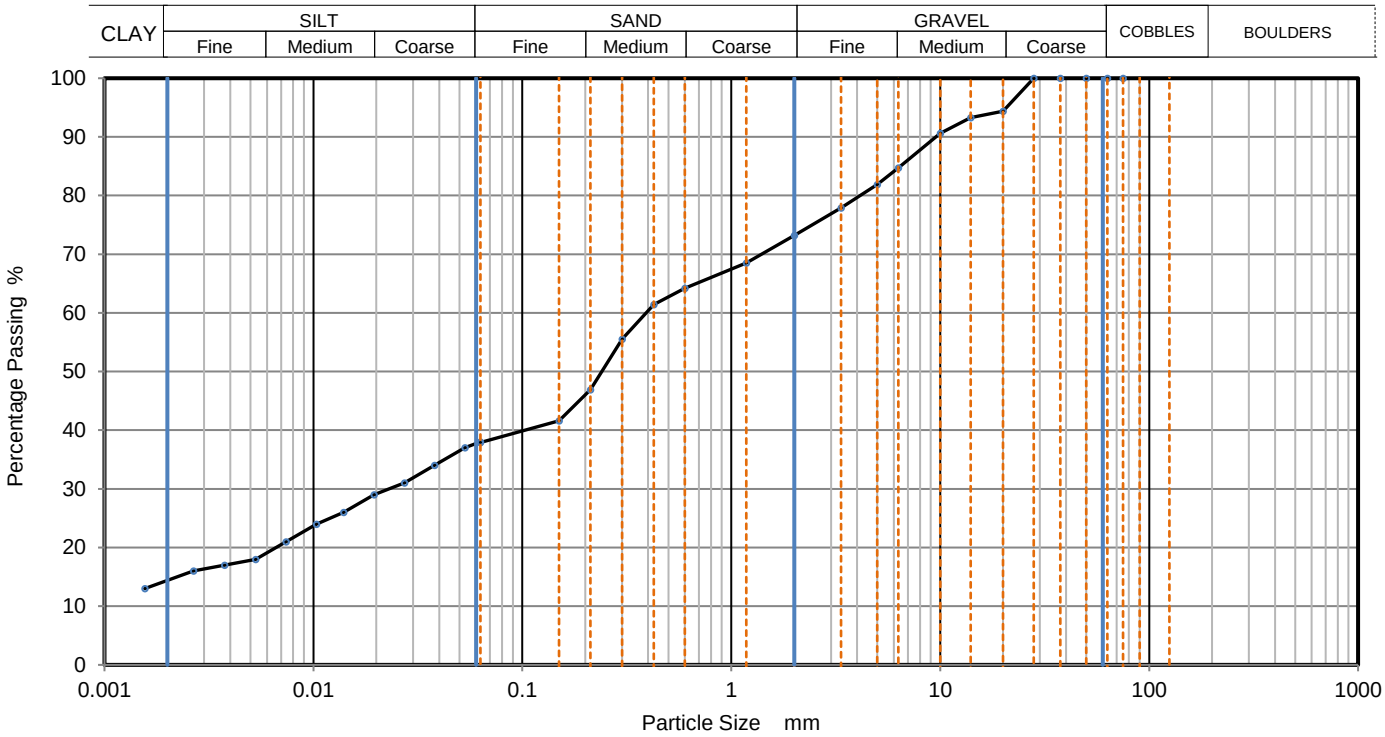
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPC08
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Brownish-grey slightly gravelly sandy SILT.	Depth, m	0.80
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081613



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	38
		0.0531	37
75	100	0.0380	34
63	100	0.0272	31
50	100	0.0195	29
37.5	100	0.0140	26
28	100	0.0103	24
20	94	0.0074	21
14	93	0.0053	18
10	91	0.0038	17
6.3	85	0.0027	16
5	82	0.0016	13
3.35	78		
2	73		
1.18	69		
0.6	64	Particle density	(assumed)
0.425	61	2.65	Mg/m3
0.3	56		
0.212	47		
0.15	42		
0.063	38		

Dry Mass of sample, g: 577

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	35
Silt	24
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.391
D30	mm	0.0229
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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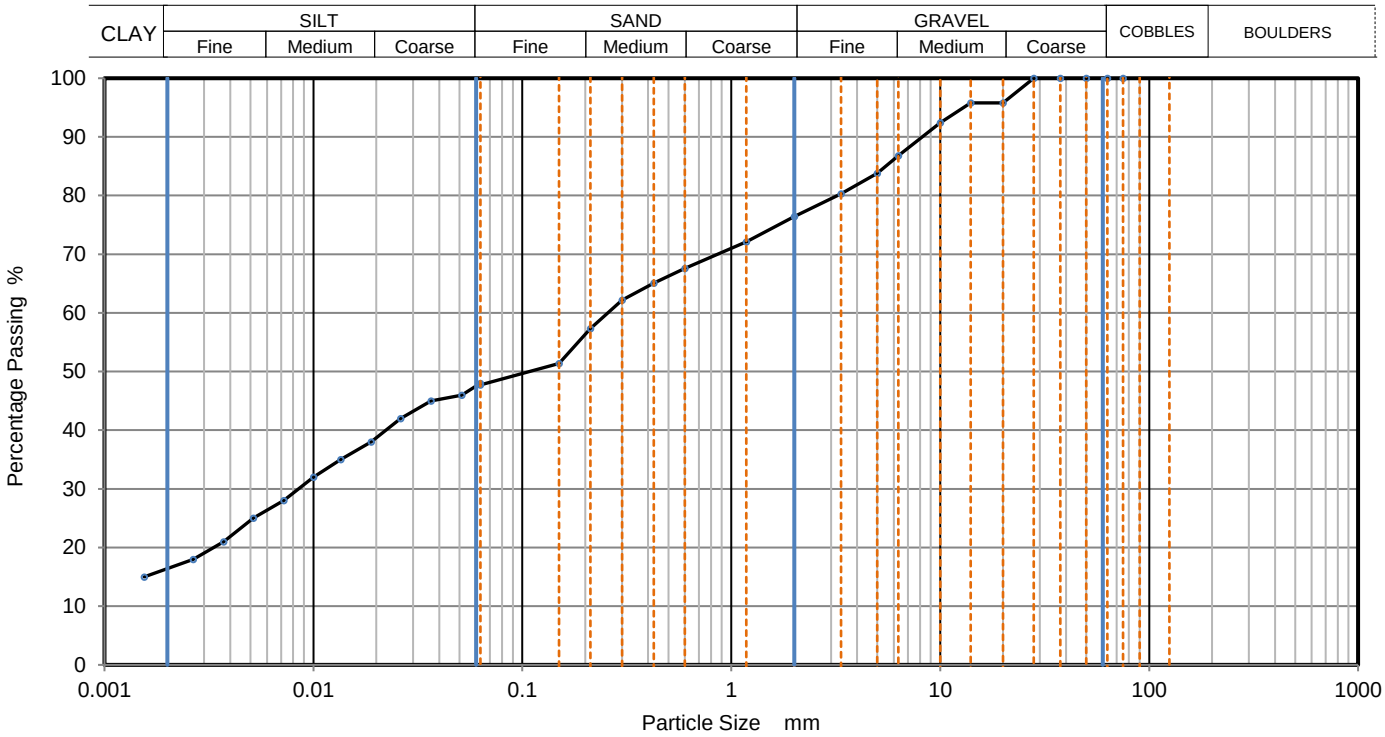
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	TPC08
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description	Brownish-grey slightly gravelly slightly sandy SILT.			Depth, m	2.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL12023081616



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	48
		0.0512	46
75	100	0.0365	45
63	100	0.0262	42
50	100	0.0189	38
37.5	100	0.0135	35
28	100	0.0100	32
20	96	0.0072	28
14	96	0.0052	25
10	92	0.0037	21
6.3	87	0.0027	18
5	84	0.0015	15
3.35	80		
2	76		
1.18	72		
0.6	68	Particle density	(assumed)
0.425	65	2.65	Mg/m3
0.3	62		
0.212	57		
0.15	51		
0.063	48		

Dry Mass of sample, g	827

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	29
Silt	31
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.257
D30	mm	0.00839
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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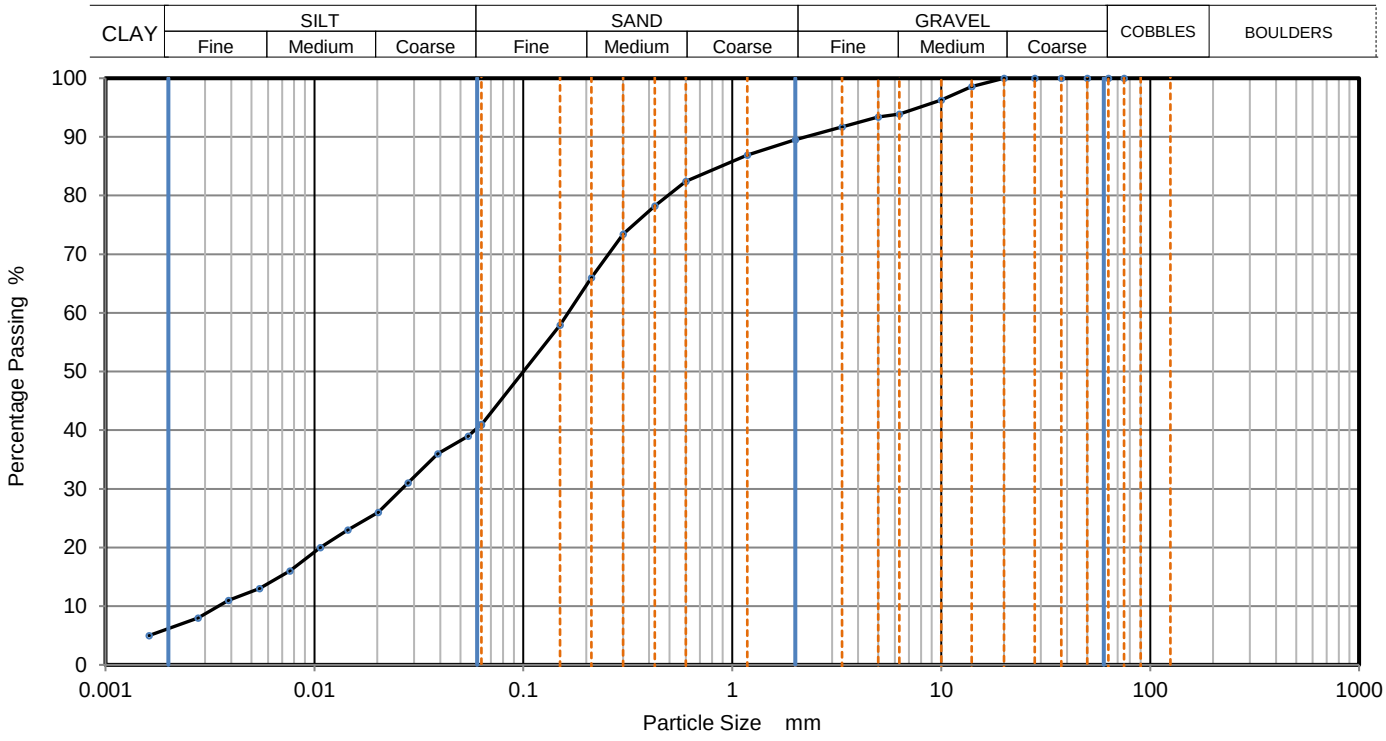
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPC09
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Dark grey slightly gravelly sandy SILT. Sand is fine and medium.	Depth, m	1.30
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081622



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0545	39
75	100	0.0390	36
63	100	0.0281	31
50	100	0.0202	26
37.5	100	0.0145	23
28	100	0.0107	20
20	100	0.0076	16
14	99	0.0055	13
10	96	0.0039	11
6.3	94	0.0028	8
5	93	0.0016	5
3.35	92		
2	90		
1.18	87		
0.6	82	Particle density (assumed)	
0.425	78	2.65 Mg/m3	
0.3	73		
0.212	66		
0.15	58		
0.063	41		

Dry Mass of sample, g	761

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	49
Silt	35
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.164
D30	mm	0.0261
D10	mm	0.00334
Uniformity Coefficient		49
Curvature Coefficient		1.2

Remarks

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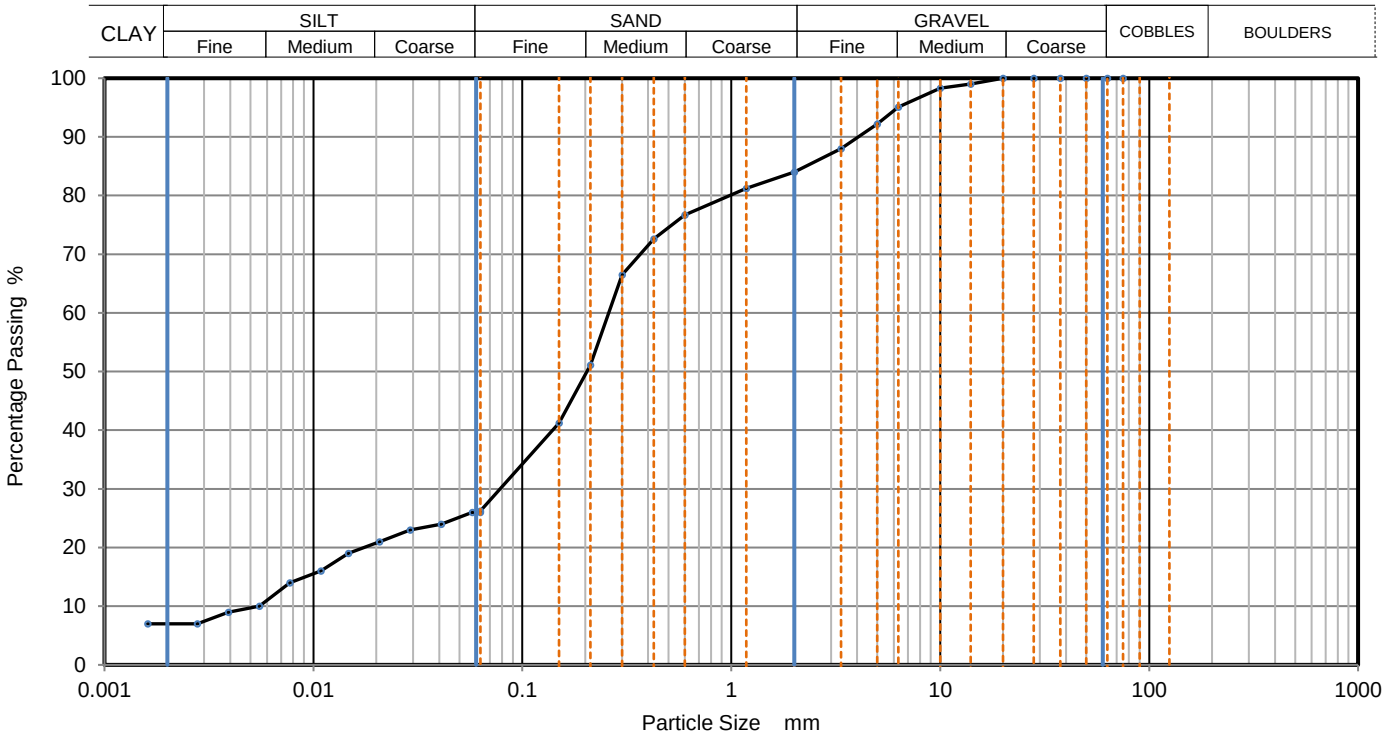
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPCC01
Site Name	Derrygreenagh Power	Sample No.	5
Soil Description	Black and greeenish-grey gravelly very silty fine and medium SAND.	Depth, m	2.90
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060973



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	26
		0.0575	26
75	100	0.0409	24
63	100	0.0291	23
50	100	0.0207	21
37.5	100	0.0147	19
28	100	0.0109	16
20	100	0.0077	14
14	99	0.0055	10
10	98	0.0039	9
6.3	95	0.0028	7
5	92	0.0016	7
3.35	88		
2	84		
1.18	81		
0.6	77	Particle density	(assumed)
0.425	73	2.65	Mg/m3
0.3	67		
0.212	51		
0.15	41		
0.063	26		

Dry Mass of sample, g	350

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	58
Silt	19
Clay	7

Grading Analysis		
D100	mm	
D60	mm	0.259
D30	mm	0.0785
D10	mm	0.00502
Uniformity Coefficient		52
Curvature Coefficient		4.7

Remarks

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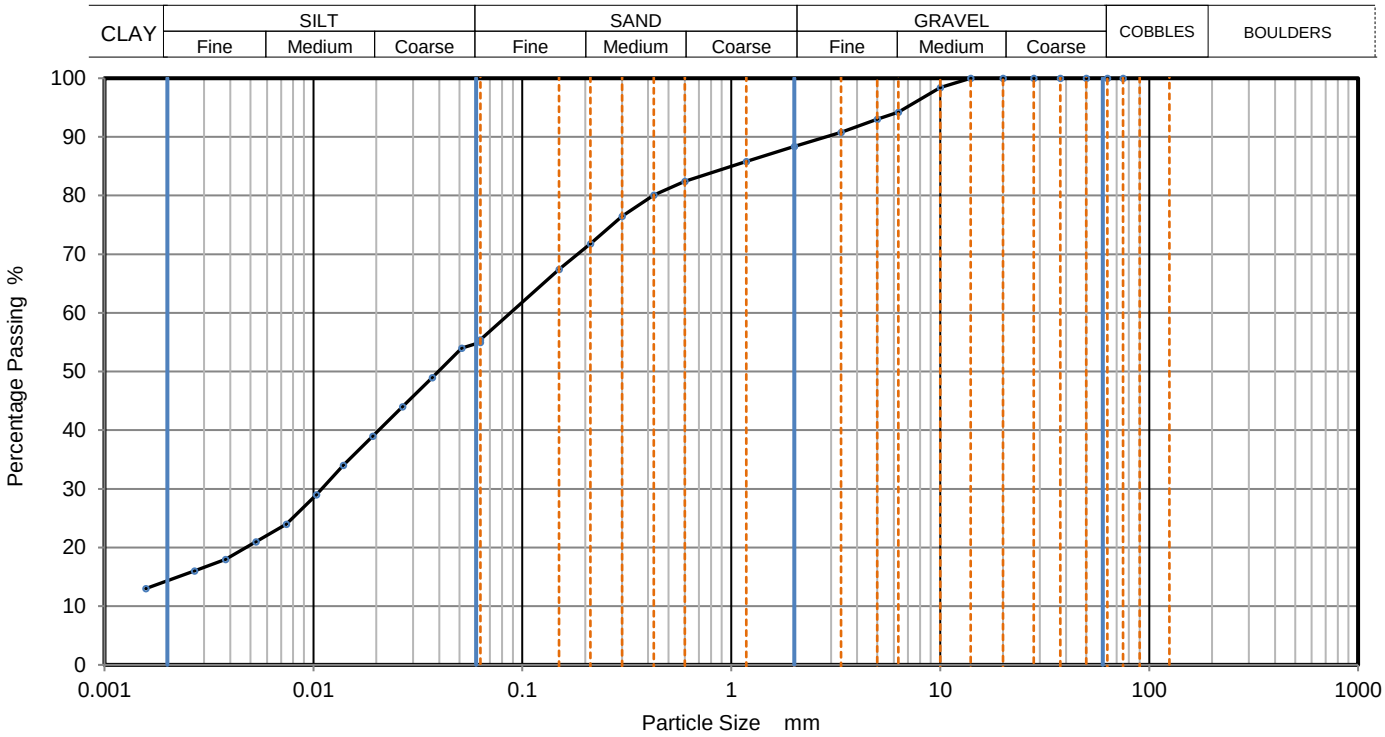
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS02
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown slightly gravelly sandy SILT.	Depth, m	1.90
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023052320



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	55
		0.0512	54
75	100	0.0370	49
63	100	0.0267	44
50	100	0.0193	39
37.5	100	0.0139	34
28	100	0.0103	29
20	100	0.0074	24
14	100	0.0053	21
10	98	0.0038	18
6.3	94	0.0027	16
5	93	0.0016	13
3.35	91		
2	88		
1.18	86		
0.6	82	Particle density	(assumed)
0.425	80	2.65	Mg/m3
0.3	77		
0.212	72		
0.15	67		
0.063	55		

Dry Mass of sample, g	697

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	33
Silt	41
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.0876
D30	mm	0.0107
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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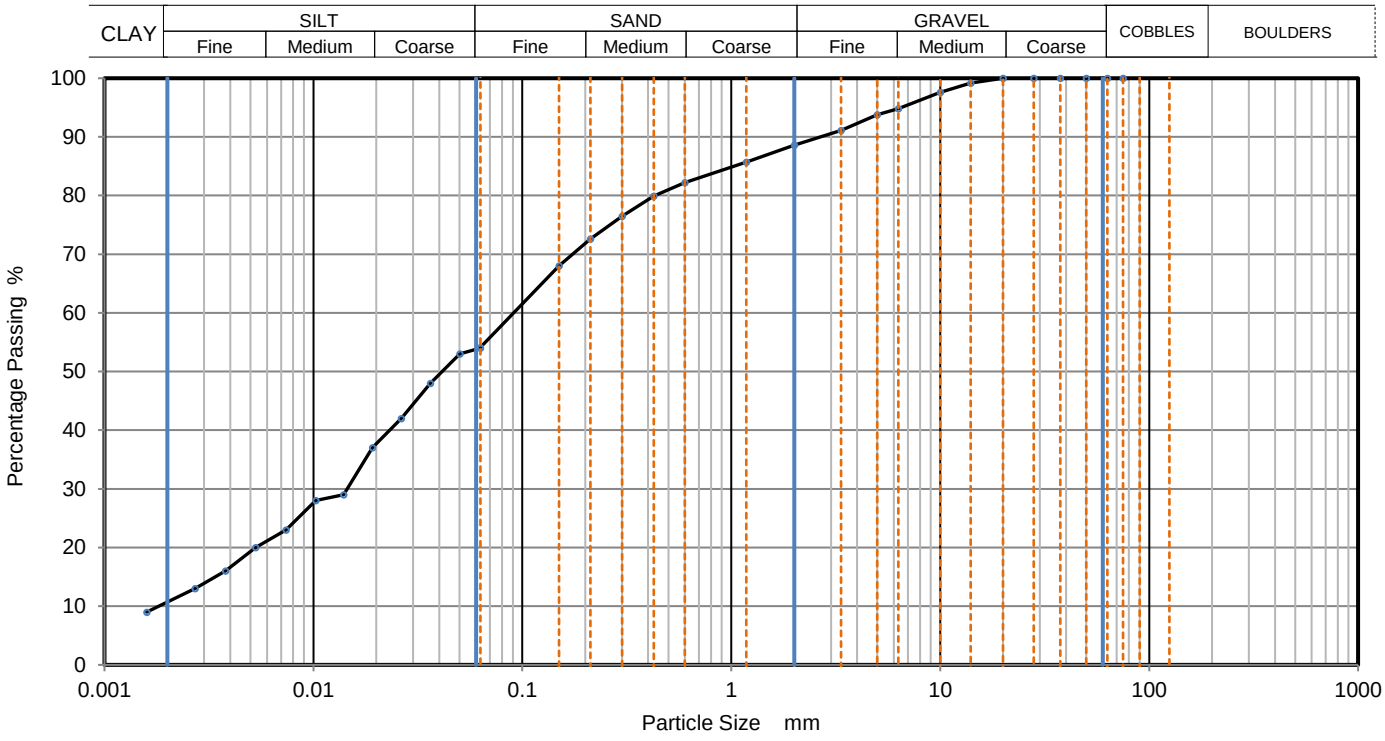
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS04
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brownish-grey slighlty gravelly sandy SILT.	Depth, m	2.10
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023052335



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	54
		0.0501	53
75	100	0.0362	48
63	100	0.0264	42
50	100	0.0191	37
37.5	100	0.0140	29
28	100	0.0103	28
20	100	0.0074	23
14	99	0.0053	20
10	98	0.0038	16
6.3	95	0.0027	13
5	94	0.0016	9
3.35	91		
2	89		
1.18	86		
0.6	82	Particle density (assumed)	
0.425	80	2.65 Mg/m3	
0.3	77		
0.212	73		
0.15	68		
0.063	54		

Dry Mass of sample, g	893

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	35
Silt	44
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.0909
D30	mm	0.0144
D10	mm	0.00185
Uniformity Coefficient		49
Curvature Coefficient		1.2

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
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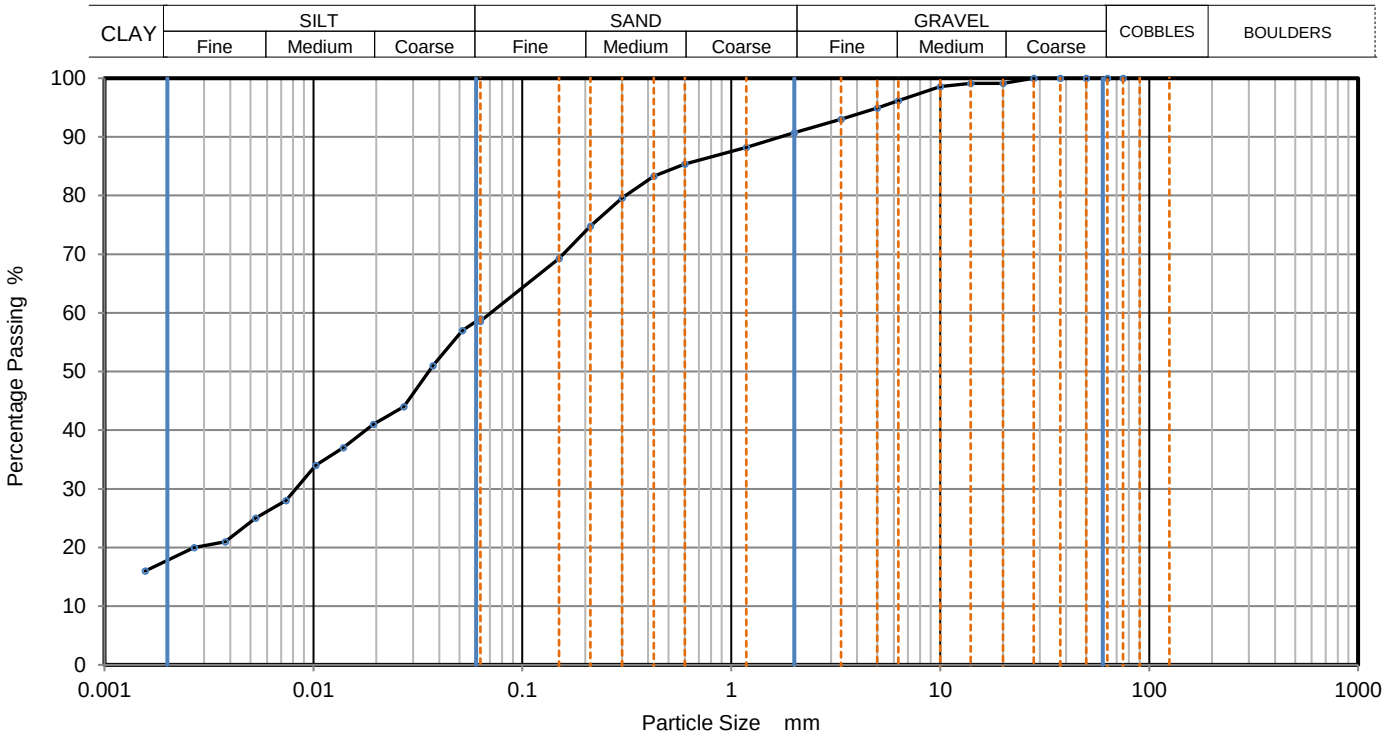
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS06
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Greenish-grey slightly gravelly slightly sandy SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023052349



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	59
		0.0516	57
75	100	0.0373	51
63	100	0.0271	44
50	100	0.0194	41
37.5	100	0.0139	37
28	100	0.0103	34
20	99	0.0074	28
14	99	0.0053	25
10	99	0.0038	21
6.3	96	0.0027	20
5	95	0.0016	16
3.35	93		
2	91		
1.18	88		
0.6	85	Particle density	(assumed)
0.425	83	2.65	Mg/m3
0.3	80		
0.212	75		
0.15	69		
0.063	59		

Dry Mass of sample, g	764

Sample Proportions	% dry mass
Very coarse	0
Gravel	9
Sand	32
Silt	41
Clay	18

Grading Analysis		
D100	mm	
D60	mm	0.0706
D30	mm	0.00814
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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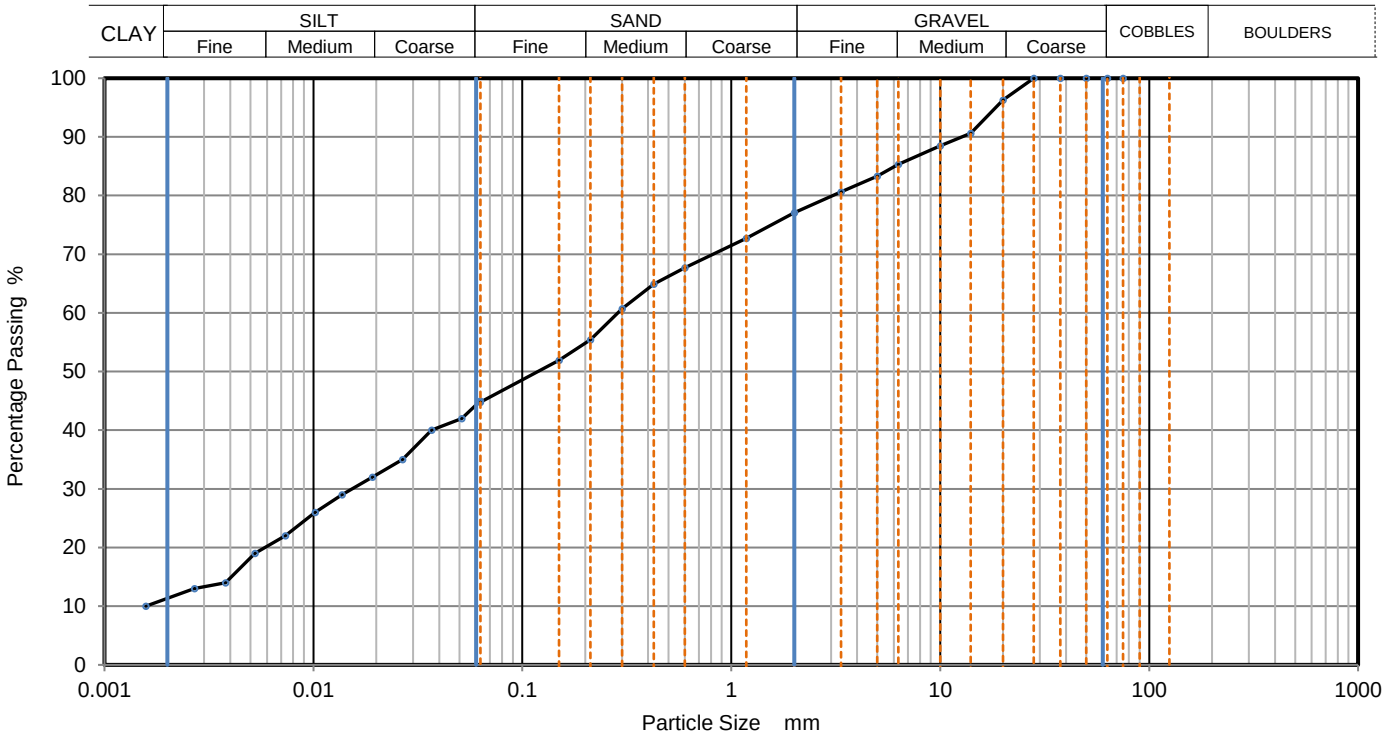
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS101
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brownish-grey slightly gravelly slightly sandy SILT.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081628



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0512	42
75	100	0.0368	40
63	100	0.0267	35
50	100	0.0191	32
37.5	100	0.0137	29
28	100	0.0102	26
20	96	0.0073	22
14	91	0.0053	19
10	89	0.0038	14
6.3	85	0.0027	13
5	83	0.0016	10
3.35	81		
2	77		
1.18	73		
0.6	68	Particle density	(assumed)
0.425	65	2.65	Mg/m3
0.3	61		
0.212	55		
0.15	52		
0.063	45		

Dry Mass of sample, g	863

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	32
Silt	33
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.286
D30	mm	0.0147
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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		Dympna Darcy B.Sc.	01/11/2023 09:40	1 QC From No:R2

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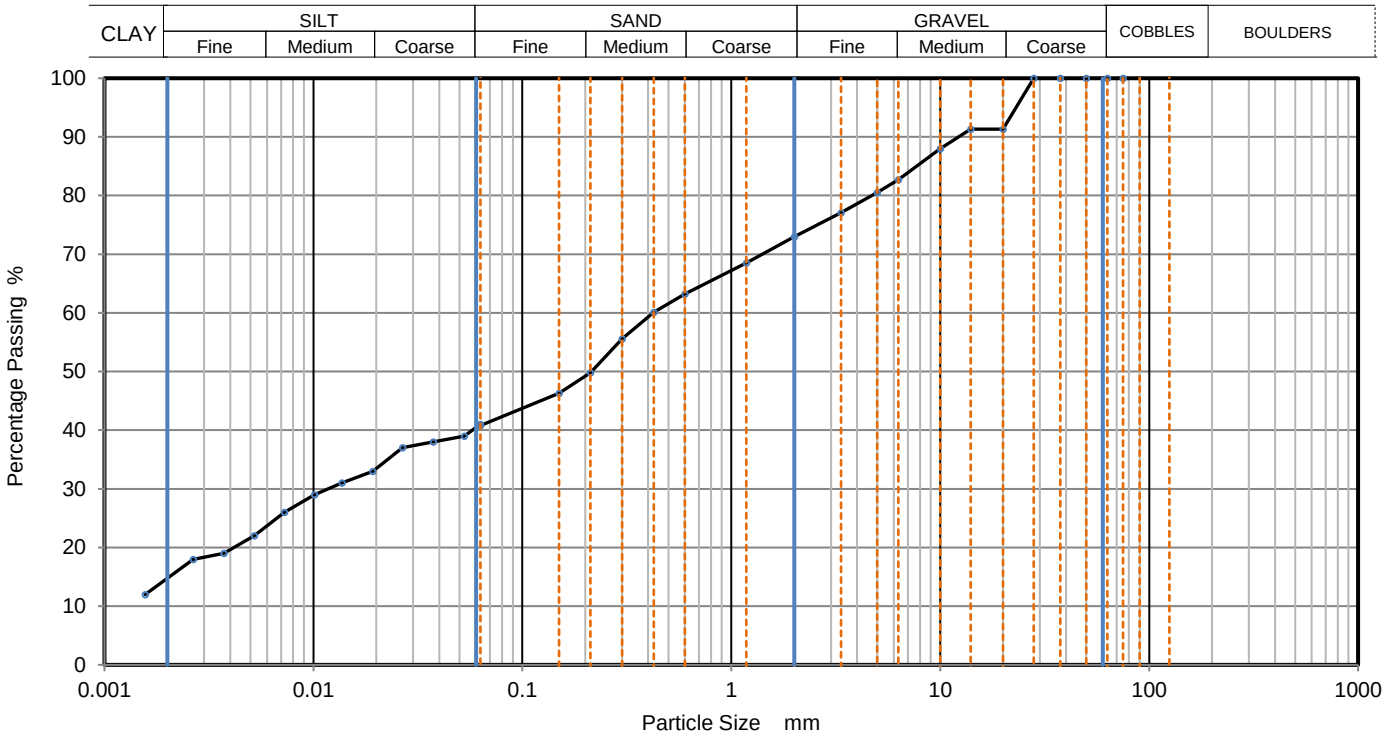
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS101
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Light greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	1.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081631



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0527	39
75	100	0.0375	38
63	100	0.0267	37
50	100	0.0193	33
37.5	100	0.0137	31
28	100	0.0101	29
20	91	0.0073	26
14	91	0.0052	22
10	88	0.0037	19
6.3	83	0.0027	18
5	81	0.0016	12
3.35	77		
2	73		
1.18	69		
0.6	63	Particle density	(assumed)
0.425	60	2.65	Mg/m3
0.3	56		
0.212	50		
0.15	46		
0.063	41		

Dry Mass of sample, g	973

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	32
Silt	26
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.42
D30	mm	0.0119
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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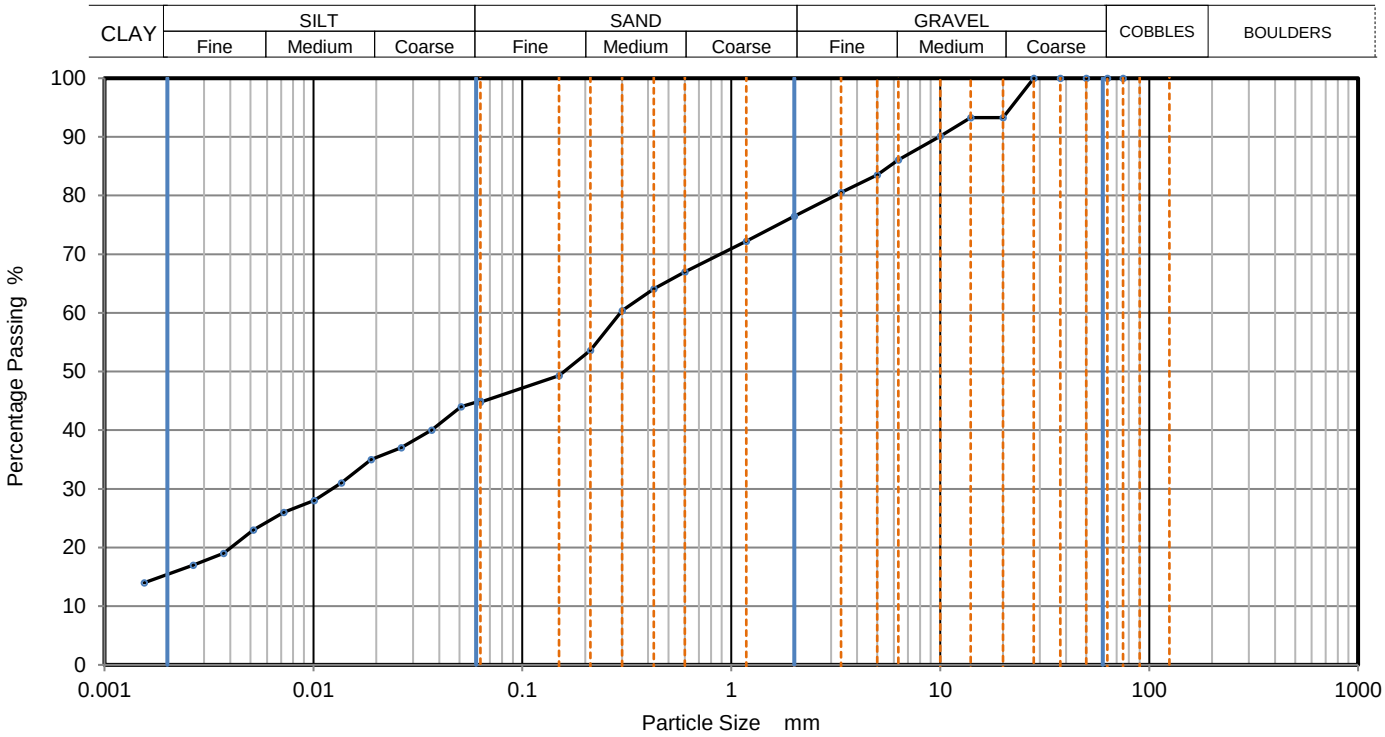
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS101
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Light grey slightly gravelly slightly sandy SILT.	Depth, m	2.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081633



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0509	44
75	100	0.0368	40
63	100	0.0264	37
50	100	0.0189	35
37.5	100	0.0136	31
28	100	0.0101	28
20	93	0.0072	26
14	93	0.0052	23
10	90	0.0037	19
6.3	86	0.0027	17
5	84	0.0015	14
3.35	81		
2	77		
1.18	72		
0.6	67	Particle density	(assumed)
0.425	64	2.65	Mg/m3
0.3	60		
0.212	54		
0.15	49		
0.063	45		

Dry Mass of sample, g	806

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	32
Silt	30
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.294
D30	mm	0.0125
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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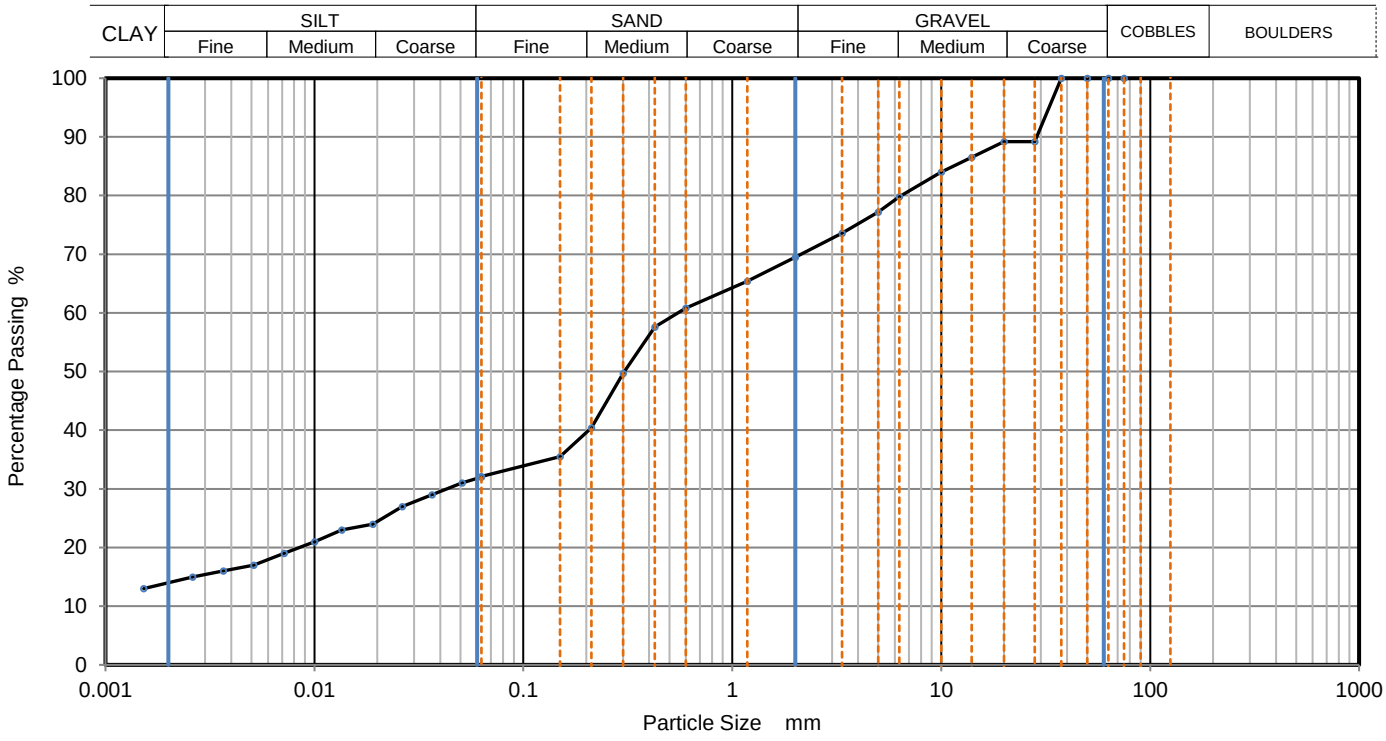
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS102
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown very gravelly very silty medium SAND.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081636



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	32
		0.0509	31
75	100	0.0365	29
63	100	0.0264	27
50	100	0.0190	24
37.5	100	0.0135	23
28	89	0.0100	21
20	89	0.0072	19
14	87	0.0051	17
10	84	0.0037	16
6.3	80	0.0026	15
5	77	0.0015	13
3.35	74		
2	70		
1.18	65		
0.6	61	Particle density	(assumed)
0.425	58	2.65	Mg/m3
0.3	50		
0.212	40		
0.15	36		
0.063	32		

Dry Mass of sample, g: 602

Sample Proportions	% dry mass
Very coarse	0
Gravel	31
Sand	38
Silt	18
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.552
D30	mm	0.0411
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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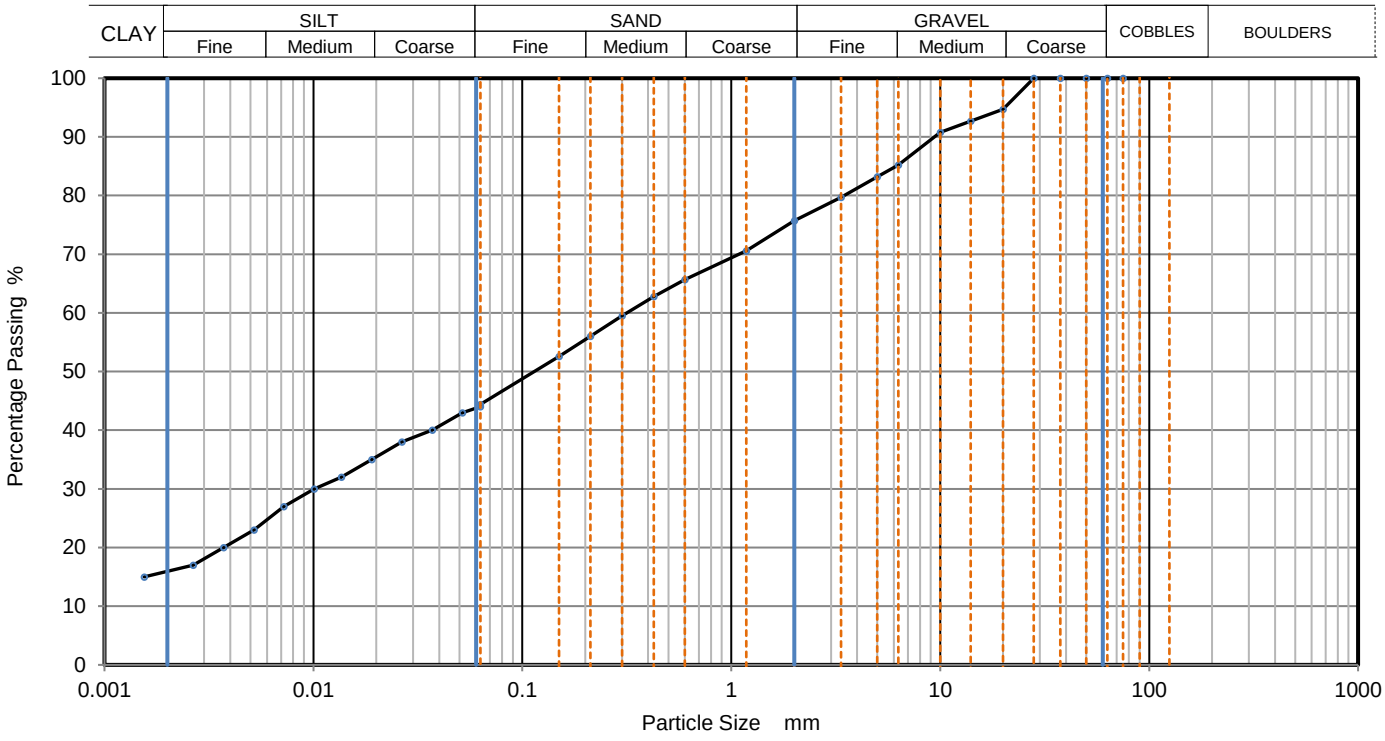
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS102
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	1.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081639



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	44
		0.0516	43
75	100	0.0370	40
63	100	0.0265	38
50	100	0.0190	35
37.5	100	0.0136	32
28	100	0.0101	30
20	95	0.0072	27
14	93	0.0052	23
10	91	0.0037	20
6.3	85	0.0027	17
5	83	0.0015	15
3.35	80		
2	76		
1.18	71		
0.6	66	Particle density (assumed)	
0.425	63	2.65 Mg/m3	
0.3	60		
0.212	56		
0.15	53		
0.063	44		

Dry Mass of sample, g	968

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	31
Silt	28
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.315
D30	mm	0.0105
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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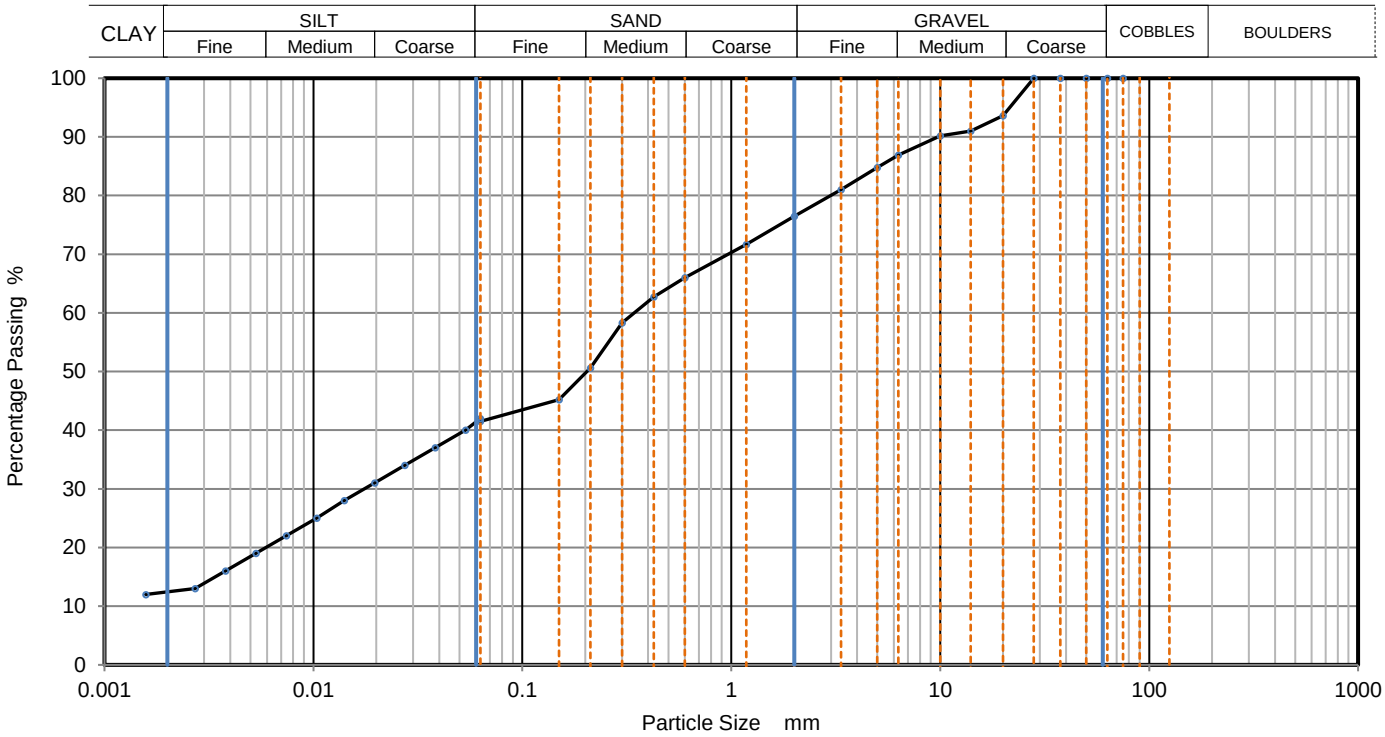
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS103
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greenish-brown slightly gravelly sandy SILT.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081644



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	42
		0.0534	40
75	100	0.0383	37
63	100	0.0274	34
50	100	0.0196	31
37.5	100	0.0140	28
28	100	0.0104	25
20	94	0.0074	22
14	91	0.0053	19
10	90	0.0038	16
6.3	87	0.0027	13
5	85	0.0016	12
3.35	81		
2	77		
1.18	72		
0.6	66	Particle density	(assumed)
0.425	63	2.65	Mg/m3
0.3	58		
0.212	51		
0.15	45		
0.063	42		

Dry Mass of sample, g: 887

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	35
Silt	29
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.344
D30	mm	0.0173
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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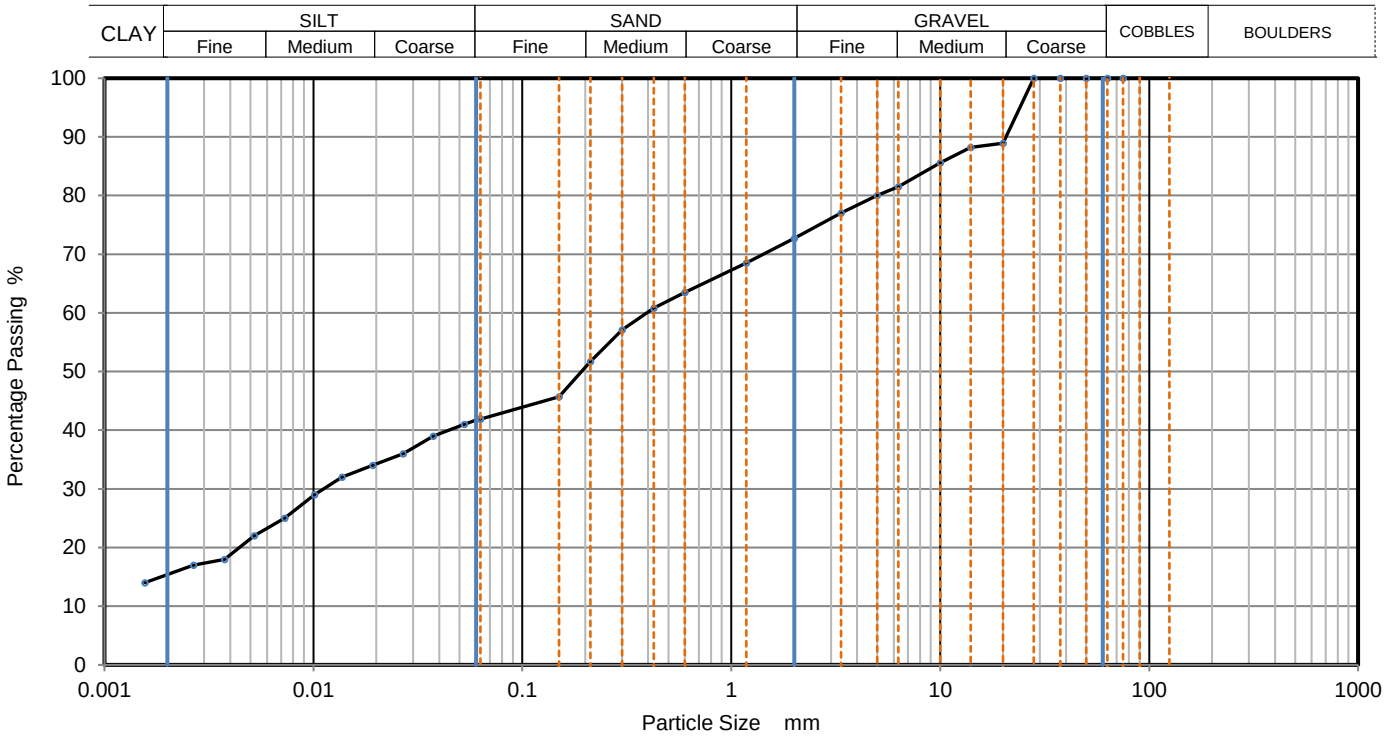
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS103
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Light grey slightly gravelly slightly sandy SILT.	Depth, m	1.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081647



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	42
		0.0527	41
75	100	0.0375	39
63	100	0.0269	36
50	100	0.0193	34
37.5	100	0.0137	32
28	100	0.0101	29
20	89	0.0073	25
14	88	0.0052	22
10	86	0.0038	18
6.3	82	0.0027	17
5	80	0.0016	14
3.35	77		
2	73		
1.18	69		
0.6	64	Particle density (assumed)	
0.425	61	2.65 Mg/m3	
0.3	57		
0.212	52		
0.15	46		
0.063	42		

Dry Mass of sample, g	1136

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	31
Silt	27
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.393
D30	mm	0.0109
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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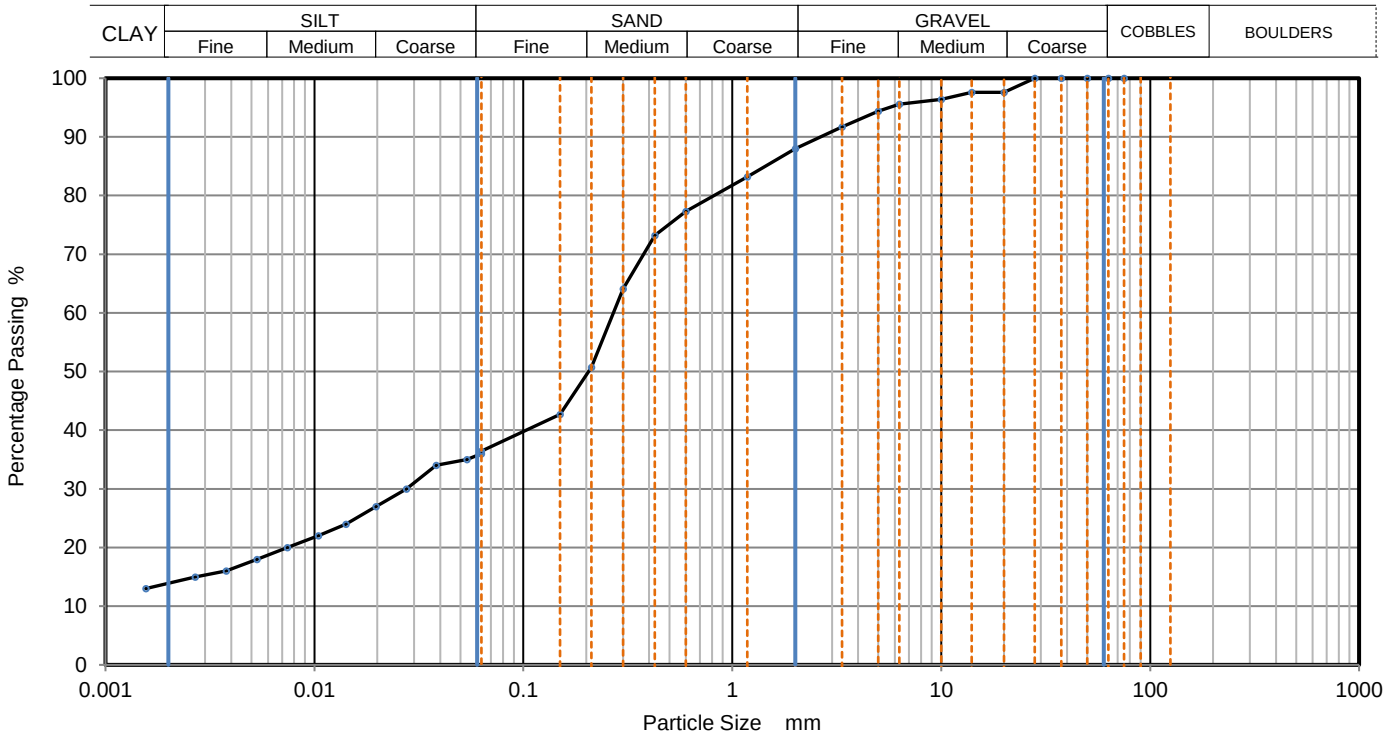
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS104
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Greyish-brown slightly gravelly sandy SILT. Sand is medium.	Depth, m	0.70
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081655



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	36
		0.0538	35
75	100	0.0383	34
63	100	0.0276	30
50	100	0.0197	27
37.5	100	0.0141	24
28	100	0.0104	22
20	98	0.0074	20
14	98	0.0053	18
10	96	0.0038	16
6.3	96	0.0027	15
5	94	0.0016	13
3.35	92		
2	88		
1.18	83		
0.6	77	Particle density	(assumed)
0.425	73	2.65	Mg/m3
0.3	64		
0.212	51		
0.15	43		
0.063	36		

Dry Mass of sample, g	549

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	52
Silt	22
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.27
D30	mm	0.0284
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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Operator	Checked	Approved	Sheet printed	
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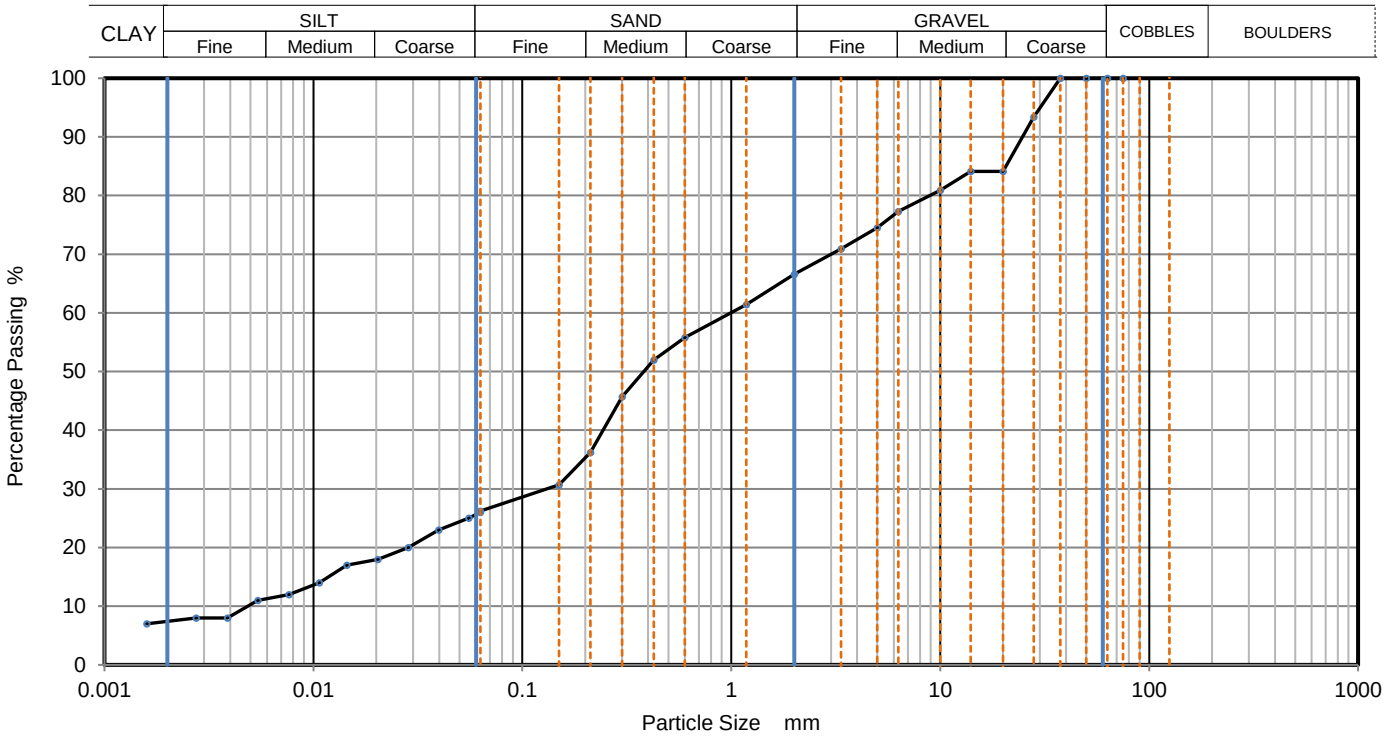
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS105
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brownish-grey very silty very gravelly medium SAND.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081661



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	26
		0.0555	25
75	100	0.0397	23
63	100	0.0284	20
50	100	0.0203	18
37.5	100	0.0145	17
28	93	0.0107	14
20	84	0.0076	12
14	84	0.0054	11
10	81	0.0039	8
6.3	77	0.0027	8
5	75	0.0016	7
3.35	71		
2	67		
1.18	61		
0.6	56	Particle density	(assumed)
0.425	52	2.65	Mg/m3
0.3	46		
0.212	36		
0.15	31		
0.063	26		

Dry Mass of sample, g	918

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	41
Silt	19
Clay	8

Grading Analysis		
D100	mm	
D60	mm	0.994
D30	mm	0.131
D10	mm	0.0049
Uniformity Coefficient		200
Curvature Coefficient		3.5

Remarks

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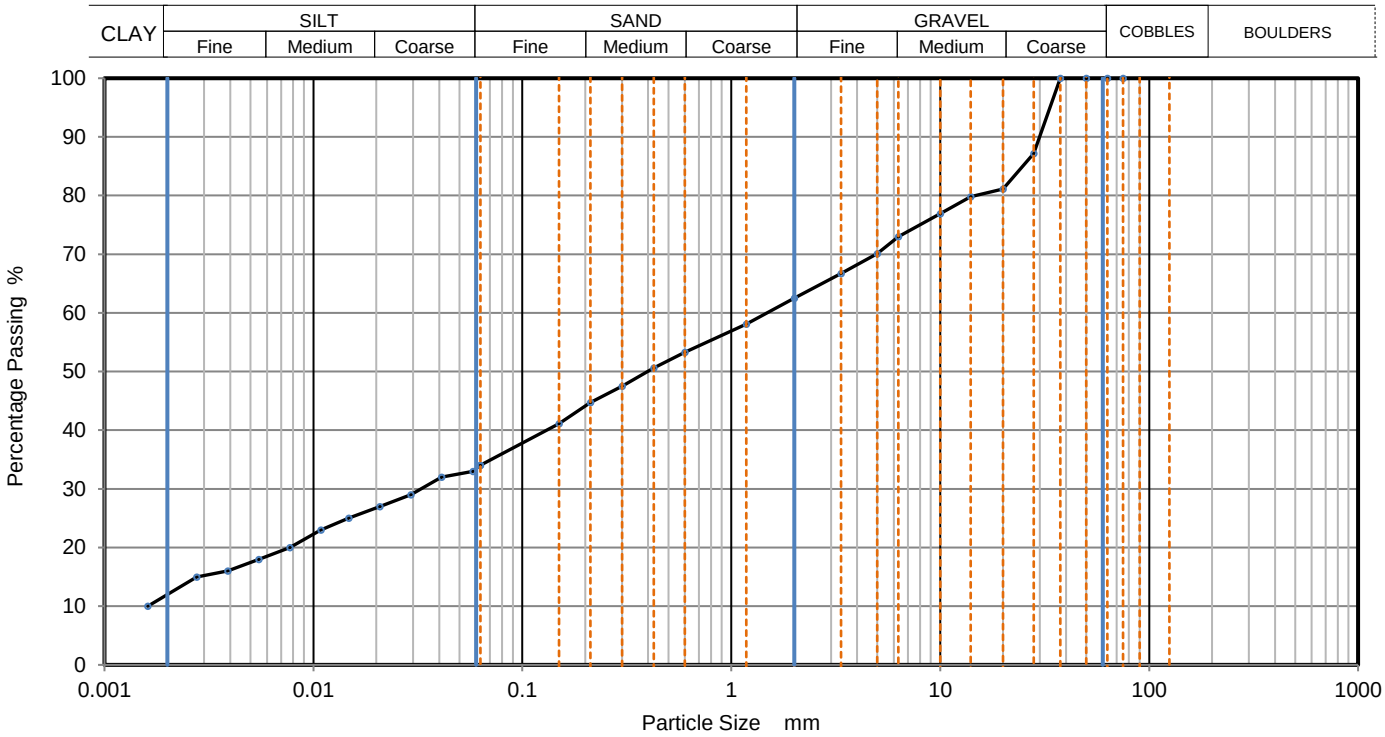
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS105
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Light brownish-grey very sandy very silty GRAVEL.	Depth, m	1.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081664



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	34
		0.0579	33
75	100	0.0411	32
63	100	0.0292	29
50	100	0.0208	27
37.5	100	0.0148	25
28	87	0.0108	23
20	81	0.0077	20
14	80	0.0055	18
10	77	0.0039	16
6.3	73	0.0028	15
5	70	0.0016	10
3.35	67		
2	63		
1.18	58		
0.6	53	Particle density	(assumed)
0.425	51	2.65	Mg/m3
0.3	48		
0.212	45		
0.15	41		
0.063	34		

Dry Mass of sample, g	1006

Sample Proportions	% dry mass
Very coarse	0
Gravel	38
Sand	29
Silt	22
Clay	12

Grading Analysis		
D100	mm	
D60	mm	1.48
D30	mm	0.0316
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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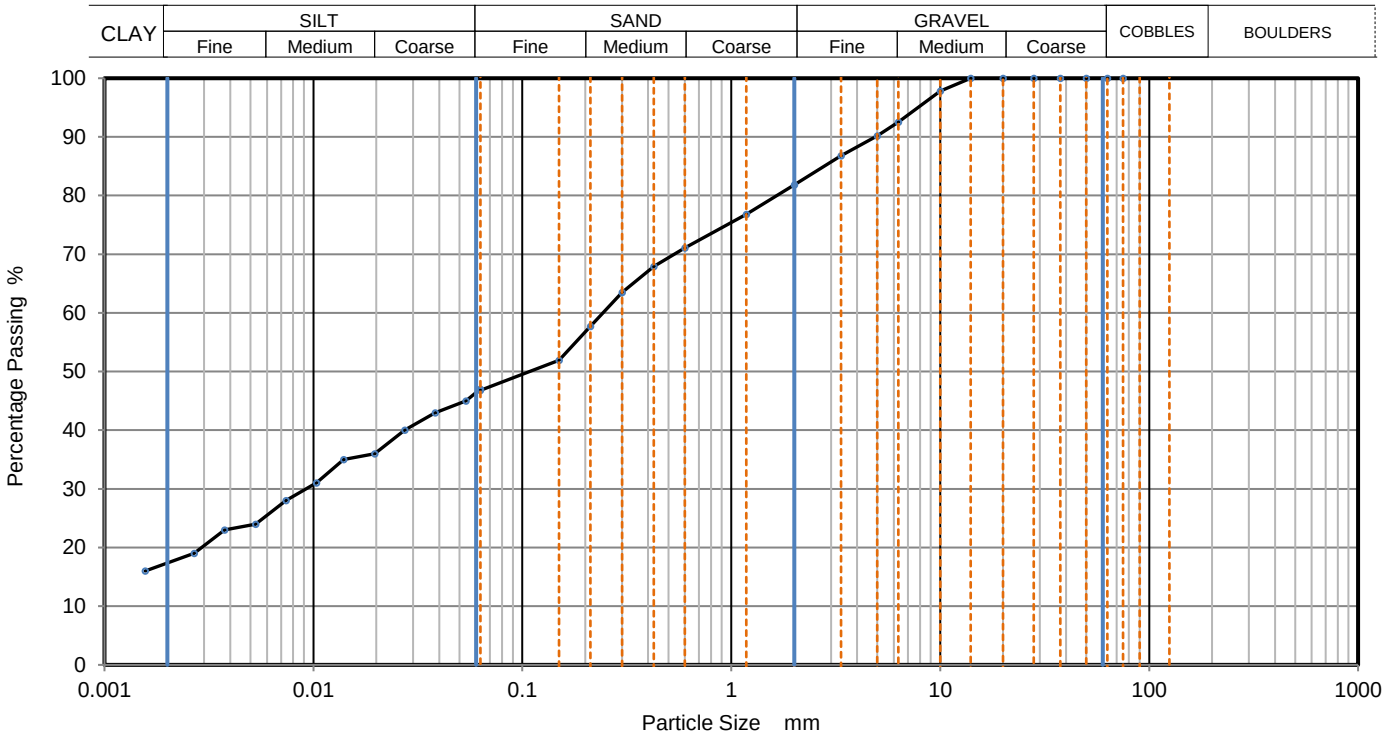
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS105
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Light grey slightly gravelly sandy SILT.	Depth, m	2.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081666



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	47
		0.0538	45
75	100	0.0383	43
63	100	0.0274	40
50	100	0.0196	36
37.5	100	0.0140	35
28	100	0.0103	31
20	100	0.0074	28
14	100	0.0053	24
10	98	0.0038	23
6.3	93	0.0027	19
5	90	0.0016	16
3.35	87		
2	82		
1.18	77		
0.6	71	Particle density	(assumed)
0.425	68	2.65	Mg/m3
0.3	64		
0.212	58		
0.15	52		
0.063	47		

Dry Mass of sample, g	794

Sample Proportions	% dry mass
Very coarse	0
Gravel	18
Sand	35
Silt	30
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.243
D30	mm	0.00919
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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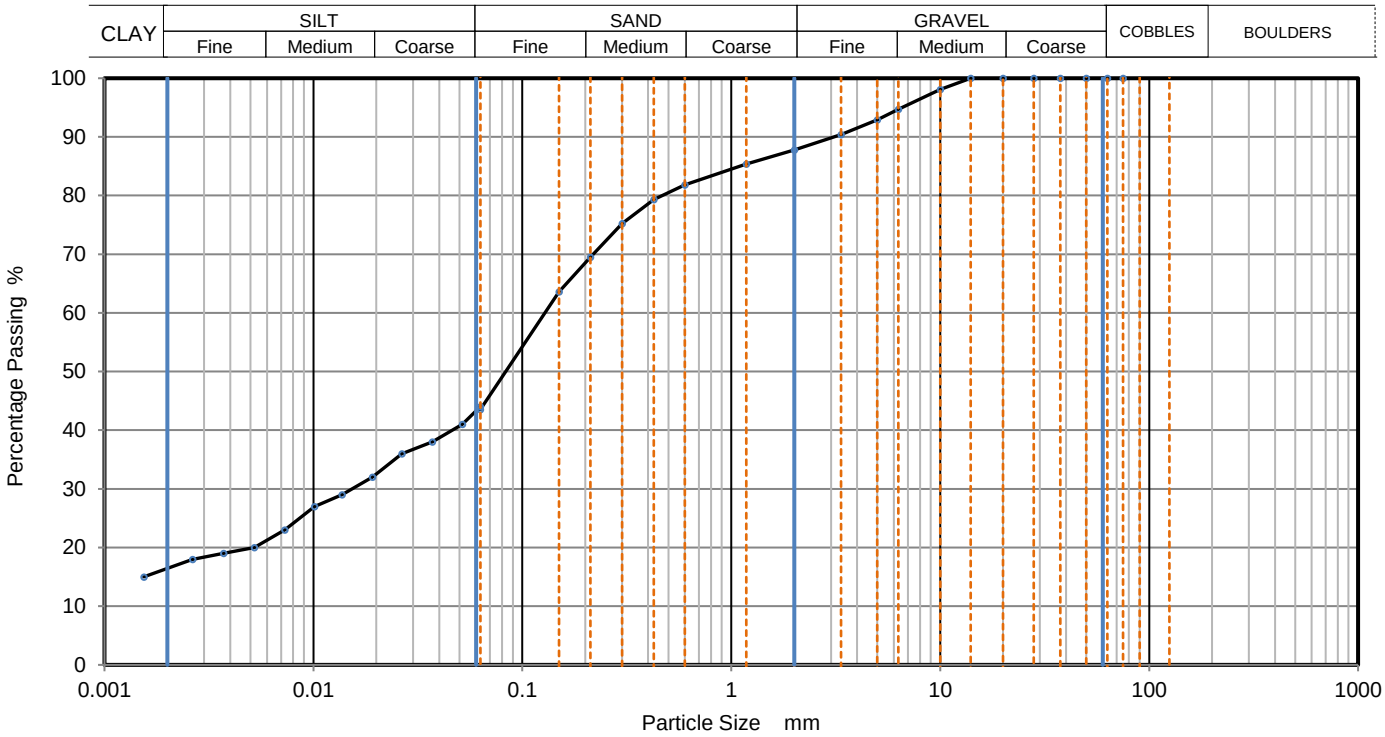
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS106
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown slighlty gravelly sandy SILT. Sand is fine.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081669



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	44
		0.0516	41
75	100	0.0370	38
63	100	0.0265	36
50	100	0.0191	32
37.5	100	0.0137	29
28	100	0.0101	27
20	100	0.0073	23
14	100	0.0052	20
10	98	0.0037	19
6.3	95	0.0026	18
5	93	0.0015	15
3.35	90		
2	88		
1.18	85		
0.6	82	Particle density (assumed)	
0.425	79	2.65 Mg/m3	
0.3	75		
0.212	70		
0.15	64		
0.063	44		

Dry Mass of sample, g	739

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	44
Silt	27
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.128
D30	mm	0.0148
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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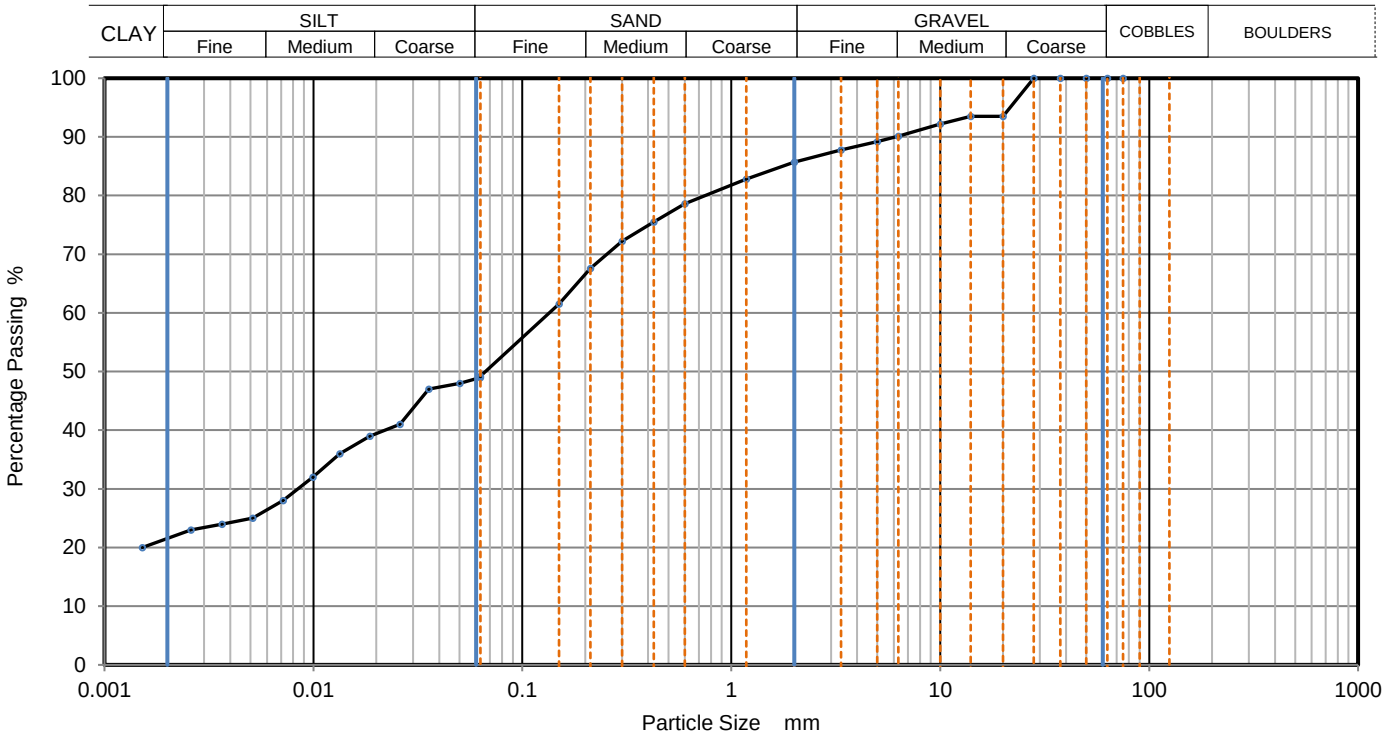
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown slightly gravelly sandy SILT. Sand is fine.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081677



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	49
		0.0501	48
75	100	0.0357	47
63	100	0.0260	41
50	100	0.0186	39
37.5	100	0.0134	36
28	100	0.0099	32
20	94	0.0072	28
14	94	0.0051	25
10	92	0.0036	24
6.3	90	0.0026	23
5	89	0.0015	20
3.35	88		
2	86		
1.18	83		
0.6	79	Particle density	(assumed)
0.425	76	2.65	Mg/m3
0.3	72		
0.212	68		
0.15	62		
0.063	49		

Dry Mass of sample, g	802

Sample Proportions	% dry mass
Very coarse	0
Gravel	14
Sand	37
Silt	28
Clay	21

Grading Analysis		
D100	mm	
D60	mm	0.135
D30	mm	0.0085
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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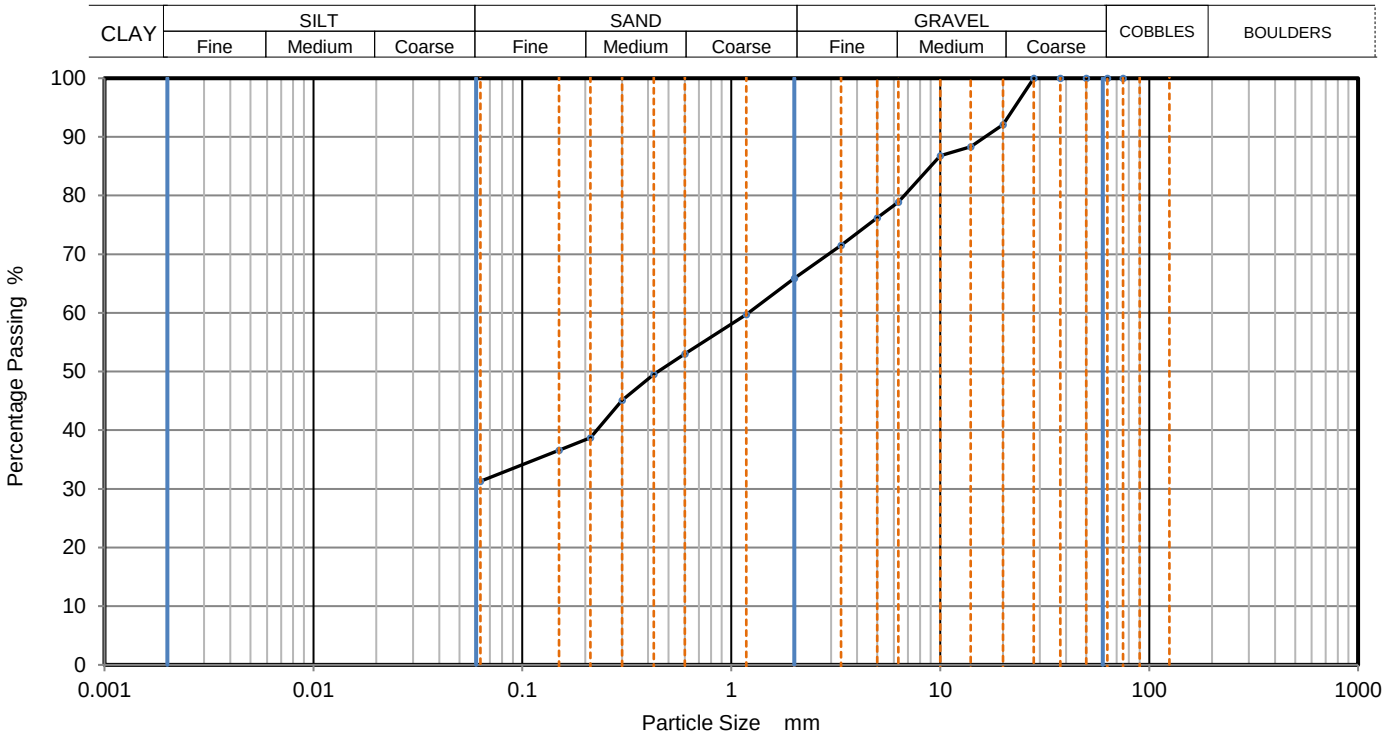
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Light grey very silty SAND and GRAVEL.			Depth, m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12023081680



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	92		
14	88		
10	87		
6.3	79		
5	76		
3.35	72		
2	66		
1.18	60		
0.6	53		
0.425	50		
0.3	45		
0.212	39		
0.15	37		
0.063	31		

Dry Mass of sample, g	1016

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	35
Fines <0.063mm	31

Grading Analysis		
D100	mm	
D60	mm	1.21
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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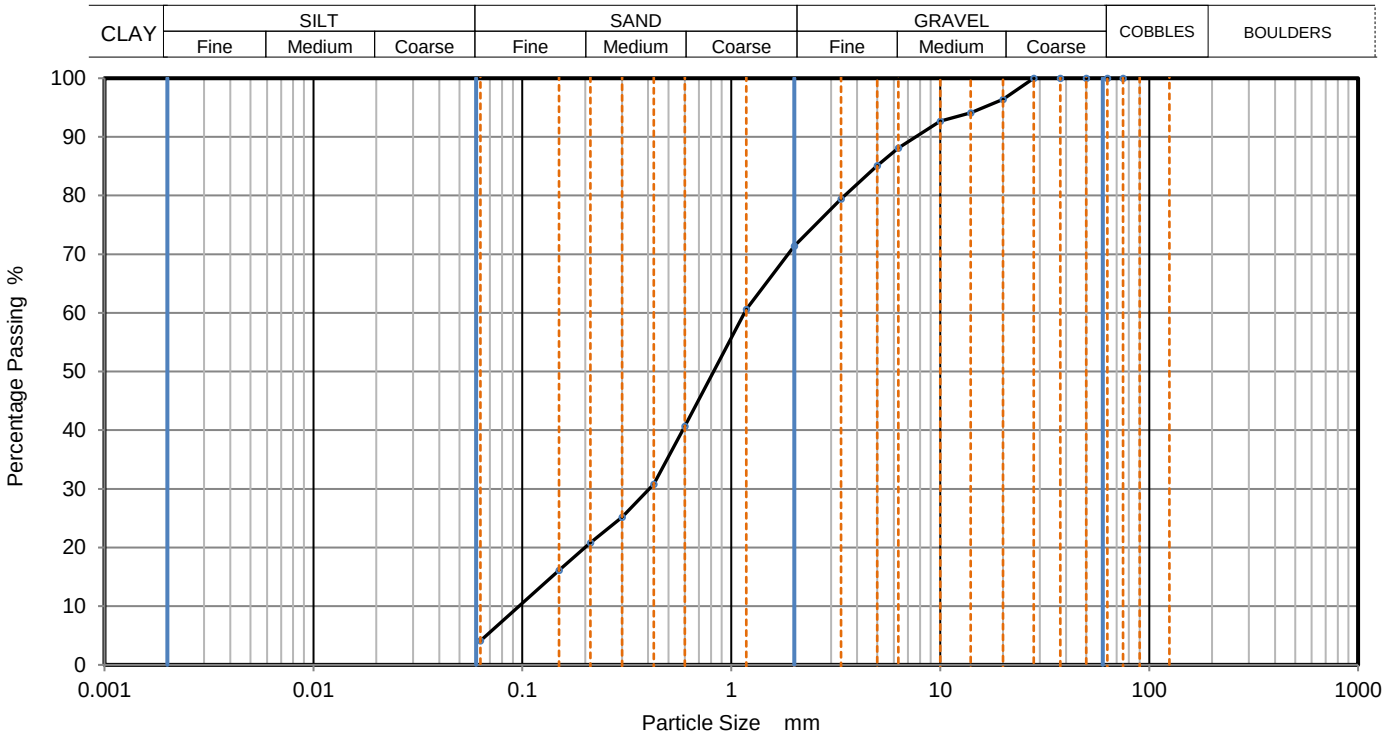
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT01
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Dark grey slightly silty very gravelly coarse SAND.	Depth, m	3.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023060983



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	94		
10	93		
6.3	88		
5	85		
3.35	79		
2	71		
1.18	61		
0.6	41		
0.425	31		
0.3	25		
0.212	21		
0.15	16		
0.063	4		

Dry Mass of sample, g	800

Sample Proportions	% dry mass
Very coarse	0
Gravel	29
Sand	67
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	1.16
D30	mm	0.404
D10	mm	0.0965
Uniformity Coefficient		12
Curvature Coefficient		1.5

Remarks

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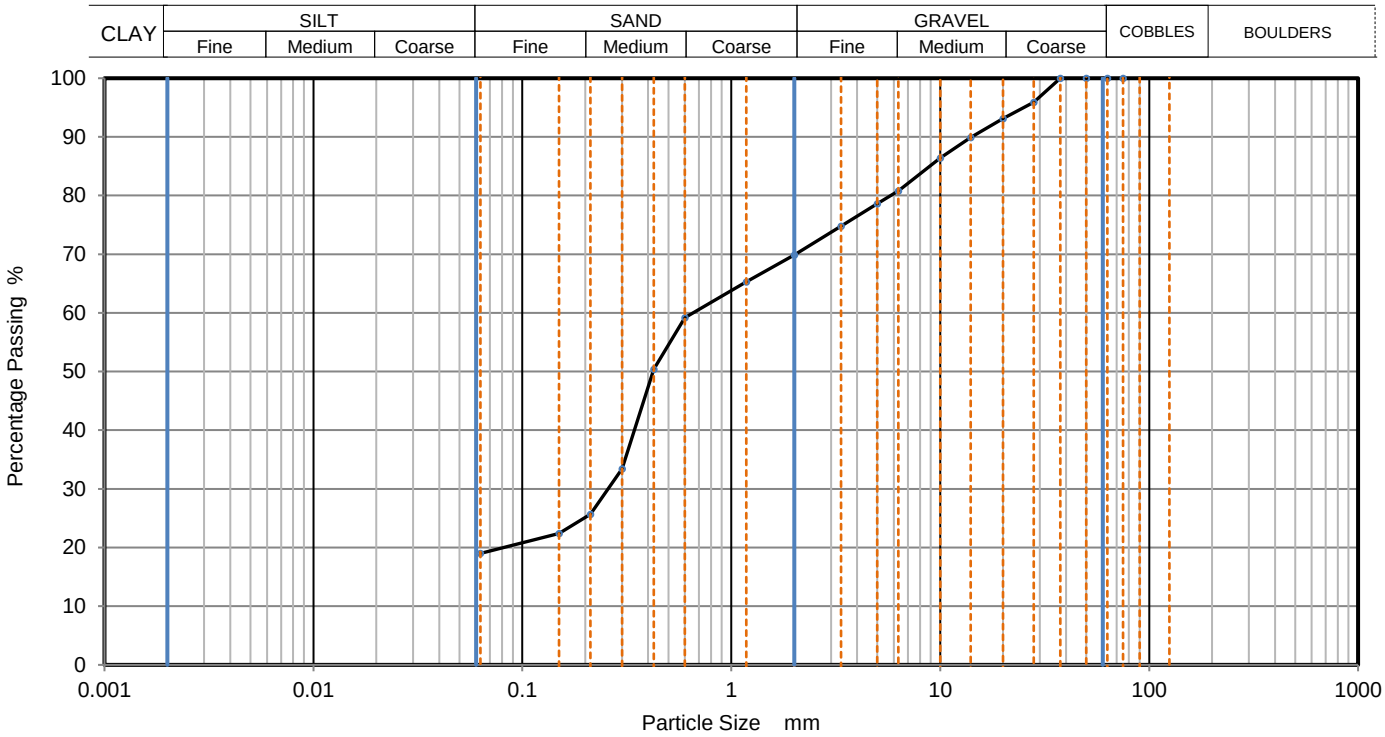
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT03
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Dark grey silty very gravelly medium SAND.	Depth, m	1.50
Specimen Reference	Specimen Depth: m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023060995



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	93		
14	90		
10	86		
6.3	81		
5	79		
3.35	75		
2	70		
1.18	65		
0.6	59		
0.425	50		
0.3	33		
0.212	26		
0.15	22		
0.063	19		

Dry Mass of sample, g	910

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	51
Fines <0.063mm	19

Grading Analysis		
D100	mm	
D60	mm	0.655
D30	mm	0.257
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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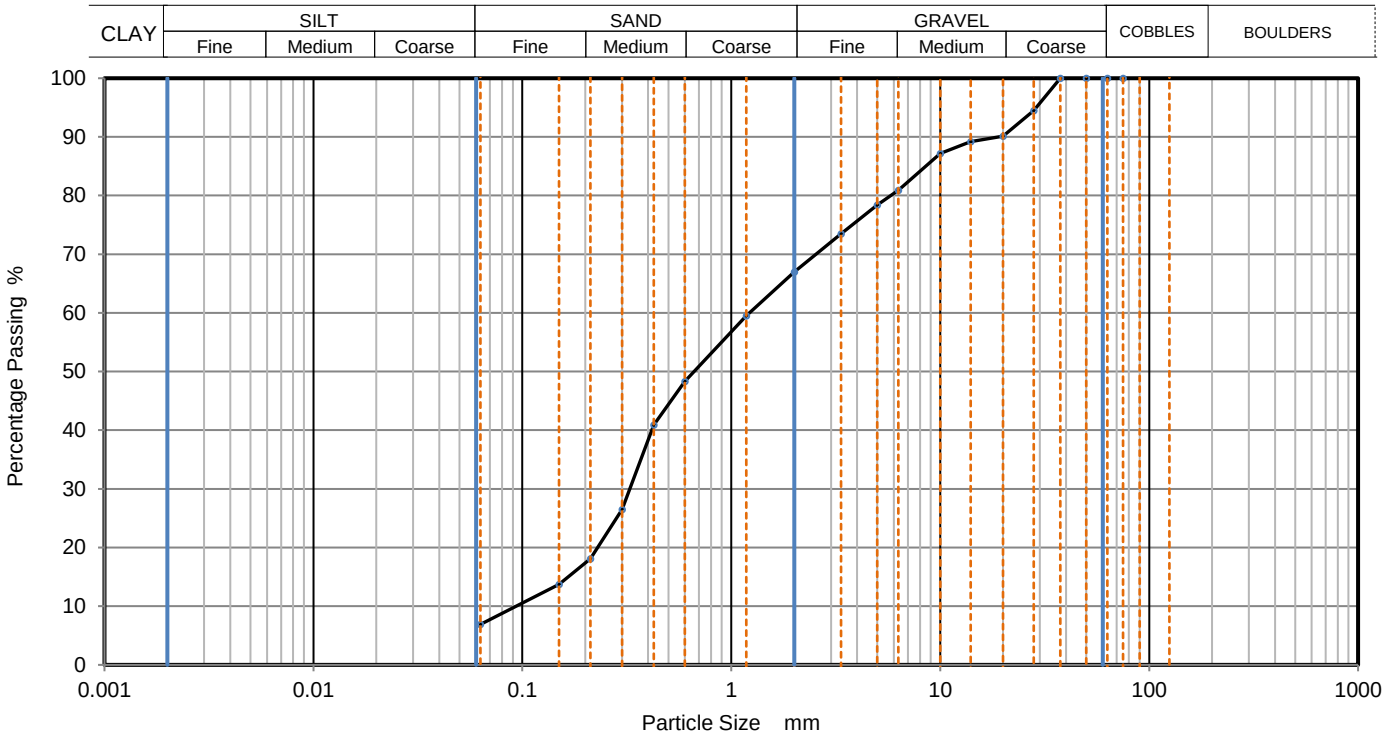
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	TPT04
Site Name	Derrygreenagh Power			Sample No.	5
Soil Description	Dark grey silty very gravelly medium SAND.			Depth, m	2.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120230609103



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	95		
20	90		
14	89		
10	87		
6.3	81		
5	78		
3.35	74		
2	67		
1.18	60		
0.6	48		
0.425	41		
0.3	27		
0.212	18		
0.15	14		
0.063	7		

Dry Mass of sample, g	982

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	60
Fines <0.063mm	7

Grading Analysis		
D100	mm	
D60	mm	1.23
D30	mm	0.326
D10	mm	0.0931
Uniformity Coefficient		13
Curvature Coefficient		0.93

Remarks

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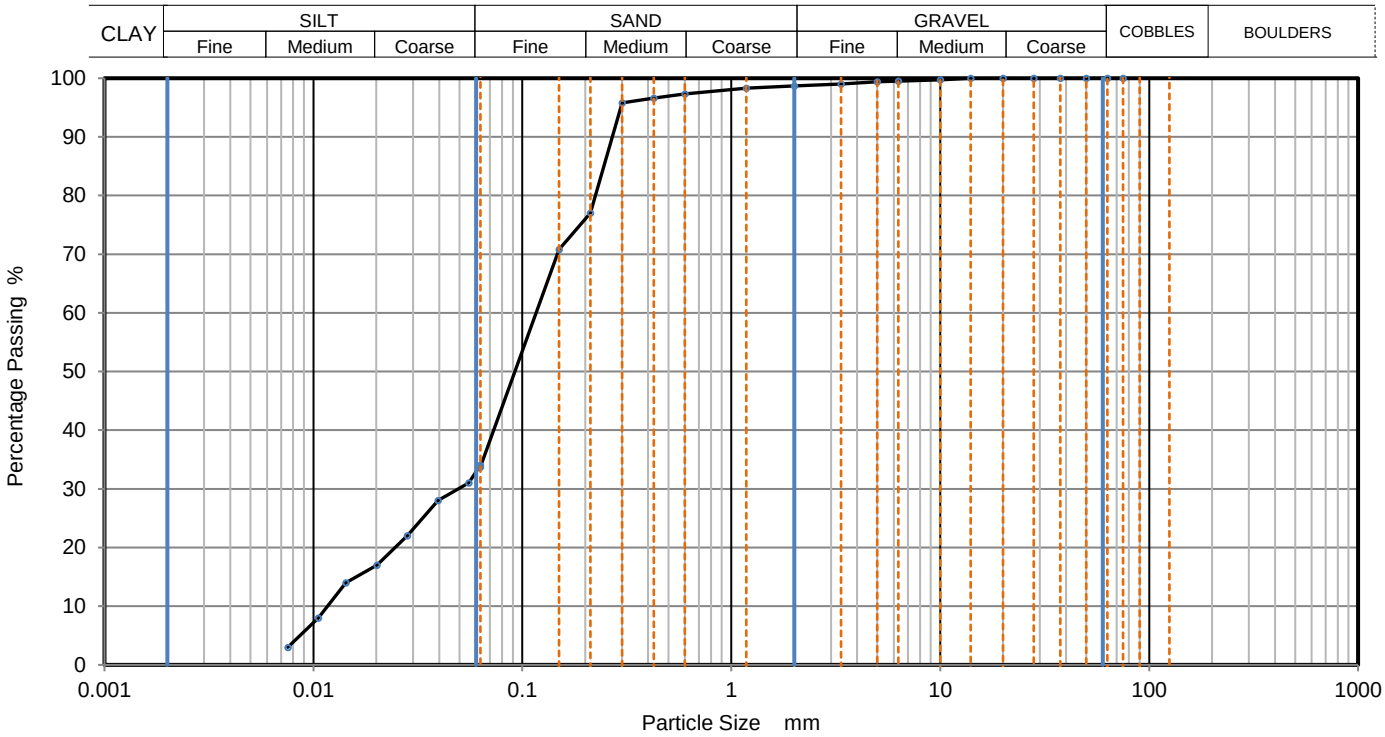
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT05
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Dark grey very silty fine SAND.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230602102



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	34
		0.0554	31
75	100	0.0394	28
63	100	0.0282	22
50	100	0.0201	17
37.5	100	0.0143	14
28	100	0.0106	8
20	100	0.0075	3
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	99		
1.18	98		
0.6	97	Particle density	(assumed)
0.425	97	2.65	Mg/m3
0.3	96		
0.212	77		
0.15	71		
0.063	34		

Dry Mass of sample, g	930

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	65
Fines <0.063mm	34

Grading Analysis		
D100	mm	
D60	mm	0.116
D30	mm	0.0498
D10	mm	0.0115
Uniformity Coefficient		10
Curvature Coefficient		1.8

Remarks

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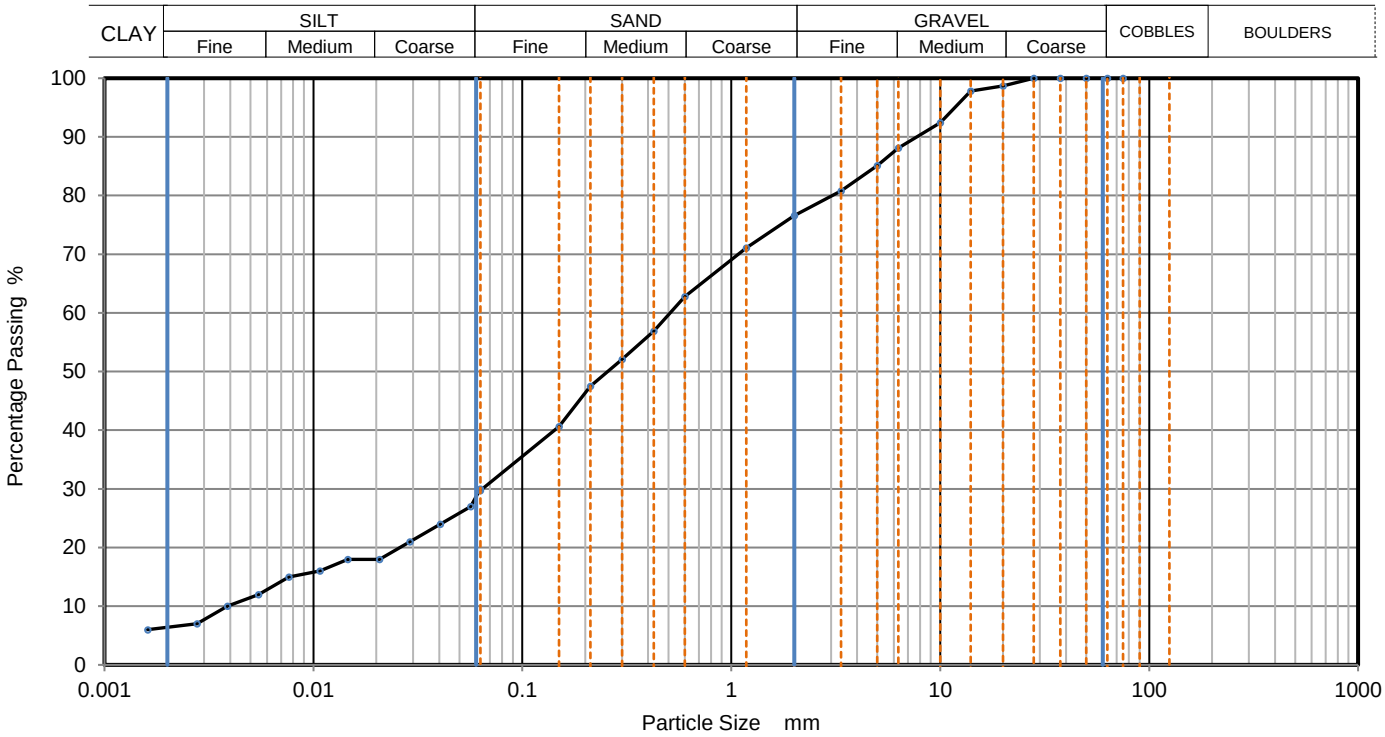
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT09
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Dark grey very silty very silty (peaty) SAND.	Depth, m	0.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230602120



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	30
		0.0565	27
75	100	0.0404	24
63	100	0.0289	21
50	100	0.0207	18
37.5	100	0.0146	18
28	100	0.0107	16
20	99	0.0076	15
14	98	0.0055	12
10	92	0.0039	10
6.3	88	0.0028	7
5	85	0.0016	6
3.35	81		
2	77		
1.18	71		
0.6	63	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	52		
0.212	48		
0.15	41		
0.063	30		

Dry Mass of sample, g	843

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	47
Silt	23
Clay	7

Grading Analysis		
D100	mm	
D60	mm	0.509
D30	mm	0.0644
D10	mm	0.00371
Uniformity Coefficient		140
Curvature Coefficient		2.2

Remarks

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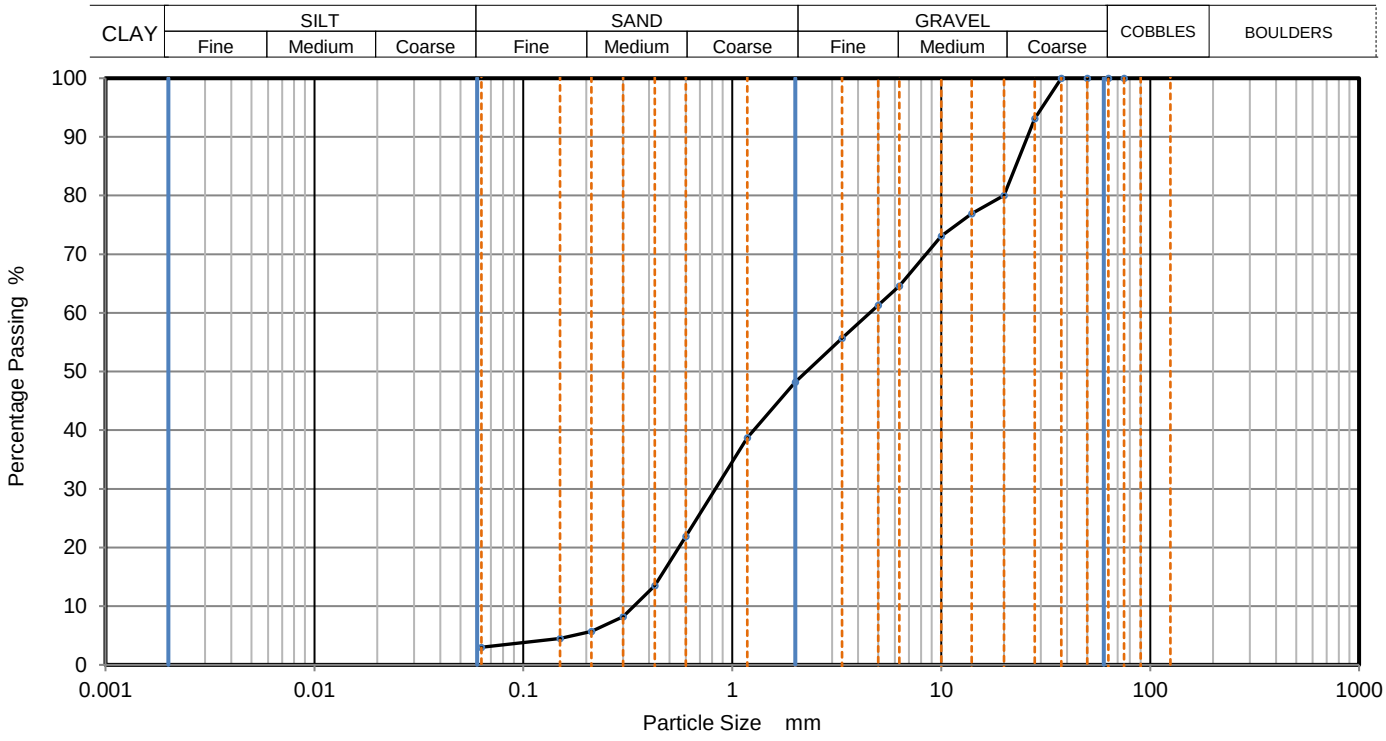
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT14
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Bluish-grey slightly silty SAND and GRAVEL.	Depth, m	1.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023062913



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	80		
14	77		
10	73		
6.3	65		
5	61		
3.35	56		
2	48		
1.18	39		
0.6	22	Particle density	(assumed)
0.425	14	2.65	Mg/m3
0.3	8		
0.212	6		
0.15	5		
0.063	3		

Dry Mass of sample, g	975

Sample Proportions	% dry mass
Very coarse	0
Gravel	52
Sand	45
Fines <0.063mm	3

Grading Analysis		
D100	mm	
D60	mm	4.56
D30	mm	0.83
D10	mm	0.338
Uniformity Coefficient		13
Curvature Coefficient		0.45

Remarks

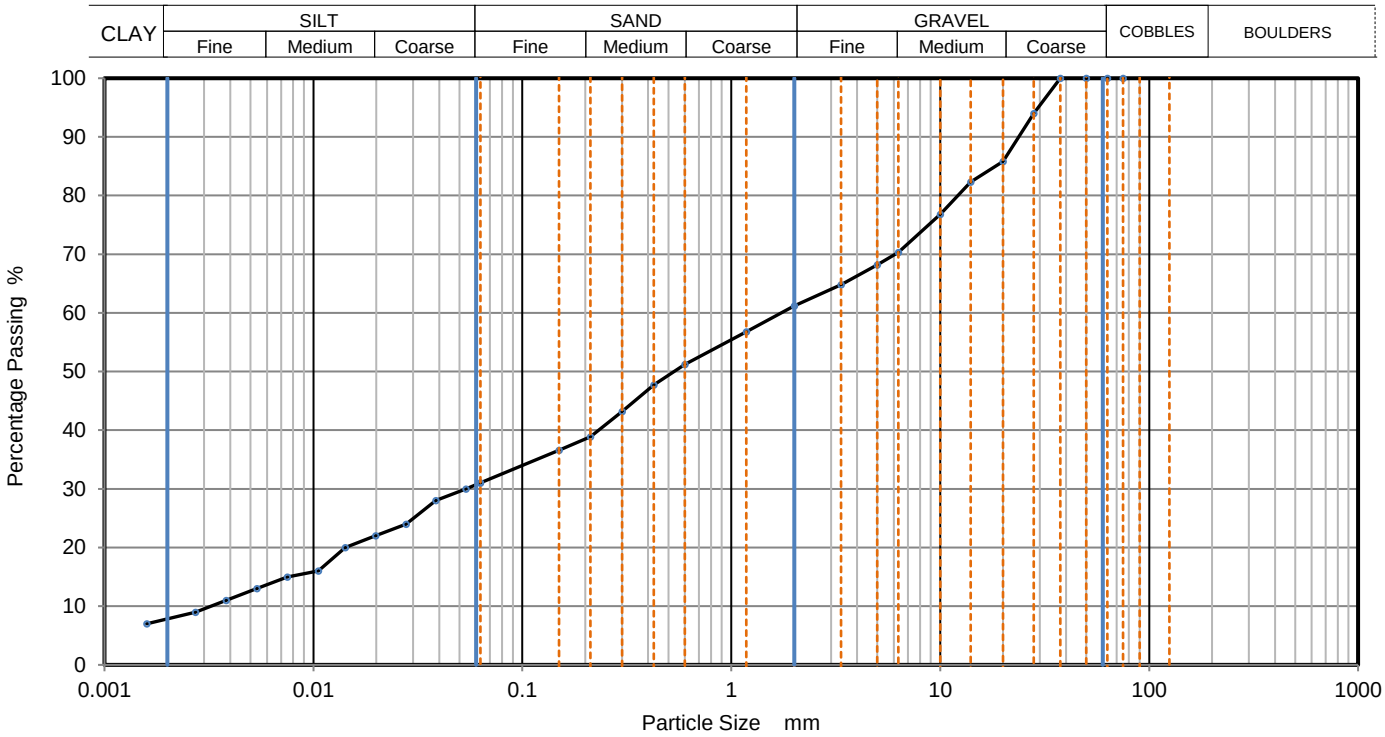
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:40	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT16
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Blackish-brown very silty SAND and GRAVEL.	Depth, m	0.80
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023053066



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	31
		0.0538	30
75	100	0.0385	28
63	100	0.0278	24
50	100	0.0199	22
37.5	100	0.0142	20
28	94	0.0106	16
20	86	0.0075	15
14	82	0.0054	13
10	77	0.0038	11
6.3	70	0.0027	9
5	68	0.0016	7
3.35	65		
2	61		
1.18	57		
0.6	51	Particle density	(assumed)
0.425	48	2.65	Mg/m3
0.3	43		
0.212	39		
0.15	37		
0.063	31		

Dry Mass of sample, g	560

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	30
Silt	23
Clay	8

Grading Analysis		
D100	mm	
D60	mm	1.73
D30	mm	0.0549
D10	mm	0.00307
Uniformity Coefficient		560
Curvature Coefficient		0.57

Remarks

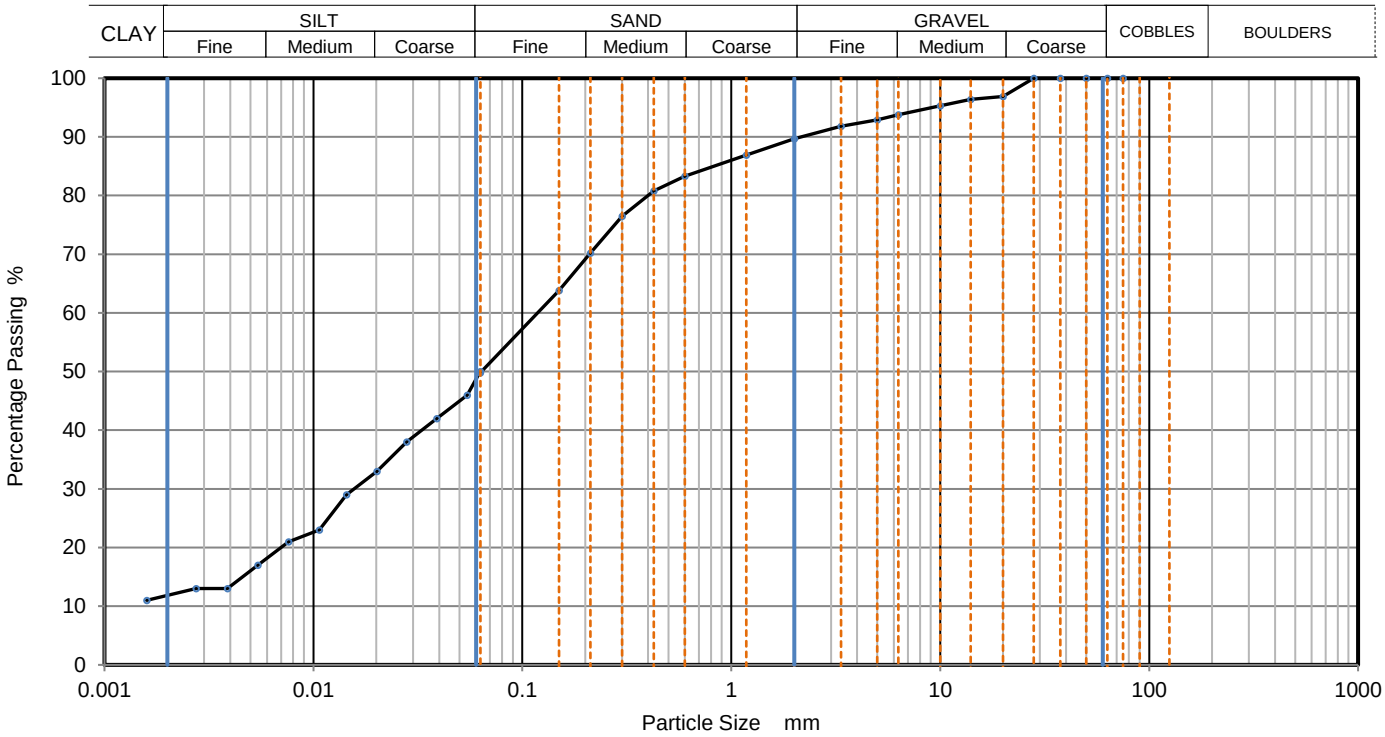
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:40	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT18
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Greenish-brown slightly gravelly sandy SILT.	Depth, m	1.30
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023053080



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	50
		0.0545	46
75	100	0.0390	42
63	100	0.0279	38
50	100	0.0201	33
37.5	100	0.0144	29
28	100	0.0107	23
20	97	0.0076	21
14	96	0.0054	17
10	95	0.0039	13
6.3	94	0.0027	13
5	93	0.0016	11
3.35	92		
2	90		
1.18	87		
0.6	83	Particle density	(assumed)
0.425	81	2.65	Mg/m3
0.3	77		
0.212	70		
0.15	64		
0.063	50		

Dry Mass of sample, g	919

Sample Proportions	% dry mass
Very coarse	0
Gravel	10
Sand	40
Silt	37
Clay	12

Grading Analysis		
D100	mm	
D60	mm	0.119
D30	mm	0.0161
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:40	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	25 September 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230915-61
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	705162
Order Number:	12380

We received 25 samples on Friday September 15, 2023 and 25 of these samples were scheduled for analysis which was completed on Friday September 22, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28634491	BH101	B4	1.00 - 1.50	13/04/2023
28634521	BH104	B7	2.00 - 2.50	18/04/2023
28634539	BH110	B4	1.00 - 1.50	27/04/2023
28634541	BH115	B10	3.00 - 3.50	21/04/2023
28634544	BHPW301	B9	3.00 - 3.50	19/04/2023
28634547	BHSS05	B10	3.00 - 3.50	03/05/2023
28634551	BHT03	B6	2.00 - 2.50	07/06/2023
28634553	BHT04	B4	1.00 - 1.50	06/06/2023
28634555	TP201	B2	2.80 - 3.00	02/05/2023
28634493	TP202	B2	3.00 - 3.20	02/05/2023
28634497	TP203	B2	2.80 - 3.00	03/05/2023
28634499	TP204	D6	2.50 - 2.70	02/05/2023
28634501	TP205	B2	2.50 - 2.70	03/05/2023
28634508	TP207	B3	1.40 - 1.60	03/05/2023
28634511	TP209	B2	1.30 - 1.50	03/05/2023
28634513	TP210	B1	0.50 - 0.70	08/05/2023
28634515	TP211	B3	1.00 - 1.20	09/05/2023
28634517	TP216	B1	0.50 - 0.70	05/05/2023
28634524	TP217	B4	1.60 - 1.80	05/05/2023
28634528	TP218	B1	0.60 - 0.80	04/05/2023
28634530	TP219	B1	0.60 - 0.80	04/05/2023
28634532	TP221	B1	3.00 - 3.20	14/06/2023
28634535	TP222	B2	2.70 - 3.00	14/06/2023
28634537	TP224	B2	2.30 - 2.50	14/06/2023
28634505	TP206A	B1	0.50 - 0.70	08/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230915-61 **Report Number:** 705162 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28634521	28634539	28634544	28634553	28634555	28634493	28634497	28634499	28634501	28634513	28634515	28634517	28634524	28634528	28634530
Customer Sample Reference			BH104	BH110	BHPW301	BHT04	TP201	TP202	TP203	TP204	TP205	TP210	TP211	TP216	TP217	TP218	TP219
AGS Reference			B7	B4	B9	B4	B2	B2	B2	D6	B2	B1	B3	B1	B4	B1	B1
Depth (m)			2.00 - 2.50	1.00 - 1.50	3.00 - 3.50	1.00 - 1.50	2.80 - 3.00	3.00 - 3.20	2.80 - 3.00	2.50 - 2.70	2.50 - 2.70	0.50 - 0.70	1.00 - 1.20	0.50 - 0.70	1.60 - 1.80	0.60 - 0.80	0.60 - 0.80
Container			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Anions by Kone (soil)	All	NDPs: 2 Tests: 9	X	X	X	X	X	N	N	X	X	X	X	X	X	X	X
Magnesium (BRE)	All	NDPs: 2 Tests: 9	X	X	X	X	X	N	N	X	X	X	X	X	X	X	X
NO3, NO2 and TON by KONE (s)	All	NDPs: 2 Tests: 9	X	X	X	X	X	N	N	X	X	X	X	X	X	X	X
pH	All	NDPs: 0 Tests: 11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Sulphate	All	NDPs: 0 Tests: 11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Sulphur	All	NDPs: 0 Tests: 11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28634521	BH104	2.00 - 2.50	Dark Brown	Silt Loam	Vegetation	None
28634539	BH110	1.00 - 1.50	Dark Brown	Sandy Loam	Stones	None
28634544	BHPW301	3.00 - 3.50	Dark Brown	Peat	Vegetation	None
28634553	BHT04	1.00 - 1.50	Dark Brown	Loamy Sand	Stones	Vegetation
28634555	TP201	2.80 - 3.00	Grey	Sandy Silt Loam	Stones	Vegetation
28634493	TP202	3.00 - 3.20	Dark Brown	Silt Loam	Vegetation	None
28634497	TP203	2.80 - 3.00	Dark Brown	Peat	Vegetation	None
28634499	TP204	2.50 - 2.70	Light Brown	Loamy Sand	Stones	None
28634501	TP205	2.50 - 2.70	Light Brown	Sandy Clay Loam	Stones	None
28634513	TP210	0.50 - 0.70	Light Brown	Sandy Clay Loam	Stones	None
28634515	TP211	1.00 - 1.20	Light Brown	Sandy Loam	Stones	None
28634517	TP216	0.50 - 0.70	Light Brown	Sandy Clay Loam	Stones	None
28634524	TP217	1.60 - 1.80	Dark Brown	Sandy Loam	Stones	None
28634528	TP218	0.60 - 0.80	Light Brown	Sandy Loam	Stones	None
28634530	TP219	0.60 - 0.80	Light Brown	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230915-61 **Report Number:** 705162 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH104	BH110	BHPW301	BHT04	TP201	TP202
Customer Sample Ref.			BH104	BH110	BHPW301	BHT04	TP201	TP202
Depth (m)			2.00 - 2.50	1.00 - 1.50	3.00 - 3.50	1.00 - 1.50	2.80 - 3.00	3.00 - 3.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			18/04/2023	27/04/2023	19/04/2023	06/06/2023	02/05/2023	02/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/09/2023	15/09/2023	15/09/2023	15/09/2023	15/09/2023	15/09/2023
SDG Ref			230915-61	230915-61	230915-61	230915-61	230915-61	230915-61
Lab Sample No.(s)			28634521	28634539	28634544	28634553	28634555	28634493
AGS Reference			B7	B4	B9	B4	B2	B2
Moisture Content Ratio (% of as received sample)	%	PM024	72	11	81	6.4	21	88
Sulphur, Total	<0.02 %	TM132					0.031 @ #	0.277 @ #
Soil Organic Matter (SOM)	<0.35 %	TM132	54.1 @ #	<0.35 @ #	74.5 @ #	1.76 @ #	1.33 @ #	89.3 @ #
pH	1 pH Units	TM133					8.07 @ M	4.89 @ M
Sulphate, acid soluble (total)	<0.0048 %	TM221					0.0437 M	0.0549 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243					0.0639 @ M	
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243					0.0062 @ M	
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243					0.0366	
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248					0.00192	0.00622
Magnesium (BRE)	<0.008 g/l	TM282					<0.008	

12:57:33 25/09/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230915-61 **Report Number:** 705162 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP203	TP204	TP205	TP210	TP211	TP216
Customer Sample Ref.			TP203	TP204	TP205	TP210	TP211	TP216
Depth (m)			2.80 - 3.00	2.50 - 2.70	2.50 - 2.70	0.50 - 0.70	1.00 - 1.20	0.50 - 0.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			03/05/2023	02/05/2023	03/05/2023	08/05/2023	09/05/2023	05/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/09/2023	15/09/2023	15/09/2023	15/09/2023	15/09/2023	15/09/2023
SDG Ref			230915-61	230915-61	230915-61	230915-61	230915-61	230915-61
Lab Sample No.(s)			28634497	28634499	28634501	28634513	28634515	28634517
AGS Reference			B2	D6	B2	B1	B3	B1
Moisture Content Ratio (% of as received sample)	%	PM024	88	5.4	15	14	9.9	19
Sulphur, Total	<0.02 %	TM132	0.202 @ #	0.0246 @ #	0.0311 @ #	0.0237 @ #	<0.02 @ #	<0.02 @ #
Soil Organic Matter (SOM)	<0.35 %	TM132	87.6 @ #	2.21 @ #	1.4 @ #	<0.35 @ #	<0.35 @ #	0.86 @ #
pH	1 pH Units	TM133	4.9 @ #	8.11 @ M	5.32 @ M	8.75 @ M	8.87 @ M	8.44 @ M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0443 #	0.021 M	0.024 M	<0.0048 M	0.0122 M	0.0156 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243		0.0394 @ M	0.0603 @ M	<0.004 @ M	<0.004 @ M	<0.004 @ M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243		0.0076 @ M	0.0029 @ M	0.0028 @ M	0.0043 @ M	0.0033 @ M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243		0.0755	0.00388	0.00388	0.00271	0.00507
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.00552	0.00639	0.0065	0.00319	0.0025	0.00129
Magnesium (BRE)	<0.008 g/l	TM282		<0.008	<0.008	<0.008	<0.008	<0.008

12:57:33 25/09/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230915-61 **Report Number:** 705162 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217	TP218	TP219			
Depth (m)			1.60 - 1.80	0.60 - 0.80	0.60 - 0.80			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			05/05/2023	04/05/2023	04/05/2023			
Sample Time			.	.	.			
Date Received			15/09/2023	15/09/2023	15/09/2023			
SDG Ref			230915-61	230915-61	230915-61			
Lab Sample No.(s)			28634524	28634528	28634530			
AGS Reference			B4	B1	B1			
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	8.6	9.7	12			
Sulphur, Total	<0.02 %	TM132	<0.02 @ #	<0.02 @ #	<0.02 @ #			
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 @ #	<0.35 @ #	0.702 @ #			
pH	1 pH Units	TM133	8.81 @ M	8.8 @ M	8.55 @ M			
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.025 M	0.0103 M	0.0179 M			
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243	0.0115 @ M	<0.004 @ M	0.01 @ M			
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0029 @ M	0.0028 @ M	0.0035 @ M			
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.0143	0.00157	0.0143			
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.0025	0.00269	0.00262			
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008			

12:57:33 25/09/2023

Notification of NDPs (No determination possible)

Date Received : 15/09/2023 10:40:09

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
28634493	TP202 B2	3.00 - 3.20	Anions by Kone (soil)	Sample unsuitable for extraction
28634493	TP202 B2	3.00 - 3.20	Magnesium (BRE)	Sample unsuitable for extraction
28634493	TP202 B2	3.00 - 3.20	NO3, NO2 and TON by KONE (s)	Sample unsuitable for extraction
28634497	TP203 B2	2.80 - 3.00	Anions by Kone (soil)	Sample unsuitable for extraction
28634497	TP203	2.80 - 3.00	Magnesium (BRE)	Sample unsuitable for analysis
28634497	TP203 B2	2.80 - 3.00	NO3, NO2 and TON by KONE (s)	Sample unsuitable for extraction

Table of Results - Appendix

Method No	Description
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM248	Determination of Ammonium BRE (2:1 Extract) on solids
TM282	Extraction of Magnesium by BRE Method
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28634521	28634539	28634544	28634553	28634555	28634493	28634497	28634499	28634501	28634513
Customer Sample Ref.	BH104	BH110	BHPW301	BHT04	TP201	TP202	TP203	TP204	TP205	TP210
AGS Ref.	B7	B4	B9	B4	B2	B2	B2	D6	B2	B1
Depth	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50	1.00 - 1.50	2.80 - 3.00	3.00 - 3.20	2.80 - 3.00	2.50 - 2.70	2.50 - 2.70	0.50 - 0.70
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract					19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023
Anions by Kone (soil)					18-Sep-2023			18-Sep-2023	19-Sep-2023	19-Sep-2023
Magnesium (BRE)					18-Sep-2023			18-Sep-2023	19-Sep-2023	19-Sep-2023
NO3, NO2 and TON by KONE (s)					21-Sep-2023			21-Sep-2023	21-Sep-2023	21-Sep-2023
pH					21-Sep-2023	21-Sep-2023	20-Sep-2023	21-Sep-2023	21-Sep-2023	20-Sep-2023
Sample description	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023
Total Organic Carbon	22-Sep-2023	21-Sep-2023	22-Sep-2023	21-Sep-2023	21-Sep-2023	22-Sep-2023	22-Sep-2023	21-Sep-2023	21-Sep-2023	22-Sep-2023
Total Sulphate					19-Sep-2023	21-Sep-2023	21-Sep-2023	19-Sep-2023	20-Sep-2023	20-Sep-2023
Total Sulphur					19-Sep-2023	20-Sep-2023	20-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023

Lab Sample No(s)	28634515	28634517	28634524	28634528	28634530
Customer Sample Ref.	TP211	TP216	TP217	TP218	TP219
AGS Ref.	B3	B1	B4	B1	B1
Depth	1.00 - 1.20	0.50 - 0.70	1.60 - 1.80	0.60 - 0.80	0.60 - 0.80
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023
Anions by Kone (soil)	19-Sep-2023	19-Sep-2023	18-Sep-2023	19-Sep-2023	19-Sep-2023
Magnesium (BRE)	19-Sep-2023	19-Sep-2023	18-Sep-2023	19-Sep-2023	19-Sep-2023
NO3, NO2 and TON by KONE (s)	21-Sep-2023	21-Sep-2023	21-Sep-2023	21-Sep-2023	21-Sep-2023
pH	20-Sep-2023	20-Sep-2023	20-Sep-2023	20-Sep-2023	21-Sep-2023
Sample description	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023
Total Organic Carbon	21-Sep-2023	22-Sep-2023	21-Sep-2023	21-Sep-2023	22-Sep-2023
Total Sulphate	20-Sep-2023	20-Sep-2023	19-Sep-2023	20-Sep-2023	20-Sep-2023
Total Sulphur	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALS Environmental Analytical Services

Sample Descriptions

SDG Number	230925-27	**Location**	Derrygreenagh
Client Reference	2023OY104	**Order No.**	12380
Attention	Dympna Darcy	**Date Received**	25/09/2023 10:00:00

Grain

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusion 1)	Inclusion 2)
28679633	TPC04	**1.60 - 1.70**	**Dark Brown**	**Silt Loam**	**Stones**	**Fibres**

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

ALS Life Sciences Limited

Notification of NDPs (No determination possible)

SDG Number	230925-27	**Location**	Derrygreenagh
Client	D_DRILL_LGA	**Order No.**	12380
Client Reference	2023OY104		
Attention	Dympna Darcy	**Date Received**	25/09/2023 11:13:24

Sample No	Sample Identity	Depth (m)	Test	Comment
28685220	TPC01	0.50 - 0.60	Anions by Kone (soil)	Sample unsuitable for extraction
28685220	TPC01	0.50 - 0.60	Kone Anions prep (s)	Sample unsuitable for extraction
28685220	TPC01	0.50 - 0.60	NO3, NO2 and TON by KONE (s)	Sample unsuitable for extraction
28712885	TPC01	0.50 - 0.60	Magnesium (BRE)	Sample unsuitable for extraction

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	02 October 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230925-27
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	706013
Order Number:	12380

We received 8 samples on Monday September 25, 2023 and 8 of these samples were scheduled for analysis which was completed on Monday October 02, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28679629	TPC01	B1	0.50 - 0.60	29/05/2023
28679631	TPC02	B5	2.50 - 3.00	29/05/2023
28679633	TPC04	B3	1.60 - 1.70	30/05/2023
28679635	TPCC01	B5	2.90 - 3.00	29/05/2023
28679637	TPT01	B6	3.40 - 3.50	26/05/2023
28679639	TPT03	B3	1.50 - 1.60	26/05/2023
28679641	TPT04	B5	2.10 - 2.20	26/05/2023
28679644	TPT09	B1	0.50 - 0.60	25/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230925-27 **Report Number:** 706013 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

		Lab Sample No(s)	28679629	28679631	28679633	28679635	28679637	28679639	28679641	28679644
		Customer Sample Reference	TPC01	TPC02	TPC04	TPCC01	TPT01	TPT03	TPT04	TPT09
		AGS Reference	B1	B5	B3	B5	B6	B3	B5	B1
		Depth (m)	0.50 - 0.60	2.50 - 3.00	1.60 - 1.70	2.90 - 3.00	3.40 - 3.50	1.50 - 1.60	2.10 - 2.20	0.50 - 0.60
		Container	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
		Sample Type	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 8	X	X	X	X	X	X	X	X
Anions by Kone (soil)	All	NDPs: 1 Tests: 7	N	X	X	X	X	X	X	X
Magnesium (BRE)	All	NDPs: 1 Tests: 7	N	X	X	X	X	X	X	X
NO3, NO2 and TON by KONE (s)	All	NDPs: 1 Tests: 7	N	X	X	X	X	X	X	X
pH	All	NDPs: 0 Tests: 8	X	X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 8	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 5	X	X	X	X				X
Total Sulphate	All	NDPs: 0 Tests: 8	X	X	X	X	X	X	X	X
Total Sulphur	All	NDPs: 0 Tests: 8	X	X	X	X	X	X	X	X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28679629	TPC01	0.50 - 0.60	Dark Brown	Silt Loam	Vegetation	None
28679631	TPC02	2.50 - 3.00	Dark Brown	Silty Clay Loam	Stones	Vegetation
28679633	TPC04	1.60 - 1.70	Dark Brown	Silt Loam	Stones	Fibres
28679635	TPCC01	2.90 - 3.00	Dark Brown	Sandy Silt Loam	Stones	None
28679637	TPT01	3.40 - 3.50	Grey	Loamy Sand	Stones	None
28679639	TPT03	1.50 - 1.60	Dark Brown	Sandy Loam	Stones	None
28679641	TPT04	2.10 - 2.20	Dark Brown	Loamy Sand	Stones	None
28679644	TPT09	0.50 - 0.60	Dark Brown	Sandy Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

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Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230925-27 **Report Number:** 706013 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPC01	TPC02	TPC04	TPCC01	TPT01	TPT03
Customer Sample Ref.			TPC01	TPC02	TPC04	TPCC01	TPT01	TPT03
Depth (m)			0.50 - 0.60	2.50 - 3.00	1.60 - 1.70	2.90 - 3.00	3.40 - 3.50	1.50 - 1.60
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	29/05/2023	30/05/2023	29/05/2023	26/05/2023	26/05/2023
Sample Time			-	-	-	-	-	-
Date Received			25/09/2023	25/09/2023	25/09/2023	25/09/2023	25/09/2023	25/09/2023
SDG Ref			230925-27	230925-27	230925-27	230925-27	230925-27	230925-27
Lab Sample No.(s)			28679629	28679631	28679633	28679635	28679637	28679639
AGS Reference			B1	B5	B3	B5	B6	B3
Moisture Content Ratio (% of as received sample)	%	PM024	87	22	24	56	11	18
Sulphur, Total	<0.02 %	TM132	0.167 @ #	<0.02 @ #	0.0363 @ #	1.37 @ #	0.403 @ #	<0.02 @ #
Soil Organic Matter (SOM)	<0.35 %	TM132	76.2 @ #	1.27 @ #	2.17 @ #	10.3 @ #		
pH	1 pH Units	TM133	5.93 @ M	8.21 @ M	6.12 @ M	7.54 @ M	7.87 @ M	8.23 @ M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0542 M	0.0399 M	0.0259 M	0.64 M	0.115 M	0.0636 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243		0.11 @ M	0.0462 @ M	0.964 @ M	0.319 @ M	0.2 @ M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243		0.0074 @ M	0.0058 @ M	0.0085 @ M	0.0119 @ M	0.0126 @ M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243		0.0736	0.00641	0.000516	0.000481	0.000827
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.00613	0.00311	0.00245	0.00361	0.00326	0.00346
Magnesium (BRE)	<0.008 g/l	TM282		<0.008	<0.008	<0.008	<0.008	<0.008

13:41:47 02/10/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230925-27 **Report Number:** 706013 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT04	TPT09				
Depth (m)			2.10 - 2.20	0.50 - 0.60				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			26/05/2023	25/05/2023				
Sample Time			.	.				
Date Received			25/09/2023	25/09/2023				
SDG Ref			230925-27	230925-27				
Lab Sample No.(s)			28679641	28679644				
AGS Reference			B5	B1				
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	9.3	20				
Sulphur, Total	<0.02 %	TM132	<0.02 @ #	<0.02 @ #				
Soil Organic Matter (SOM)	<0.35 %	TM132		1.79 @ #				
pH	1 pH Units	TM133	8.83 @ M	8.24 @ M				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0382 M	0.0543 M				
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243	0.0218 @ M	0.116 @ M				
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0104 @ M	0.0117 @ M				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.00148	0.000328				
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.00392	0.00318				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				

13:41:47 02/10/2023

CERTIFICATE OF ANALYSIS

SDG: 230925-27 **Report Number:** 706013 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Notification of NDPs (No determination possible)

Date Received : 25/09/2023 11:13:24

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
28679629	TPC01 B1	0.50 - 0.60	Anions by Kone (soil)	Sample unsuitable for extraction
28679629	TPC01	0.50 - 0.60	Magnesium (BRE)	Sample unsuitable for extraction
28679629	TPC01 B1	0.50 - 0.60	NO3, NO2 and TON by KONE (s)	Sample unsuitable for extraction

Table of Results - Appendix

Method No	Description
TM248	Determination of Ammonium BRE (2:1 Extract) on solids
TM282	Extraction of Magnesium by BRE Method
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230925-27 **Report Number:** 706013 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	28679629	28679631	28679633	28679635	28679637	28679639	28679641	28679644
Customer Sample Ref.	TPC01	TPC02	TPC04	TPCC01	TPT01	TPT03	TPT04	TPT09
AGS Ref.	B1	B5	B3	B5	B6	B3	B5	B1
Depth	0.50 - 0.60	2.50 - 3.00	1.60 - 1.70	2.90 - 3.00	3.40 - 3.50	1.50 - 1.60	2.10 - 2.20	0.50 - 0.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	28-Sep-2023	28-Sep-2023	02-Oct-2023	28-Sep-2023	28-Sep-2023	28-Sep-2023	28-Sep-2023	28-Sep-2023
Anions by Kone (soil)		29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023
Magnesium (BRE)		29-Sep-2023	02-Oct-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023
NO3, NO2 and TON by KONE (s)		02-Oct-2023	02-Oct-2023	02-Oct-2023	02-Oct-2023	02-Oct-2023	02-Oct-2023	02-Oct-2023
pH	27-Sep-2023	27-Sep-2023	27-Sep-2023	27-Sep-2023	27-Sep-2023	27-Sep-2023	27-Sep-2023	27-Sep-2023
Sample description	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023
Total Organic Carbon	02-Oct-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023				29-Sep-2023
Total Sulphate	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023
Total Sulphur	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	12 October 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	231005-93
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	707132
Order Number:	12380

We received 22 samples on Thursday October 05, 2023 and 22 of these samples were scheduled for analysis which was completed on Thursday October 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28734629	BH117	B6	2.00 - 2.50	10/05/2023
28734656	BHSS01	B11	4.00 - 4.50	16/05/2023
28734666	BHSS02	B9	3.00 - 3.50	05/05/2023
28734671	BHSS03	B4	1.00 - 1.50	08/05/2023
28734678	TP214	B2	1.70 - 1.90	10/05/2023
28734681	TP215	B3	1.60 - 1.80	10/05/2023
28734684	TP302	B3	0.90 - 1.00	16/05/2023
28734687	TP303	B3	2.20 - 2.30	16/05/2023
28734689	TP305	B1	0.80 - 0.80	17/05/2023
28734632	TP308	B3	1.30 - 1.40	22/05/2023
28734634	TP312	B2	1.20 - 1.30	31/05/2023
28734636	TPBP01	B3	1.40 - 1.50	23/05/2023
28734639	TPBP06	B4	1.20 - 1.30	24/05/2023
28734641	TPBP08	B1	0.40 - 0.50	24/05/2023
28734643	TPC06	B3	2.50 - 2.60	30/05/2023
28734645	TPSS02	B1	1.90 - 2.10	10/05/2023
28734647	TPSS04	B1	2.10 - 2.20	11/05/2023
28734649	TPSS06	B2	2.00 - 2.20	11/05/2023
28734653	TPT05	B3	1.00 - 1.10	25/05/2023
28734658	TPT14	B4	1.50 - 1.60	16/05/2023
28734660	TPT16	B3	0.80 - 0.90	15/05/2023
28734662	TPT18	B3	1.30 - 1.40	15/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 231005-93 **Report Number:** 707132 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28734629	28734656	28734666	28734671	28734678	28734681	28734684	28734687	28734689	28734632	28734634	28734636	28734639	28734641	28734643	28734645	28734647	28734649	28734653
Customer Sample Reference			BH117	BHSS01	BHSS02	BHSS03	TP214	TP215	TP302	TP303	TP305	TP308	TP312	TPBP01	TPBP06	TPBP08	TPC06	TPSS02	TPSS04	TPSS06	TPT05
AGS Reference			B6	B11	B9	B4	B2	B3	B3	B3	B1	B3	B2	B3	B4	B1	B3	B1	B1	B2	B3
Depth (m)			2.00 - 2.50	4.00 - 4.50	3.00 - 3.50	1.00 - 1.50	1.70 - 1.90	1.60 - 1.80	0.90 - 1.00	2.20 - 2.30	0.80 - 0.80	1.30 - 1.40	1.20 - 1.30	1.40 - 1.50	1.20 - 1.30	0.40 - 0.50	2.50 - 2.60	1.90 - 2.10	2.10 - 2.20	2.00 - 2.20	1.00 - 1.10
Container			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Anions by Kone (soil)	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Magnesium (BRE)	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
pH	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 22	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
Total Sulphate	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Sulphur	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

28734662	TPT18	B3	1.30 - 1.40	250g Amber Jar (ALE210)	S		X		X		X		X		X		X		X		X
28734660	TPT16	B3	0.80 - 0.90	250g Amber Jar (ALE210)	S		X		X		X		X		X		X		X		X
28734658	TPT14	B4	1.50 - 1.60	250g Amber Jar (ALE210)	S		X		X		X		X		X		X		X		X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28734629	BH117	2.00 - 2.50	Light Brown	Silty Clay Loam	Stones	Vegetation
28734656	BHSS01	4.00 - 4.50	Dark Brown	Sandy Silt Loam	Stones	None
28734666	BHSS02	3.00 - 3.50	Grey	Sandy Clay	Stones	None
28734671	BHSS03	1.00 - 1.50	Dark Brown	Sandy Loam	Stones	Vegetation
28734678	TP214	1.70 - 1.90	Grey	Clay	Stones	None
28734681	TP215	1.60 - 1.80	Light Brown	Sandy Clay Loam	Stones	None
28734684	TP302	0.90 - 1.00	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28734687	TP303	2.20 - 2.30	Dark Brown	Silt Loam	Stones	None
28734689	TP305	0.80 - 0.80	Dark Brown	Sandy Clay Loam	Stones	None
28734632	TP308	1.30 - 1.40	Dark Brown	Loamy Sand	Stones	None
28734634	TP312	1.20 - 1.30	Dark Brown	Loamy Sand	Stones	None
28734636	TPBP01	1.40 - 1.50	Dark Brown	Silt Loam	None	None
28734639	TPBP06	1.20 - 1.30	Dark Brown	Sandy Clay Loam	Stones	None
28734641	TPBP08	0.40 - 0.50	Dark Brown	Sandy Loam	Stones	None
28734643	TPC06	2.50 - 2.60	Dark Brown	Silt Loam	None	None
28734645	TPSS02	1.90 - 2.10	Light Brown	Sandy Clay Loam	Stones	None
28734647	TPSS04	2.10 - 2.20	Dark Brown	Loamy Sand	Stones	None
28734649	TPSS06	2.00 - 2.20	Light Brown	Sandy Clay Loam	Stones	None
28734653	TPT05	1.00 - 1.10	Dark Brown	Silty Sand	None	None
28734658	TPT14	1.50 - 1.60	Dark Brown	Sand	Stones	None
28734660	TPT16	0.80 - 0.90	Dark Brown	Silt Loam	Stones	None
28734662	TPT18	1.30 - 1.40	Dark Brown	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 231005-93 **Report Number:** 707132 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH117	BHSS01	BHSS02	BHSS03	TP214	TP215
Customer Sample Ref.			BH117	BHSS01	BHSS02	BHSS03	TP214	TP215
Depth (m)			2.00 - 2.50	4.00 - 4.50	3.00 - 3.50	1.00 - 1.50	1.70 - 1.90	1.60 - 1.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	16/05/2023	05/05/2023	08/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023
SDG Ref			231005-93	231005-93	231005-93	231005-93	231005-93	231005-93
Lab Sample No.(s)			28734629	28734656	28734666	28734671	28734678	28734681
AGS Reference			B6	B11	B9	B4	B2	B3
Moisture Content Ratio (% of as received sample)	%	PM024	9.2	20	10	36	9.4	23
Sulphur, Total	<0.02 %	TM132					<0.02 @ #	0.0401 @ #
Soil Organic Matter (SOM)	<0.35 %	TM132	0.398 @ #	2.95 @ #	<0.35 @ #	10.8 @ #	0.4 @ #	0.612 @ #
pH	1 pH Units	TM133					8.71 @ M	8.66 @ M
Sulphate, acid soluble (total)	<0.0048 %	TM221					0.0275 M	<0.0048 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243					0.0162 @ M	0.0144 @ M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243					0.0066 @ M	0.0178 @ M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243					0.00395	0.000863
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248					0.00264	0.00305
Magnesium (BRE)	<0.008 g/l	TM282					<0.008	<0.008

14:04:04 12/10/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 231005-93 **Report Number:** 707132 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP302	TP303	TP305	TP308	TP312	TPBP01
Customer Sample Ref.			TP302	TP303	TP305	TP308	TP312	TPBP01
Depth (m)			0.90 - 1.00	2.20 - 2.30	0.80 - 0.80	1.30 - 1.40	1.20 - 1.30	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			16/05/2023	16/05/2023	17/05/2023	22/05/2023	31/05/2023	23/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023
SDG Ref			231005-93	231005-93	231005-93	231005-93	231005-93	231005-93
Lab Sample No.(s)			28734684	28734687	28734689	28734632	28734634	28734636
AGS Reference			B3	B3	B1	B3	B2	B3
Moisture Content Ratio (% of as received sample)	%	PM024	38	52	22	25	8.3	58
Sulphur, Total	<0.02 %	TM132	0.084 @ #	0.439 @ #	<0.02 @ #	0.0374 @ #	0.0348 @ #	2.3 @ #
Soil Organic Matter (SOM)	<0.35 %	TM132	6.02 @ #	12.7 @ #	2.43 @ #	2.41 @ #		24.5 @ #
pH	1 pH Units	TM133	7.84 @ M	7.12 @ M	8.03 @ M	8.07 @ M	8.52 @ M	4.42 @ M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.049 M	0.353 M	0.014 M	0.0485 M	0.0211 M	1.34 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243	0.135 @ M	0.655 @ M	<0.004 @ M	0.107 @ M	0.0353 @ M	1.87 @ M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0086 @ M	0.0083 @ M	0.0049 @ M	0.0096 @ M	0.0065 @ M	0.0525 @ M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.0288	0.085	0.0446	0.0154	0.00102	<0.0003
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.00165	0.00345	0.00175	0.00252	0.00289	0.00966
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	0.0162	<0.008	<0.008	<0.008	0.123

14:04:04 12/10/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 231005-93 **Report Number:** 707132 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPBP06	TPBP08	TPC06	TPSS02	TPSS04	TPSS06
Depth (m)			1.20 - 1.30	0.40 - 0.50	2.50 - 2.60	1.90 - 2.10	2.10 - 2.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			24/05/2023	24/05/2023	30/05/2023	10/05/2023	11/05/2023	11/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023
SDG Ref			231005-93	231005-93	231005-93	231005-93	231005-93	231005-93
Lab Sample No.(s)			28734639	28734641	28734643	28734645	28734647	28734649
AGS Reference			B4	B1	B3	B1	B1	B2
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	7.6	27	42	27	13	17
Sulphur, Total	<0.02 %	TM132	0.0225 @ #	0.09 @ #	0.409 @ #	0.0287 @ #	<0.02 @ #	<0.02 @ #
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 @ #	16.3 @ #	7.45 @ #	2.93 @ #	1.13 @ #	0.783 @ #
pH	1 pH Units	TM133	8.56 @ M	8.05 @ M	5.98 @ M	5.39 @ M	6.16 @ M	5.87 @ M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0456 M	0.0495 M	0.302 M	0.0209 M	0.00913 M	0.00609 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243	0.106 @ M	0.0098 @ M	1.31 @ M	0.0381 @ M	0.0711 @ M	0.026 @ M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.01 @ M	0.0071 @ M	0.0106 @ M	0.0052 @ M	0.0293 @ M	0.006 @ M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.000496	0.115	0.00395	0.0208	0.033	0.00345
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.00304	0.00241	0.00536	0.00478	0.0041	0.00521
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	0.016	<0.008	<0.008	<0.008

Validated

CERTIFICATE OF ANALYSIS

SDG: 231005-93 **Report Number:** 707132 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT05	TPT14	TPT16	TPT18		
Depth (m)			1.00 - 1.10	1.50 - 1.60	0.80 - 0.90	1.30 - 1.40		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			25/05/2023	16/05/2023	15/05/2023	15/05/2023		
Sample Time			.	.	.	.		
Date Received			05/10/2023	05/10/2023	05/10/2023	05/10/2023		
SDG Ref			231005-93	231005-93	231005-93	231005-93		
Lab Sample No.(s)			28734653	28734658	28734660	28734662		
AGS Reference			B3	B4	B3	B3		
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	21	5.7	41	22		
Sulphur, Total	<0.02 %	TM132	<0.02 @ #	<0.02 @ #	0.0957 @ #	0.0238 @ #		
Soil Organic Matter (SOM)	<0.35 %	TM132	0.722 @ #	4.43 @ #	9.28 @ #	2.52 @ #		
pH	1 pH Units	TM133	8.46 @ M	9.26 @ M	6.67 @ M	7.75 @ M		
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0238 M	0.0388 M	0.0649 M	0.0179 M		
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243	0.0542 @ M	0.0114 @ M	0.0853 @ M	0.0174 @ M		
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0118 @ M	0.0064 @ M	0.0073 @ M	0.0108 @ M		
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.00361	0.00154	0.0753	0.0454		
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.00329	0.00398	0.00247	0.00202		
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008		

14:04:04 12/10/2023

Table of Results - Appendix

Method No	Description
TM248	Determination of Ammonium BRE (2:1 Extract) on solids
TM282	Extraction of Magnesium by BRE Method
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28734629	28734656	28734666	28734671	28734678	28734681	28734684	28734687	28734689	28734632
Customer Sample Ref.	BH117	BHSS01	BHSS02	BHSS03	TP214	TP215	TP302	TP303	TP305	TP308
AGS Ref.	B6	B11	B9	B4	B2	B3	B3	B3	B1	B3
Depth	2.00 - 2.50	4.00 - 4.50	3.00 - 3.50	1.00 - 1.50	1.70 - 1.90	1.60 - 1.80	0.90 - 1.00	2.20 - 2.30	0.80 - 0.80	1.30 - 1.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract					10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023
Anions by Kone (soil)					11-Oct-2023	11-Oct-2023	12-Oct-2023	12-Oct-2023	11-Oct-2023	11-Oct-2023
Magnesium (BRE)					09-Oct-2023	09-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	09-Oct-2023
NO3, NO2 and TON by KONE (s)					10-Oct-2023	10-Oct-2023	12-Oct-2023	12-Oct-2023	10-Oct-2023	10-Oct-2023
pH					09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023
Sample description	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023
Total Organic Carbon	10-Oct-2023	11-Oct-2023	12-Oct-2023	11-Oct-2023	10-Oct-2023	10-Oct-2023	11-Oct-2023	11-Oct-2023	12-Oct-2023	10-Oct-2023
Total Sulphate					10-Oct-2023	10-Oct-2023	12-Oct-2023	12-Oct-2023	10-Oct-2023	10-Oct-2023
Total Sulphur					11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023

Lab Sample No(s)	28734634	28734636	28734639	28734641	28734643	28734645	28734647	28734649	28734653	28734658
Customer Sample Ref.	TP312	TPBP01	TPBP06	TPBP08	TPC06	TPSS02	TPSS04	TPSS06	TPT05	TPT14
AGS Ref.	B2	B3	B4	B1	B3	B1	B1	B2	B3	B4
Depth	1.20 - 1.30	1.40 - 1.50	1.20 - 1.30	0.40 - 0.50	2.50 - 2.60	1.90 - 2.10	2.10 - 2.20	2.00 - 2.20	1.00 - 1.10	1.50 - 1.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023
Anions by Kone (soil)	11-Oct-2023	12-Oct-2023	11-Oct-2023	11-Oct-2023	12-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023
Magnesium (BRE)	11-Oct-2023	11-Oct-2023	09-Oct-2023	09-Oct-2023	11-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023
NO3, NO2 and TON by KONE (s)	10-Oct-2023	12-Oct-2023	10-Oct-2023	10-Oct-2023	12-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023
pH	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023
Sample description	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023
Total Organic Carbon		11-Oct-2023	10-Oct-2023	10-Oct-2023	11-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023
Total Sulphate	10-Oct-2023	12-Oct-2023	10-Oct-2023	10-Oct-2023	12-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023
Total Sulphur	10-Oct-2023	12-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	10-Oct-2023	10-Oct-2023

Lab Sample No(s)	28734660	28734662
Customer Sample Ref.	TPT16	TPT18
AGS Ref.	B3	B3
Depth	0.80 - 0.90	1.30 - 1.40
Type	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	10-Oct-2023	10-Oct-2023
Anions by Kone (soil)	12-Oct-2023	11-Oct-2023
Magnesium (BRE)	11-Oct-2023	09-Oct-2023
NO3, NO2 and TON by KONE (s)	12-Oct-2023	10-Oct-2023
pH	09-Oct-2023	09-Oct-2023
Sample description	06-Oct-2023	06-Oct-2023
Total Organic Carbon	11-Oct-2023	10-Oct-2023
Total Sulphate	12-Oct-2023	10-Oct-2023
Total Sulphur	11-Oct-2023	10-Oct-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	25 October 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	231017-51
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	708637
Order Number:	12380

We received 53 samples on Tuesday October 17, 2023 and 53 of these samples were scheduled for analysis which was completed on Wednesday October 25, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28795401	BH17A	B1	0.00 - 1.00	31/07/2023
28795403	BH17A	B7	2.00 - 2.50	31/07/2023
28795407	BH17A	B10	3.00 - 3.50	31/07/2023
28795350	BHCC01	B1	0.00 - 1.00	14/06/2023
28795376	BHSS06	B1	0.00 - 1.00	13/06/2023
28795399	BHSS06	B9	3.00 - 3.50	14/06/2023
28795430	BHSS101	B1	0.00 - 1.00	17/07/2023
28795475	BHSS101	B7	2.00 - 2.50	17/07/2023
28795494	BHSS102	B1	0.00 - 1.00	18/07/2023
28795498	BHSS102	B4	1.00 - 1.50	18/07/2023
28795501	BHSS103	B1	0.00 - 1.00	17/07/2023
28795507	BHSS103	B4	1.00 - 1.50	17/07/2023
28795353	BHSS104	B4	1.00 - 1.50	19/07/2023
28795356	BHSS104	B10	3.00 - 3.50	19/07/2023
28795358	BHSS105	B1	0.00 - 1.00	14/07/2023
28795360	BHSS105	B4	1.00 - 1.50	14/07/2023
28795363	BHSS106	B1	0.00 - 1.00	01/07/2023
28795366	BHSS106	B4	1.00 - 1.50	20/07/2023
28795368	BHSS107	B1	0.00 - 1.00	20/07/2023
28795370	BHSS107	B4	1.00 - 1.50	20/07/2023
28795372	BHSS1M08	B1	0.00 - 1.00	19/07/2023
28795374	BHSS1M08	B4	1.00 - 1.50	19/07/2023
28795378	BHT01	B9	3.00 - 3.50	13/06/2023
28795380	BHT02	B1	0.00 - 1.00	08/06/2023
28795382	BHT02	B10	3.00 - 3.50	08/06/2023
28795384	BHT08	B1	0.00 - 1.00	16/06/2023
28795386	BHT08	B7	2.00 - 2.50	19/06/2023
28795389	BHT08	B10	3.00 - 3.50	19/06/2023
28795391	BHT16	B1	0.00 - 1.00	22/06/2023
28795393	BHT16	B7	2.00 - 2.50	22/06/2023
28795395	BHT16A	B1	0.00 - 1.00	01/08/2023
28795397	BHT16A	B4	1.00 - 1.50	01/08/2023
28795410	BHT18A	B1	0.00 - 1.00	02/08/2023
28795412	BHT18A	B10	3.00 - 3.50	03/08/2023
28795415	BHT18A	B16	5.00 - 5.50	03/08/2023
28795418	TP208	B1	0.50 - 0.60	29/06/2023
28795421	TP208	B3	2.00 - 2.10	29/06/2023
28795424	TPC08	B3	0.80 - 0.90	28/06/2023
28795427	TPC09	B1	0.40 - 0.50	28/06/2023
28795432	TPC09	B3	1.30 - 1.40	28/06/2023
28795437	TPSS101	B1	0.40 - 0.50	27/06/2023
28795441	TPSS101	B4	1.40 - 1.50	27/06/2023
28795445	TPSS101	B6	2.40 - 2.50	27/06/2023
28795450	TPSS102	B1	0.40 - 0.50	27/06/2023
28795454	TPSS102	B4	1.40 - 1.50	27/06/2023
28795459	TPSS103	B1	0.40 - 0.50	27/06/2023
28795464	TPSS103	B4	1.40 - 1.50	27/06/2023
28795467	TPSS104	B1	0.30 - 0.40	28/06/2023
28795471	TPSS104	B3	0.70 - 0.80	28/06/2023
28795478	TPSS105	B1	0.40 - 0.50	27/06/2023
28795482	TPSS106	B1	0.40 - 0.50	27/06/2023
28795486	TPSS106	B6	2.40 - 2.50	27/06/2023
28795492	TPSS107	B1	0.40 - 0.50	28/06/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28795401	28795403	28795407	28795350	28795376	28795399	28795430	28795475	28795494	28795498	28795501	28795507	28795353	28795356	28795358	28795360	28795363	28795366	28795368
Customer Sample Reference			BH17A	BH17A	BH17A	BHCC01	BHSS06	BHSS06	BHSS101	BHSS101	BHSS102	BHSS102	BHSS103	BHSS103	BHSS104	BHSS104	BHSS105	BHSS105	BHSS106	BHSS106	BHSS107
AGS Reference			B1	B7	B10	B1	B1	B9	B1	B7	B1	B4	B1	B4	B4	B10	B1	B4	B1	B4	B1
Depth (m)			0.00 - 1.00	2.00 - 2.50	3.00 - 3.50	0.00 - 1.00	0.00 - 1.00	3.00 - 3.50	0.00 - 1.00	2.00 - 2.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50	1.00 - 1.50	3.00 - 3.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00
Container			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by ion Chromatography	All	NDPs: 0 Tests: 2																			
Loss on Ignition in soils	All	NDPs: 0 Tests: 1									X										
pH	All	NDPs: 0 Tests: 24			X			X	X			X		X		X		X		X	
Sample description	All	NDPs: 0 Tests: 53	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 46	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
Total Sulphate	All	NDPs: 0 Tests: 24			X			X	X			X		X		X		X		X	

28795432	TPC09	B3	1.30 - 1.40	250g Amber Jar (ALE210)	S						X		X		X		X
28795427	TPC09	B1	0.40 - 0.50	250g Amber Jar (ALE210)	S								X		X		
28795424	TPC08	B3	0.80 - 0.90	250g Amber Jar (ALE210)	S						X		X		X		X
28795421	TP208	B3	2.00 - 2.10	250g Amber Jar (ALE210)	S						X		X		X		X
28795418	TP208	B1	0.50 - 0.60	250g Amber Jar (ALE210)	S								X		X		
28795415	BHT18A	B16	5.00 - 5.50	250g Amber Jar (ALE210)	S								X		X		
28795412	BHT18A	B10	3.00 - 3.50	250g Amber Jar (ALE210)	S						X		X		X		X
28795410	BHT18A	B1	0.00 - 1.00	250g Amber Jar (ALE210)	S								X		X		
28795397	BHT16A	B4	1.00 - 1.50	250g Amber Jar (ALE210)	S						X		X		X		X
28795395	BHT16A	B1	0.00 - 1.00	250g Amber Jar (ALE210)	S								X		X		
28795393	BHT16	B7	2.00 - 2.50	250g Amber Jar (ALE210)	S		X						X				
28795391	BHT16	B1	0.00 - 1.00	250g Amber Jar (ALE210)	S						X		X		X		X
28795389	BHT08	B10	3.00 - 3.50	250g Amber Jar (ALE210)	S		X						X				
28795386	BHT08	B7	2.00 - 2.50	250g Amber Jar (ALE210)	S						X		X		X		X
28795384	BHT08	B1	0.00 - 1.00	250g Amber Jar (ALE210)	S						X		X		X		X
28795382	BHT02	B10	3.00 - 3.50	250g Amber Jar (ALE210)	S								X		X		
28795380	BHT02	B1	0.00 - 1.00	250g Amber Jar (ALE210)	S						X		X				X
28795378	BHT01	B9	3.00 - 3.50	250g Amber Jar (ALE210)	S						X		X		X		X
28795374	BHSS1M08	B4	1.00 - 1.50	250g Amber Jar (ALE210)	S						X		X				X
28795372	BHSS1M08	B1	0.00 - 1.00	250g Amber Jar (ALE210)	S								X		X		
28795370	BHSS107	B4	1.00 - 1.50	250g Amber Jar (ALE210)	S						X		X				X

Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28795437	28795441	28795445	28795450	28795454	28795459	28795464	28795467	28795471	28795478	28795482	28795486	28795492
Customer Sample Reference			TPSS101	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103	TPSS104	TPSS104	TPSS105	TPSS106	TPSS106	TPSS107
AGS Reference			B1	B4	B6	B1	B4	B1	B4	B1	B3	B1	B1	B6	B1
Depth (m)			0.40 - 0.50	1.40 - 1.50	2.40 - 2.50	0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.40 - 1.50	0.30 - 0.40	0.70 - 0.80	0.40 - 0.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50
Container			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S
pH	All	NDPs: 0 Tests: 24		X				X			X	X			
Sample description	All	NDPs: 0 Tests: 53	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 46	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Sulphate	All	NDPs: 0 Tests: 24		X				X			X	X			

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28795401	BH17A	0.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None
28795403	BH17A	2.00 - 2.50	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28795407	BH17A	3.00 - 3.50	Grey	Silt Loam	None	None
28795350	BHCC01	0.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None
28795376	BHSS06	0.00 - 1.00	Black	Loamy Sand	None	Vegetation
28795399	BHSS06	3.00 - 3.50	Black	Loamy Sand	None	None
28795430	BHSS101	0.00 - 1.00	Dark Brown	Sandy Loam	Stones	Vegetation
28795475	BHSS101	2.00 - 2.50	Light Brown	Clay	None	None
28795494	BHSS102	0.00 - 1.00	Dark Brown	Clay Loam	Stones	None
28795498	BHSS102	1.00 - 1.50	Dark Brown	Clay Loam	Stones	None
28795501	BHSS103	0.00 - 1.00	Dark Brown	Sandy Silt Loam	Stones	None
28795507	BHSS103	1.00 - 1.50	Dark Brown	Sandy Clay Loam	Stones	None
28795353	BHSS104	1.00 - 1.50	Dark Brown	Sandy Clay Loam	Stones	None
28795356	BHSS104	3.00 - 3.50	Grey	Sandy Loam	Stones	None
28795358	BHSS105	0.00 - 1.00	Dark Brown	Loamy Sand	Stones	None
28795360	BHSS105	1.00 - 1.50	Light Brown	Sandy Clay Loam	Stones	None
28795363	BHSS106	0.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None
28795366	BHSS106	1.00 - 1.50	Dark Brown	Clay Loam	Stones	None
28795368	BHSS107	0.00 - 1.00	Dark Brown	Silt Loam	None	None
28795370	BHSS107	1.00 - 1.50	Light Brown	Clay	Stones	None
28795372	BHSS1M08	0.00 - 1.00	Dark Brown	Sandy Clay Loam	Vegetation	Stones
28795374	BHSS1M08	1.00 - 1.50	Light Brown	Sandy Clay Loam	Stones	None
28795378	BHT01	3.00 - 3.50	Dark Brown	Loamy Sand	Stones	None
28795380	BHT02	0.00 - 1.00	Black	Silt Loam	Vegetation	None
28795382	BHT02	3.00 - 3.50	Grey	Silt Loam	None	None
28795384	BHT08	0.00 - 1.00	Dark Brown	Loamy Sand	Stones	None
28795386	BHT08	2.00 - 2.50	Dark Brown	Sand	Stones	None
28795389	BHT08	3.00 - 3.50	Dark Brown	Sand	Stones	None
28795391	BHT16	0.00 - 1.00	Dark Brown	Loamy Sand	Stones	Vegetation
28795393	BHT16	2.00 - 2.50	Grey	Sand	Stones	None
28795395	BHT16A	0.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None
28795397	BHT16A	1.00 - 1.50	Dark Brown	Loamy Sand	Stones	Vegetation
28795410	BHT18A	0.00 - 1.00	Black	Silt Loam	Stones	Vegetation
28795412	BHT18A	3.00 - 3.50	Dark Brown	Sandy Loam	None	None
28795415	BHT18A	5.00 - 5.50	Dark Brown	Sandy Loam	Stones	None
28795418	TP208	0.50 - 0.60	Dark Brown	Silt Loam	Vegetation	None
28795421	TP208	2.00 - 2.10	Dark Brown	Clay	None	None
28795424	TPC08	0.80 - 0.90	Dark Brown	Clay	Stones	None
28795427	TPC09	0.40 - 0.50	Dark Brown	Silt Loam	Vegetation	None

			Colour	Description	Inclusions	Inclusions 2
28795432	TPC09	1.30 - 1.40	Dark Brown	Sandy Clay	Stones	None
28795437	TPSS101	0.40 - 0.50	Dark Brown	Sandy Clay Loam	Stones	Vegetation
28795441	TPSS101	1.40 - 1.50	Light Brown	Sandy Clay	Stones	None
28795445	TPSS101	2.40 - 2.50	Light Brown	Sandy Clay	Stones	None
28795450	TPSS102	0.40 - 0.50	Dark Brown	Clay	Stones	None
28795454	TPSS102	1.40 - 1.50	Grey	Sandy Clay Loam	None	None
28795459	TPSS103	0.40 - 0.50	Dark Brown	Sandy Clay	Stones	None
28795464	TPSS103	1.40 - 1.50	Light Brown	Sandy Clay	Stones	None
28795467	TPSS104	0.30 - 0.40	Black	Loamy Sand	None	None
28795471	TPSS104	0.70 - 0.80	Dark Brown	Sandy Clay	Stones	None
28795478	TPSS105	0.40 - 0.50	Dark Brown	Loamy Sand	Stones	None
28795482	TPSS106	0.40 - 0.50	Grey	Silty Clay Loam	None	None
28795486	TPSS106	2.40 - 2.50	Grey	Sandy Clay	Stones	None
28795492	TPSS107	0.40 - 0.50	Dark Brown	Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH17A BH T 17A	BH17A BH T 17A	BH17A BH T 17A	BHCC01	BHSS06	BHSS06
Depth (m)			0.00 - 1.00	2.00 - 2.50	3.00 - 3.50	0.00 - 1.00	0.00 - 1.00	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			31/07/2023	31/07/2023	31/07/2023	14/06/2023	13/06/2023	14/06/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795401	28795403	28795407	28795350	28795376	28795399
AGS Reference			B1	B7	B10	B1	B1	B9
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	83	24	22	88	82	39
Soil Organic Matter (SOM)	<0.35 %	TM132	72.1 @ #	2.29 @ #		82.8 @ #	81.4 @ #	8.5 @ #
pH	1 pH Units	TM133			8.38 @ M			6.47 @ M
Sulphate, Total	<48 mg/kg	TM221			316 M			1240 M

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Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS101	BHSS102	BHSS102	BHSS103	BHSS103
Depth (m)			0.00 - 1.00	2.00 - 2.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	17/07/2023	18/07/2023	18/07/2023	17/07/2023	17/07/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795430	28795475	28795494	28795498	28795501	28795507
AGS Reference			B1	B7	B1	B4	B1	B4
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	25	11	14	25	17	16
Loss on ignition	<0.7 %	TM018			4 @ M			
Soil Organic Matter (SOM)	<0.35 %	TM132	6.12 @ #	<0.35 @ #		4.83 @ #	2.14 @ #	5.19 @ #
pH	1 pH Units	TM133	7.91 @ M			8.17 @ M		8.36 @ M
Sulphate, Total	<48 mg/kg	TM221	784 M			385 M		301 M

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Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHSS104	BHSS104	BHSS105	BHSS105	BHSS106	BHSS106
Customer Sample Ref.			BHSS104	BHSS104	BHSS105	BHSS105	BHSS106	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/07/2023	19/07/2023	14/07/2023	14/07/2023	01/07/2023	20/07/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795353	28795356	28795358	28795360	28795363	28795366
AGS Reference			B4	B10	B1	B4	B1	B4
Moisture Content Ratio (% of as received sample)	%	PM024	13	11	15	13	60	21
Soil Organic Matter (SOM)	<0.35 %	TM132	0.719 @ #	0.443 @ #	2.48 @ #	0.588 @ #	41 @ #	3.86 @ #
pH	1 pH Units	TM133		8.61 @ M		8.49 @ M		8.33 @ M
Sulphate, Total	<48 mg/kg	TM221		198 M		244 M		432 M

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Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
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- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
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- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS107	BHSS1M08	BHSS1M08	BHT01	BHT02
Depth (m)			0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50	3.00 - 3.50	0.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			20/07/2023	20/07/2023	19/07/2023	19/07/2023	13/06/2023	08/06/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795368	28795370	28795372	28795374	28795378	28795380
AGS Reference			B1	B4	B1	B4	B9	B1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	23	12	18	12	25	81
Soil Organic Matter (SOM)	<0.35 %	TM132	1.98 @ #		1.95 @ #		5.91 @ #	
pH	1 pH Units	TM133		8.48 @ M		8.72 @ M	7.99 @ M	5.48 @ M
Sulphate, Total	<48 mg/kg	TM221		580 M		145 M	1360 M	2940 M

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Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
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- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT02	BHT08	BHT08	BHT08	BHT16	BHT16
Customer Sample Ref.			BHT02	BHT08	BHT08	BHT08	BHT16	BHT16
Depth (m)			3.00 - 3.50	0.00 - 1.00	2.00 - 2.50	3.00 - 3.50	0.00 - 1.00	2.00 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/06/2023	16/06/2023	19/06/2023	19/06/2023	22/06/2023	22/06/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795382	28795384	28795386	28795389	28795391	28795393
AGS Reference			B10	B1	B7	B10	B1	B7
Moisture Content Ratio (% of as received sample)	%	PM024	16	27	13	7.6	26	3.4
CHLORIDE 2:1 AS %	<0.0002	TM019				0.00234 @ M		0.00208 @ M
Soil Organic Matter (SOM)	<0.35 %	TM132	1.95 @ #	9.17 @ #	2.28 @ #		14.6 @ #	
pH	1 pH Units	TM133		7.91 @ M	8.66 @ M		7.69 @ M	
Sulphate, Total	<48 mg/kg	TM221		447 M	340 M		570 M	

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Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
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- aq Aqueous / settled sample.
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- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT16A	BHT16A	BHT18A	BHT18A	BHT18A	TP208
Customer Sample Ref.			BHT16A	BHT16A	BHT18A	BHT18A	BHT18A	TP208
Depth (m)			0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	3.00 - 3.50	5.00 - 5.50	0.50 - 0.60
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/08/2023	01/08/2023	02/08/2023	03/08/2023	03/08/2023	29/06/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795395	28795397	28795410	28795412	28795415	28795418
AGS Reference			B1	B4	B1	B10	B16	B1
Moisture Content Ratio (% of as received sample)	%	PM024	43	7.7	85	19	13	79
Soil Organic Matter (SOM)	<0.35 %	TM132	8.5 @ #	0.91 @ #	76 @ #	0.945 @ #	0.629 @ #	86.4 @ #
pH	1 pH Units	TM133		8.87 @ M		8.48 @ M		
Sulphate, Total	<48 mg/kg	TM221		282 M		271 M		

14:21:57 25/10/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TPC08	TPC09	TPC09	TPSS101	TPSS101
Depth (m)			2.00 - 2.10	0.80 - 0.90	0.40 - 0.50	1.30 - 1.40	0.40 - 0.50	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	28/06/2023	28/06/2023	28/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795421	28795424	28795427	28795432	28795437	28795441
AGS Reference			B3	B3	B1	B3	B1	B4
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	23	26	81	28	8.6	12
Soil Organic Matter (SOM)	<0.35 %	TM132	1.55 @ #	1.91 @ #	73.3 @ #	2.14 @ #	0.44 @ #	0.434 @ #
pH	1 pH Units	TM133	6.41 @ M	7.31 @ M		8.03 @ M		8.62 @ M
Sulphate, Total	<48 mg/kg	TM221	131 M	188 M		483 M		200 M

14:21:57 25/10/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS101	TPSS102	TPSS102	TPSS103	TPSS103	TPSS104
Depth (m)			2.40 - 2.50	0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.40 - 1.50	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	28/06/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795445	28795450	28795454	28795459	28795464	28795467
AGS Reference			B6	B1	B4	B1	B4	B1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	10	20	11	12	9.8	71
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 @ #	1.62 @ #	1.04 @ #	0.372 @ #	<0.35 @ #	61.4 @ #
pH	1 pH Units	TM133				8.62 @ M		
Sulphate, Total	<48 mg/kg	TM221				203 M		

14:21:57 25/10/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS105	TPSS106	TPSS106	TPSS107
Depth (m)			0.70 - 0.80	0.40 - 0.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			28/06/2023	27/06/2023	27/06/2023	27/06/2023	28/06/2023
Sample Time			.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795471	28795478	28795482	28795486	28795492
AGS Reference			B3	B1	B1	B6	B1
Component	**LOD/Units**	**Method**					
Moisture Content Ratio (% of as received sample)	%	PM024	33	11	20	9.3	19
Soil Organic Matter (SOM)	<0.35 %	TM132	3.9 @ #	0.369 @ #	1.25 @ #	<0.35 @ #	1.51 @ #
pH	1 pH Units	TM133	8.21 @ M	8.93 @ M			
Sulphate, Total	<48 mg/kg	TM221	379 M	480 M			

Table of Results - Appendix

Method No	Description
TM018	Determination of Loss on Ignition
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM019	Determination of Anions in Soils using Ion Chromatography
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28795401	28795403	28795407	28795350	28795376	28795399	28795430	28795475	28795494	28795498
Customer Sample Ref.	BH17A	BH17A	BH17A	BHCC01	BHSS06	BHSS06	BHSS101	BHSS101	BHSS102	BHSS102
AGS Ref.	B1	B7	B10	B1	B1	B9	B1	B7	B1	B4
Depth	0.00 - 1.00	2.00 - 2.50	3.00 - 3.50	0.00 - 1.00	0.00 - 1.00	3.00 - 3.50	0.00 - 1.00	2.00 - 2.50	0.00 - 1.00	1.00 - 1.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Loss on Ignition in soils									23-Oct-2023	
pH			23-Oct-2023			23-Oct-2023	24-Oct-2023			24-Oct-2023
Sample description	19-Oct-2023	19-Oct-2023	18-Oct-2023	19-Oct-2023	18-Oct-2023	18-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023
Total Organic Carbon	24-Oct-2023	24-Oct-2023		24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023		24-Oct-2023
Total Sulphate			23-Oct-2023			23-Oct-2023	23-Oct-2023			23-Oct-2023

Lab Sample No(s)	28795501	28795507	28795353	28795356	28795358	28795360	28795363	28795366	28795368	28795370
Customer Sample Ref.	BHSS103	BHSS103	BHSS104	BHSS104	BHSS105	BHSS105	BHSS106	BHSS106	BHSS107	BHSS107
AGS Ref.	B1	B4	B4	B10	B1	B4	B1	B4	B1	B4
Depth	0.00 - 1.00	1.00 - 1.50	1.00 - 1.50	3.00 - 3.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
pH		24-Oct-2023		24-Oct-2023		24-Oct-2023		24-Oct-2023		24-Oct-2023
Sample description	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	18-Oct-2023	19-Oct-2023
Total Organic Carbon	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	
Total Sulphate		23-Oct-2023		23-Oct-2023		23-Oct-2023		23-Oct-2023		23-Oct-2023

Lab Sample No(s)	28795372	28795374	28795378	28795380	28795382	28795384	28795386	28795389	28795391	28795393
Customer Sample Ref.	BHSS1M08	BHSS1M08	BHT01	BHT02	BHT02	BHT08	BHT08	BHT08	BHT16	BHT16
AGS Ref.	B1	B4	B9	B1	B10	B1	B7	B10	B1	B7
Depth	0.00 - 1.00	1.00 - 1.50	3.00 - 3.50	0.00 - 1.00	3.00 - 3.50	0.00 - 1.00	2.00 - 2.50	3.00 - 3.50	0.00 - 1.00	2.00 - 2.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by ion Chromatography								25-Oct-2023		25-Oct-2023
pH		24-Oct-2023	24-Oct-2023	24-Oct-2023		24-Oct-2023	24-Oct-2023		24-Oct-2023	
Sample description	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	18-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023
Total Organic Carbon	24-Oct-2023		24-Oct-2023		24-Oct-2023	24-Oct-2023	24-Oct-2023		24-Oct-2023	
Total Sulphate		23-Oct-2023	23-Oct-2023	23-Oct-2023		23-Oct-2023	24-Oct-2023		23-Oct-2023	

Lab Sample No(s)	28795395	28795397	28795410	28795412	28795415	28795418	28795421	28795424	28795427	28795432
Customer Sample Ref.	BHT16A	BHT16A	BHT18A	BHT18A	BHT18A	TP208	TP208	TPC08	TPC09	TPC09
AGS Ref.	B1	B4	B1	B10	B16	B1	B3	B3	B1	B3
Depth	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	3.00 - 3.50	5.00 - 5.50	0.50 - 0.60	2.00 - 2.10	0.80 - 0.90	0.40 - 0.50	1.30 - 1.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
pH		24-Oct-2023		24-Oct-2023			24-Oct-2023	24-Oct-2023		24-Oct-2023
Sample description	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023
Total Organic Carbon	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023
Total Sulphate		23-Oct-2023		23-Oct-2023			23-Oct-2023	23-Oct-2023		23-Oct-2023

Lab Sample No(s)	28795437	28795441	28795445	28795450	28795454	28795459	28795464	28795467	28795471	28795478
Customer Sample Ref.	TPSS101	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103	TPSS104	TPSS104	TPSS105
AGS Ref.	B1	B4	B6	B1	B4	B1	B4	B1	B3	B1
Depth	0.40 - 0.50	1.40 - 1.50	2.40 - 2.50	0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.40 - 1.50	0.30 - 0.40	0.70 - 0.80	0.40 - 0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
pH		24-Oct-2023				24-Oct-2023			24-Oct-2023	24-Oct-2023
Sample description	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	18-Oct-2023	19-Oct-2023	19-Oct-2023	18-Oct-2023	19-Oct-2023	19-Oct-2023
Total Organic Carbon	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023
Total Sulphate		24-Oct-2023				23-Oct-2023			23-Oct-2023	23-Oct-2023

Lab Sample No(s)	28795482	28795486	28795492
Customer Sample Ref.	TPSS106	TPSS106	TPSS107
AGS Ref.	B1	B6	B1
Depth	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Sample description	18-Oct-2023	19-Oct-2023	19-Oct-2023
Total Organic Carbon	24-Oct-2023	24-Oct-2023	24-Oct-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

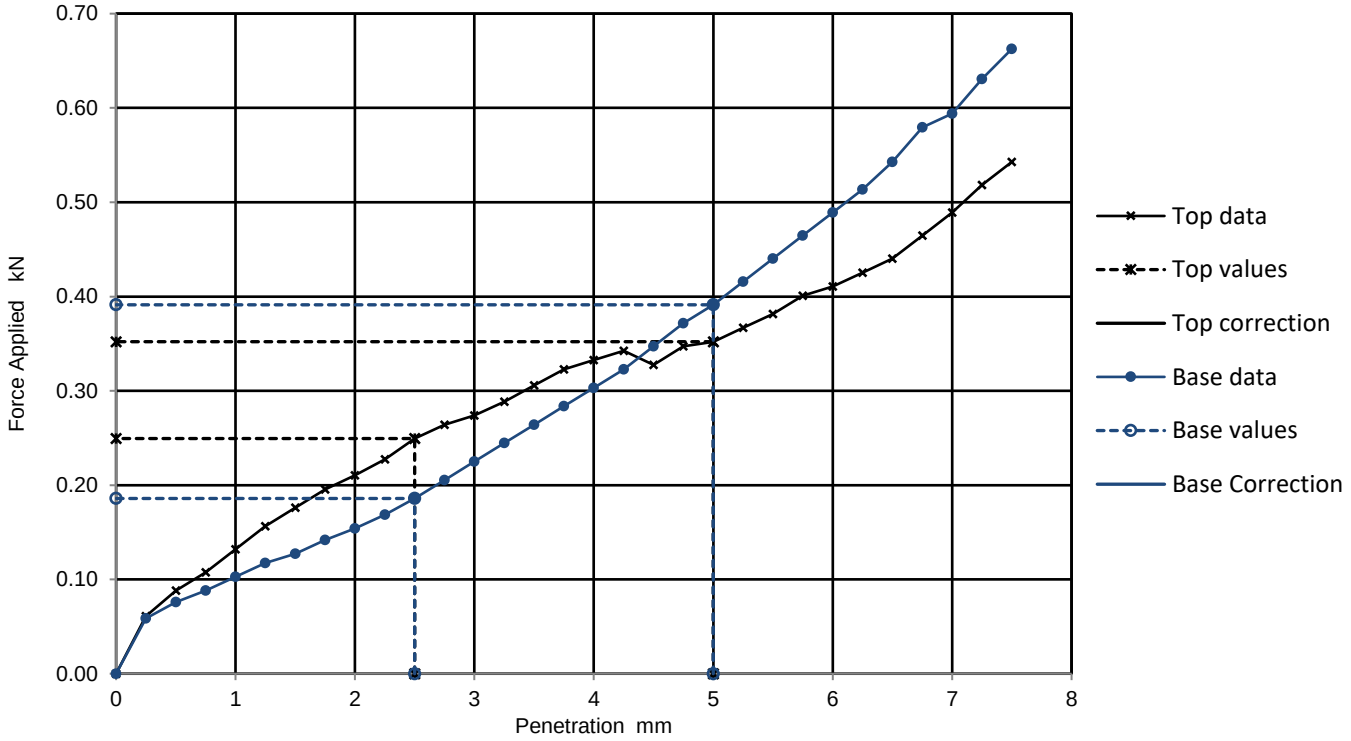
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH102
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description	Brown very silty very sandy fine and medium GRAVEL.			Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426195
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	13.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.9	1.8	1.9	1.9	
BASE		1.4	2.0	2.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	1

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

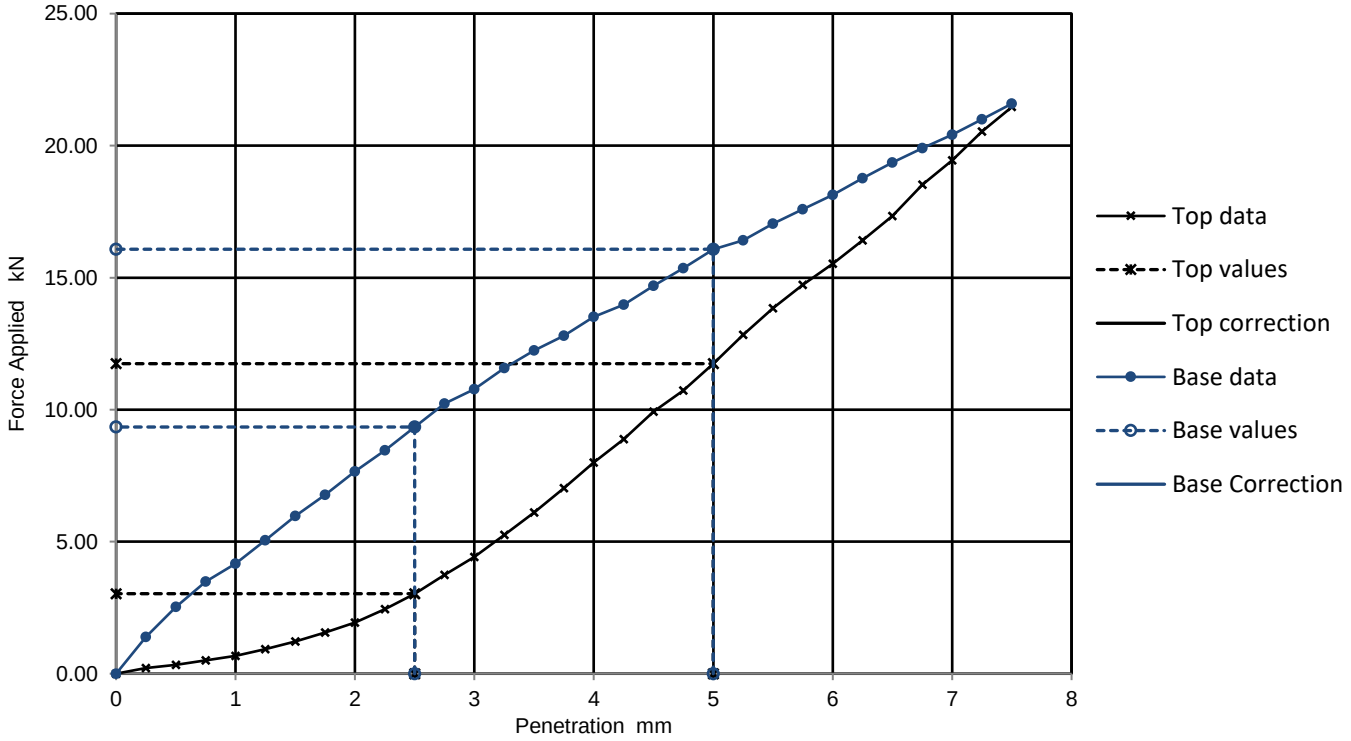
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH102
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426195
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	10.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		23.0	59.0	59.0		
BASE		71.0	80.0	80.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	2

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

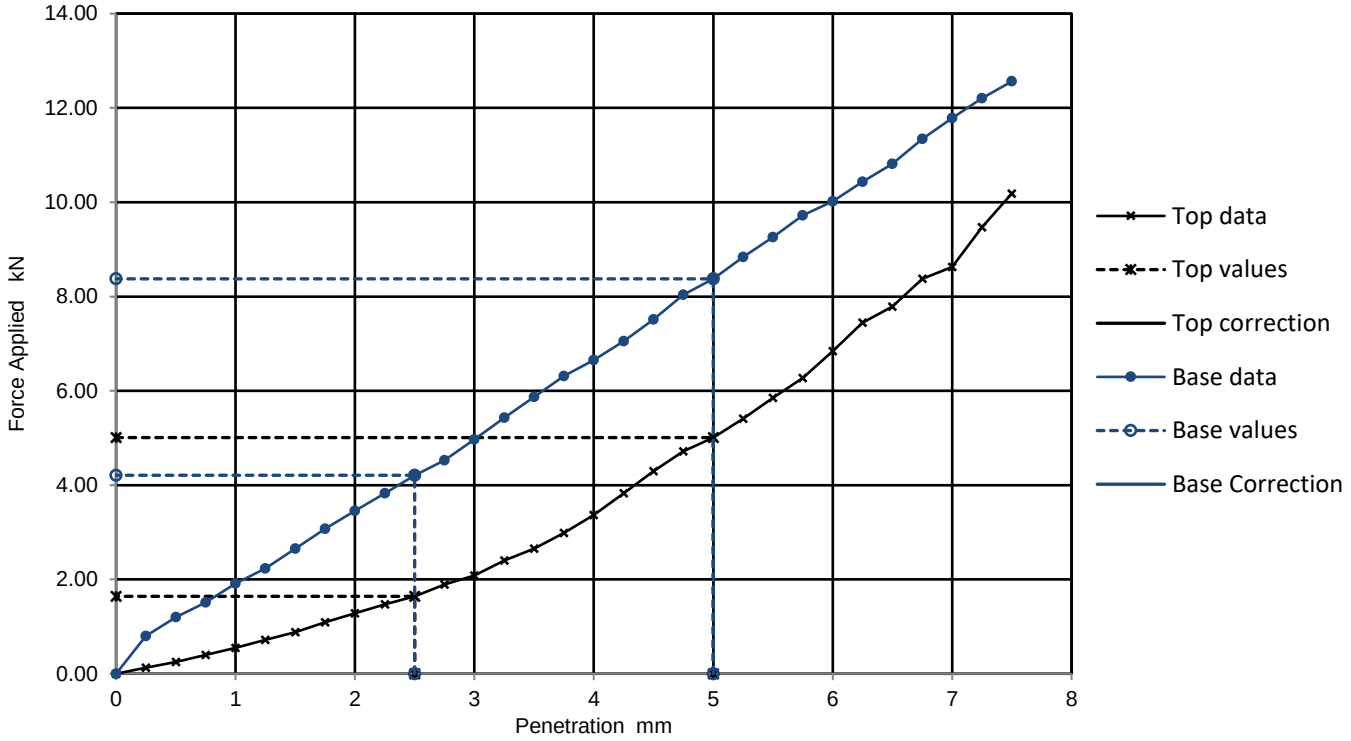
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH102
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426195
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.15	Mg/m3	Surcharge applied	2	kg
	Dry density	1.95	Mg/m3		1	kPa
	Moisture content	10.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		12.0	25.0	25.0		
BASE		32.0	42.0	42.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	3

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

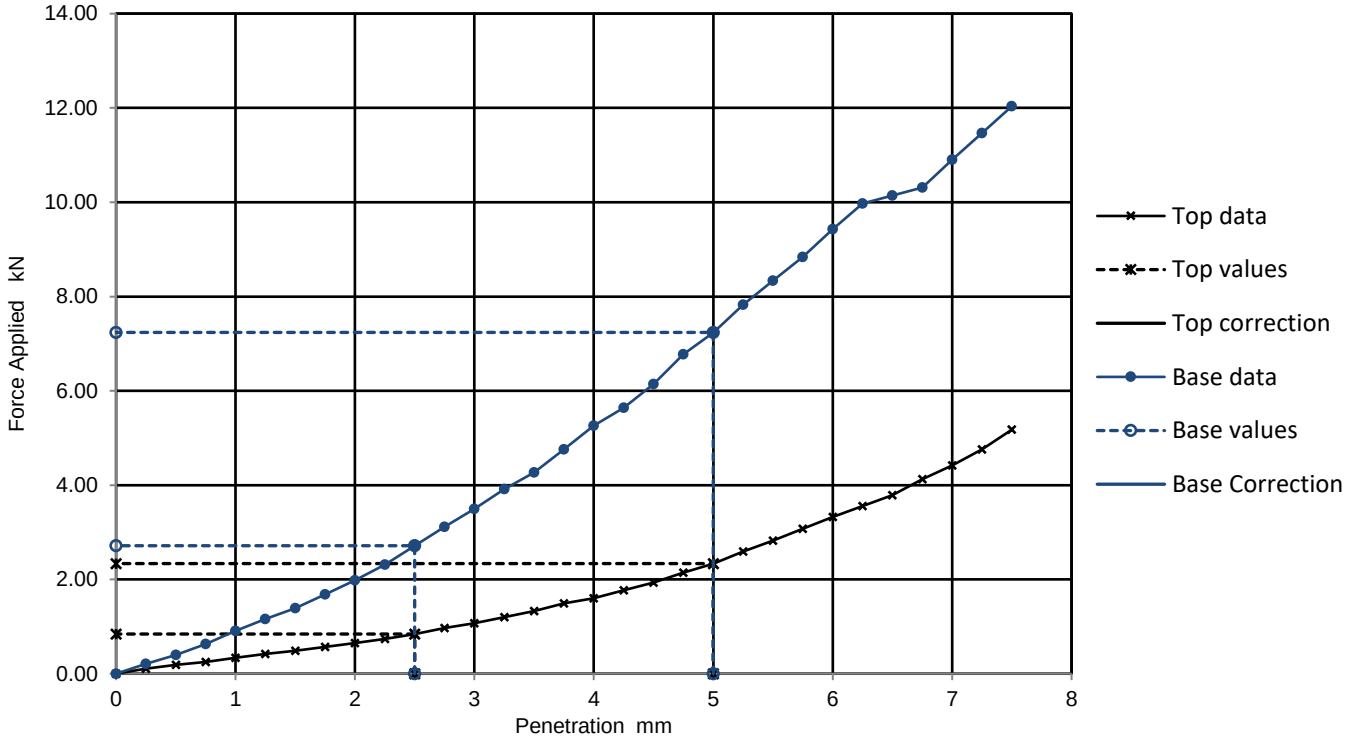
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH102
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426195
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	1.99	Mg/m3		1	kPa
	Moisture content	11.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		6.4	12.0	12.0		
BASE		21.0	36.0	36.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	4

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

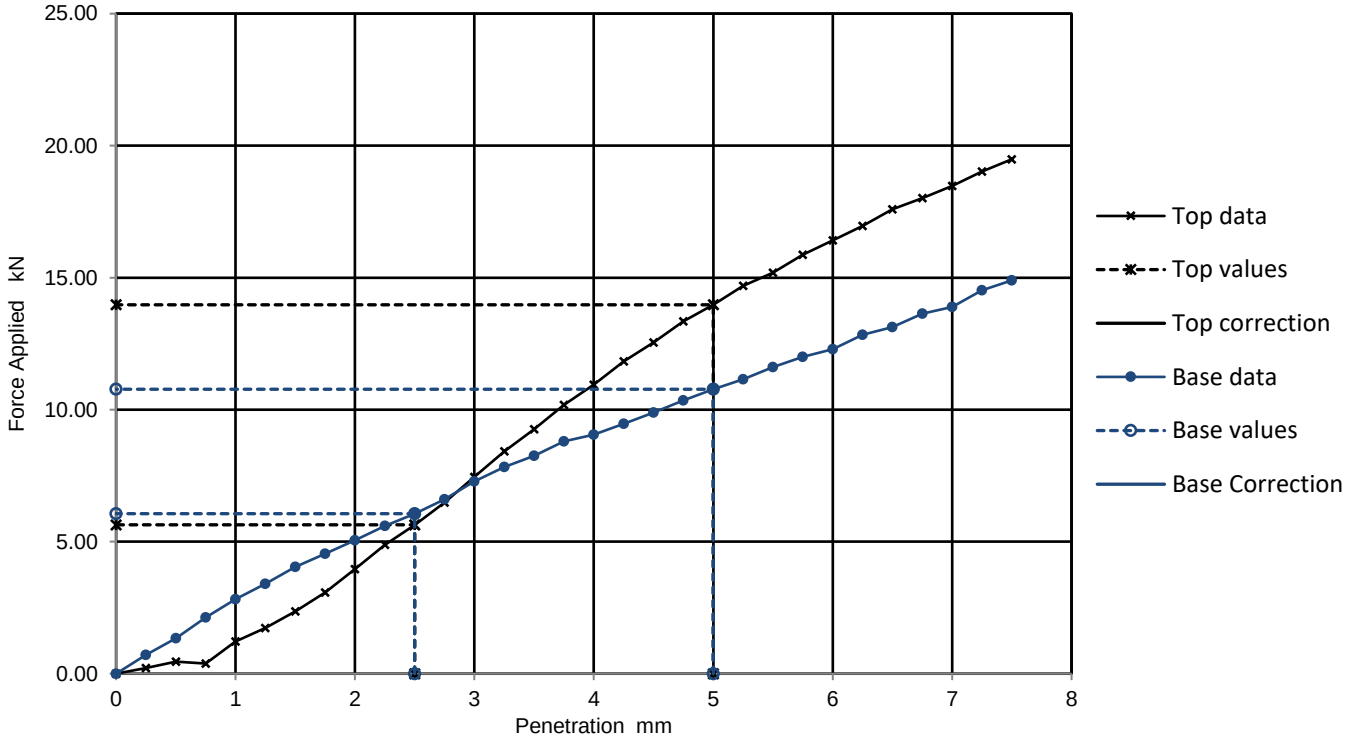
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH102
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426195
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	2	kg
	Dry density	1.88	Mg/m3		1	kPa
	Moisture content	9.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		43.0	70.0	70.0		
BASE		46.0	54.0	54.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	5

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

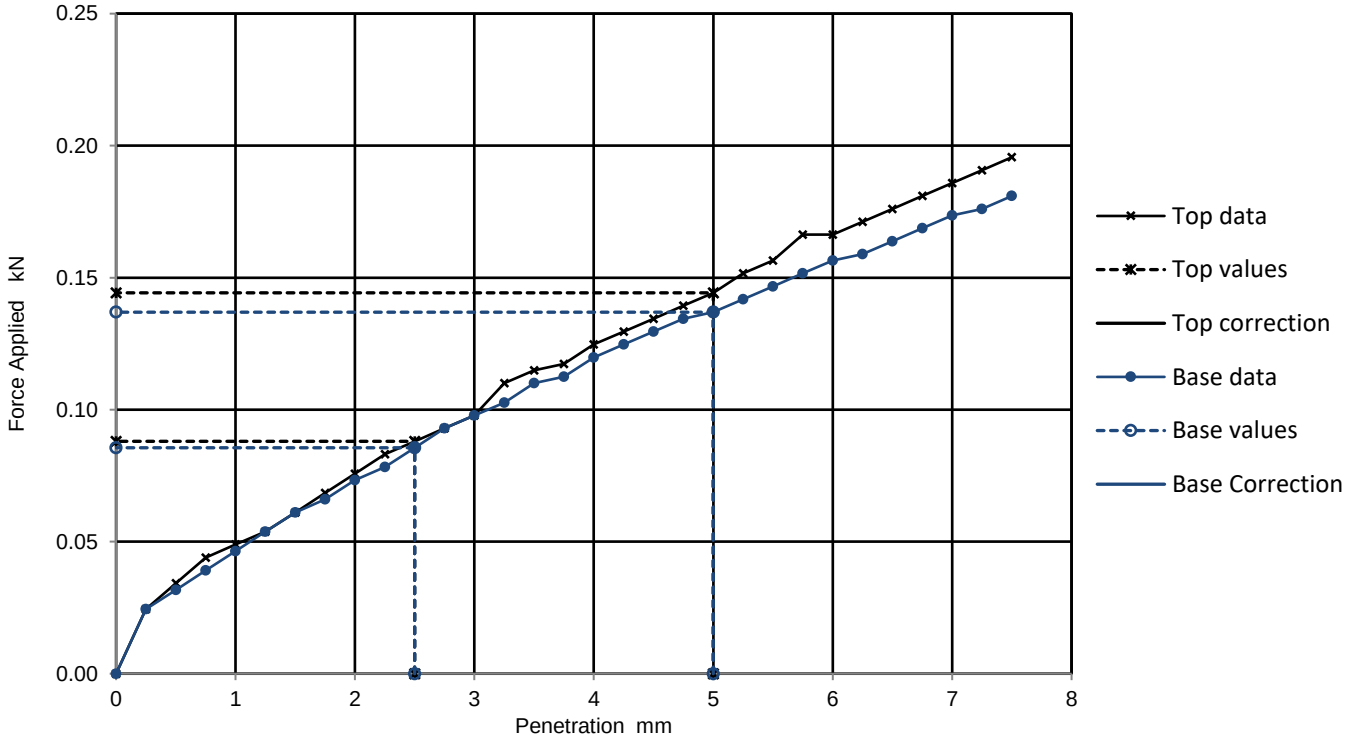
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305057
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	2	kg
	Dry density	1.83	Mg/m3		1	kPa
	Moisture content	16.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.7	0.7	0.7	0.7	
BASE		0.7	0.7	0.7		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	6

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

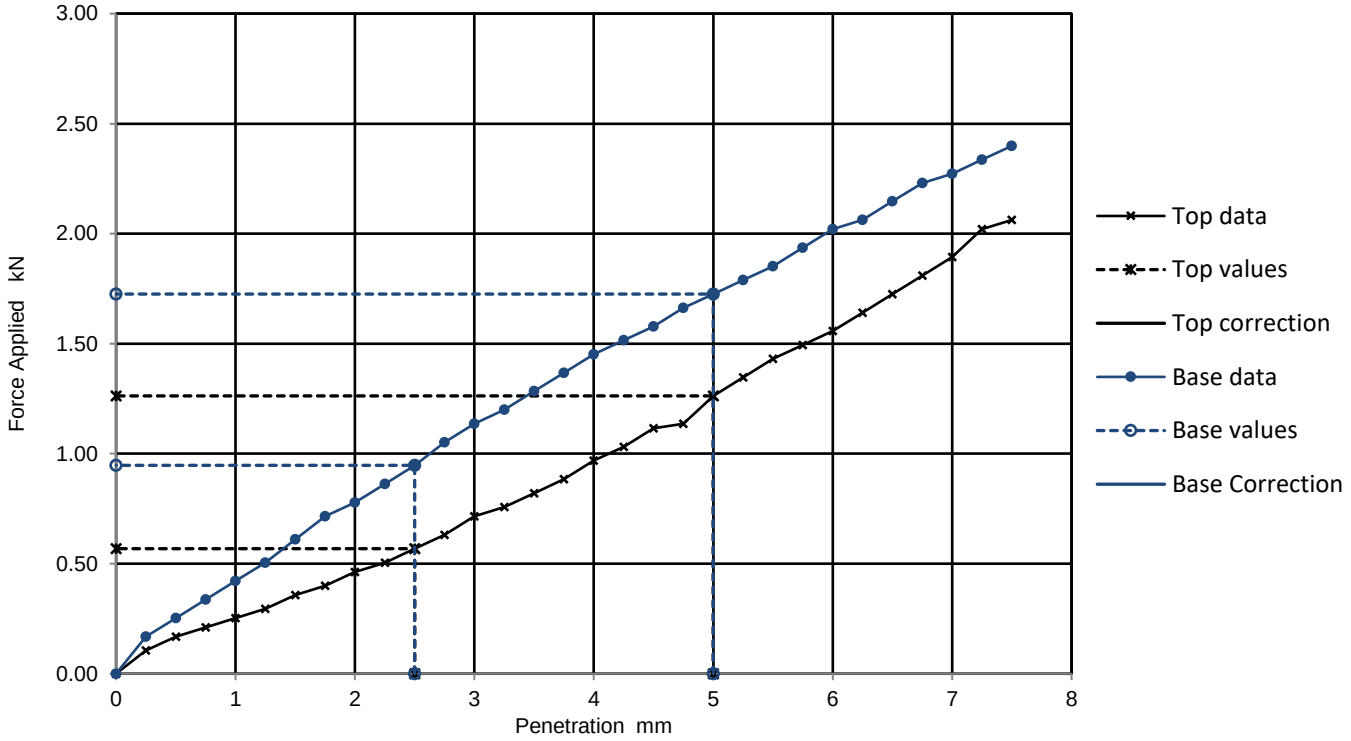
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305057
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	2	kg
	Dry density	1.87	Mg/m3		1	kPa
	Moisture content	15.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.3	6.3	6.3		
BASE		7.2	8.6	8.6		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	7

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

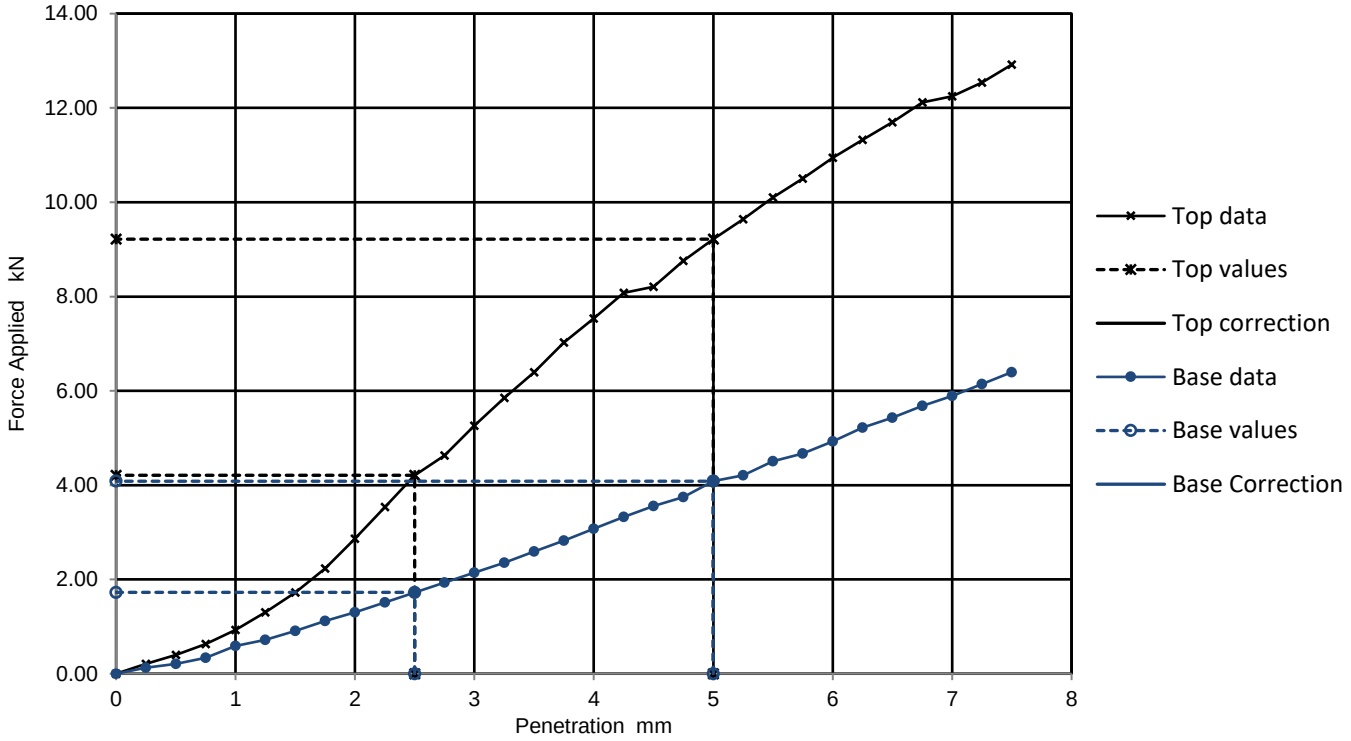
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305057
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.07	Mg/m3	Surcharge applied	2	kg
	Dry density	1.84	Mg/m3		1	kPa
	Moisture content	12.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		32.0	46.0	46.0		
BASE		13.0	20.0	20.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	8

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

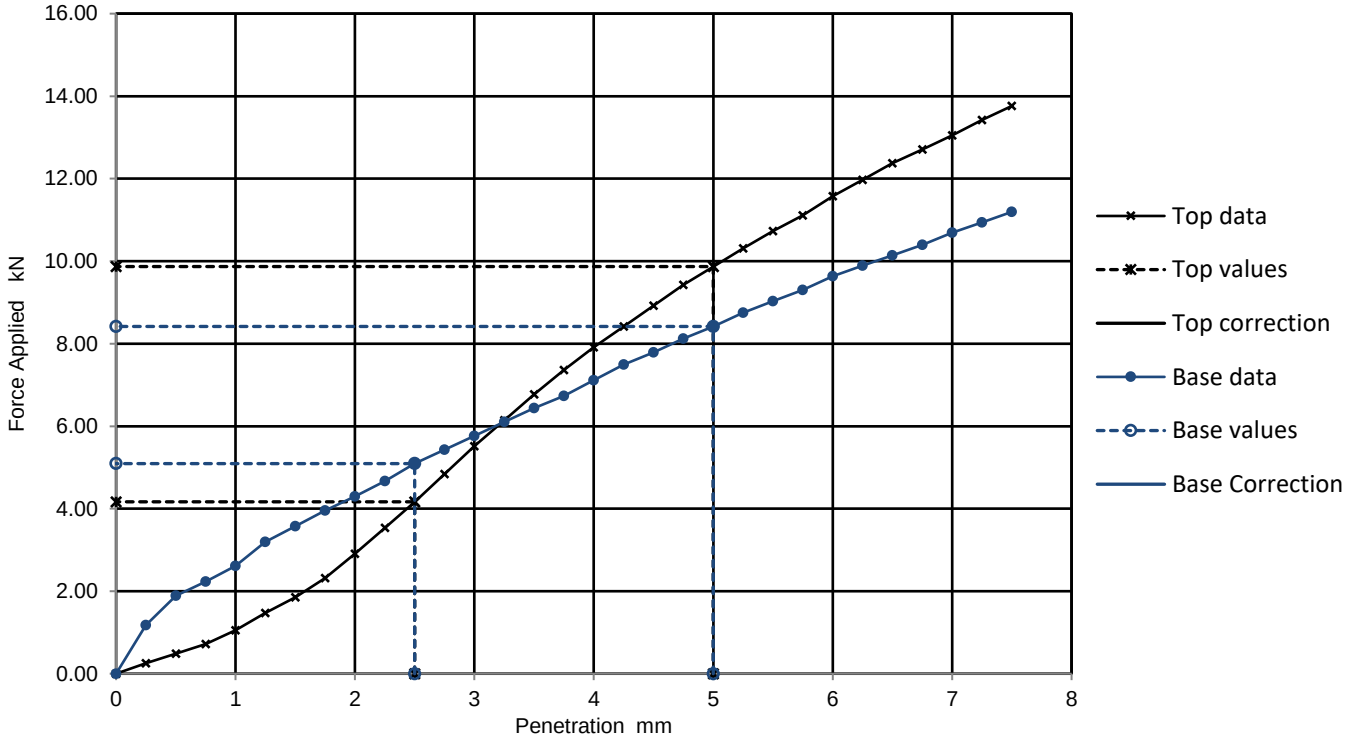
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305057
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition				Soaking details	Not soaked	
Details				Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed			%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.05	Mg/m3	Surcharge applied	2	kg
	Dry density	1.84	Mg/m3		1	kPa
	Moisture content	11.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		32.0	49.0	49.0	46.0	
BASE		39.0	42.0	42.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	9

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

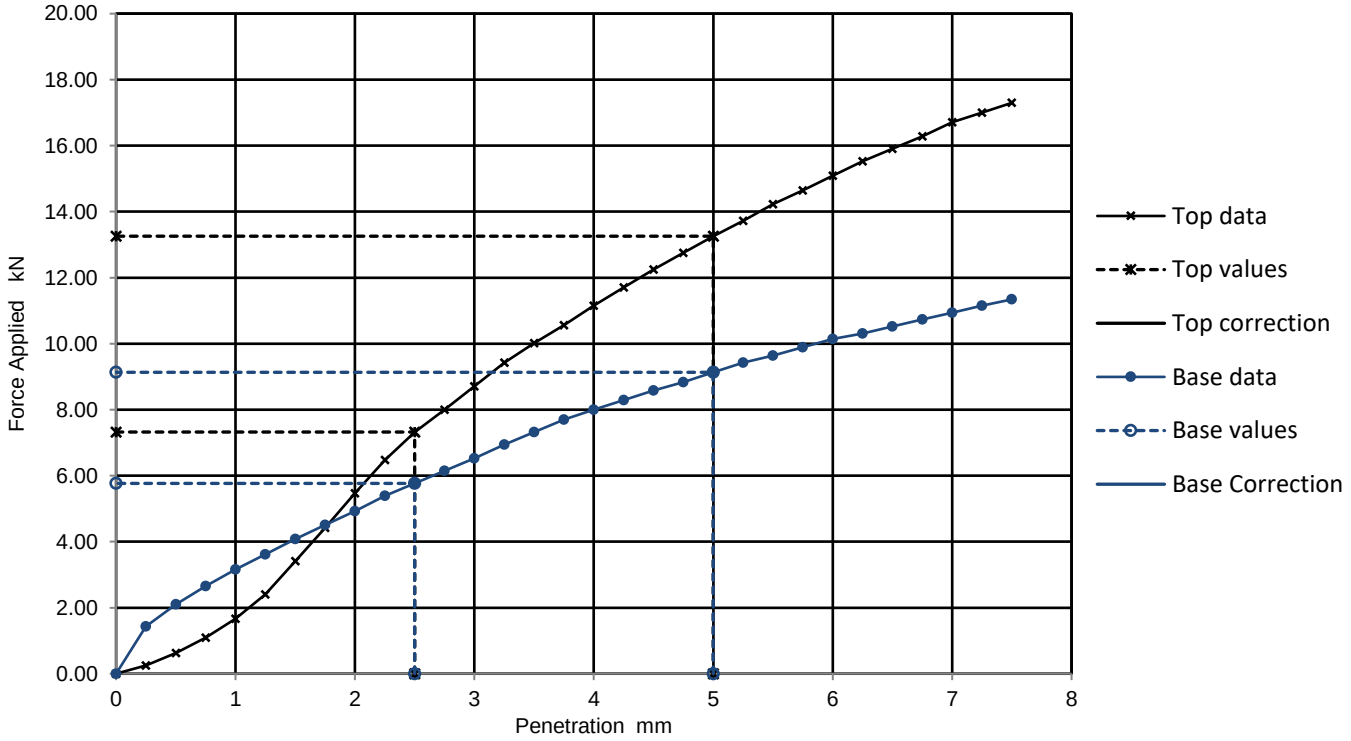
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305057
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.83	Mg/m3		1	kPa
	Moisture content	10.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		55.0	66.0	66.0		
BASE		44.0	46.0	46.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	10

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

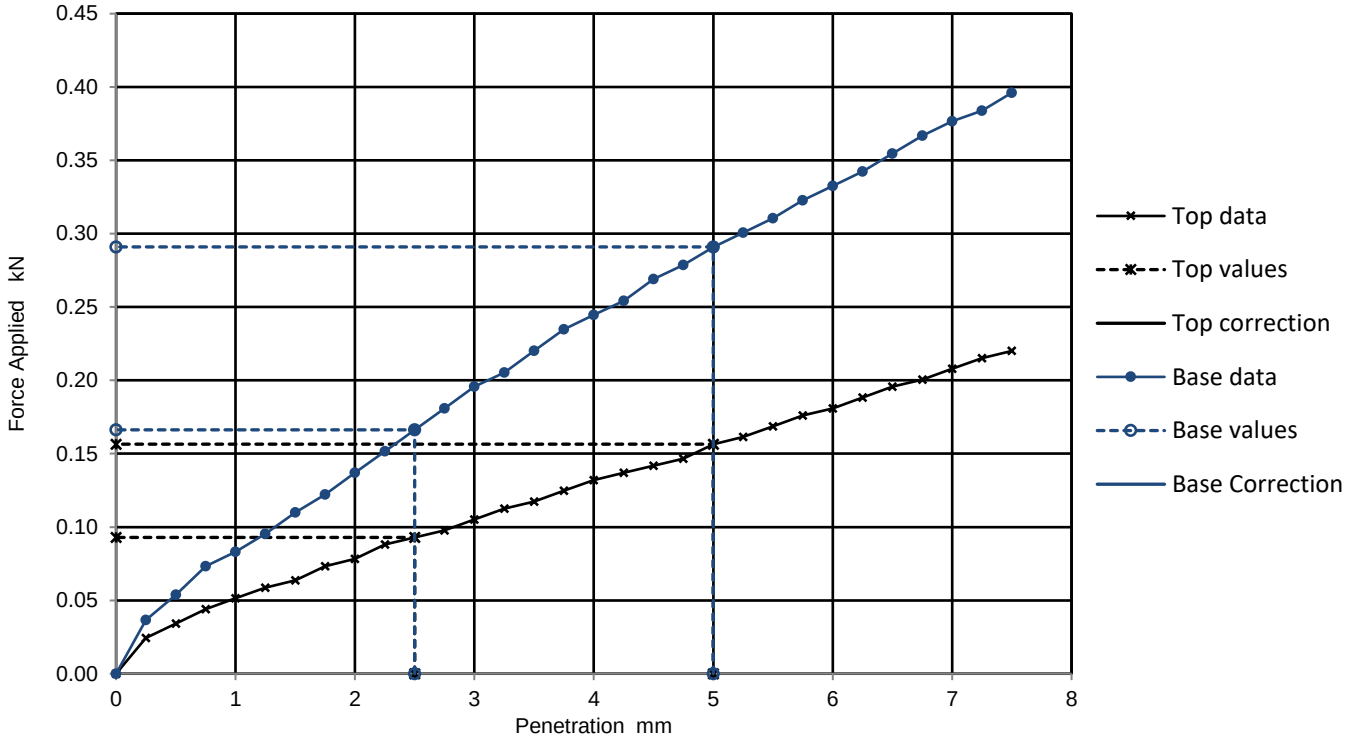
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Light greyish-brown slightly sandy gravelly SILT. Gravel is coarse.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050539
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.28	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	11.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.7	0.8	0.8		
BASE		1.3	1.5	1.5		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	11

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

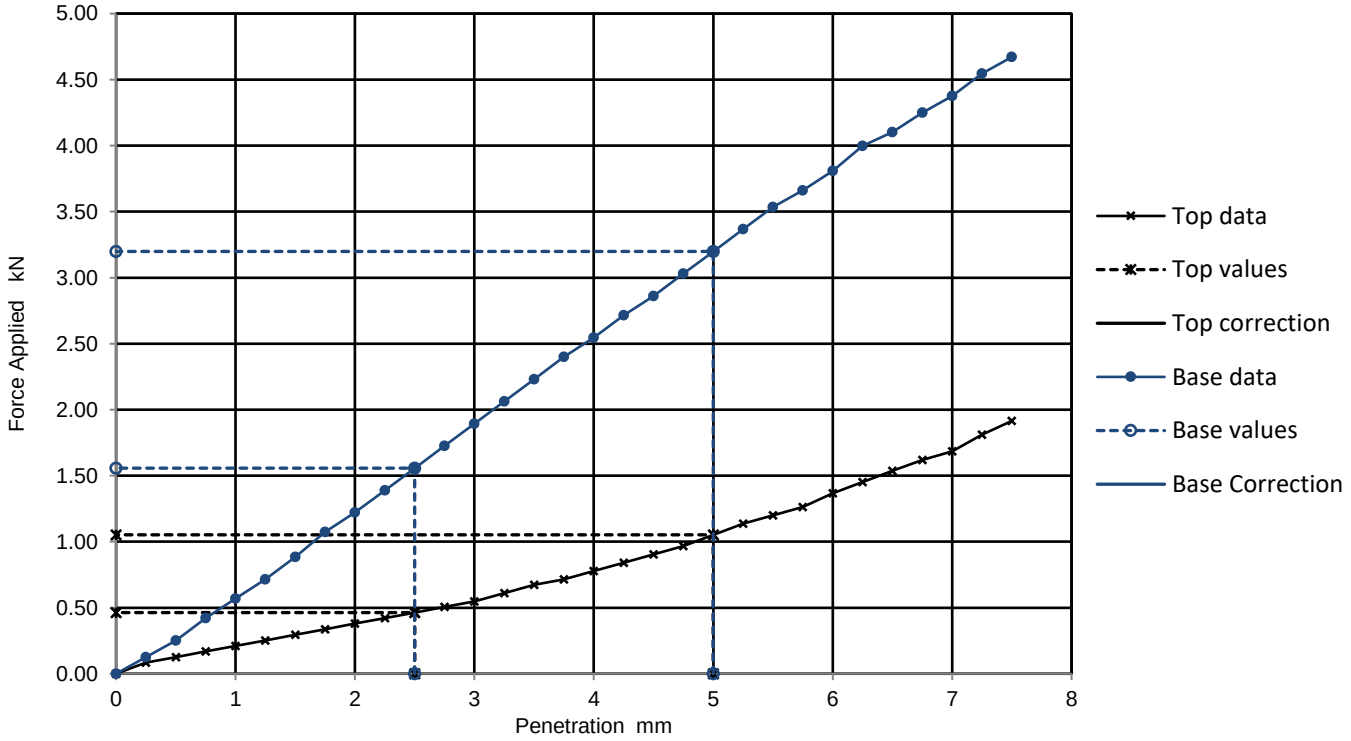
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050539
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.26	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	10.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.5	5.3	5.3		
BASE		12.0	16.0	16.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	12

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

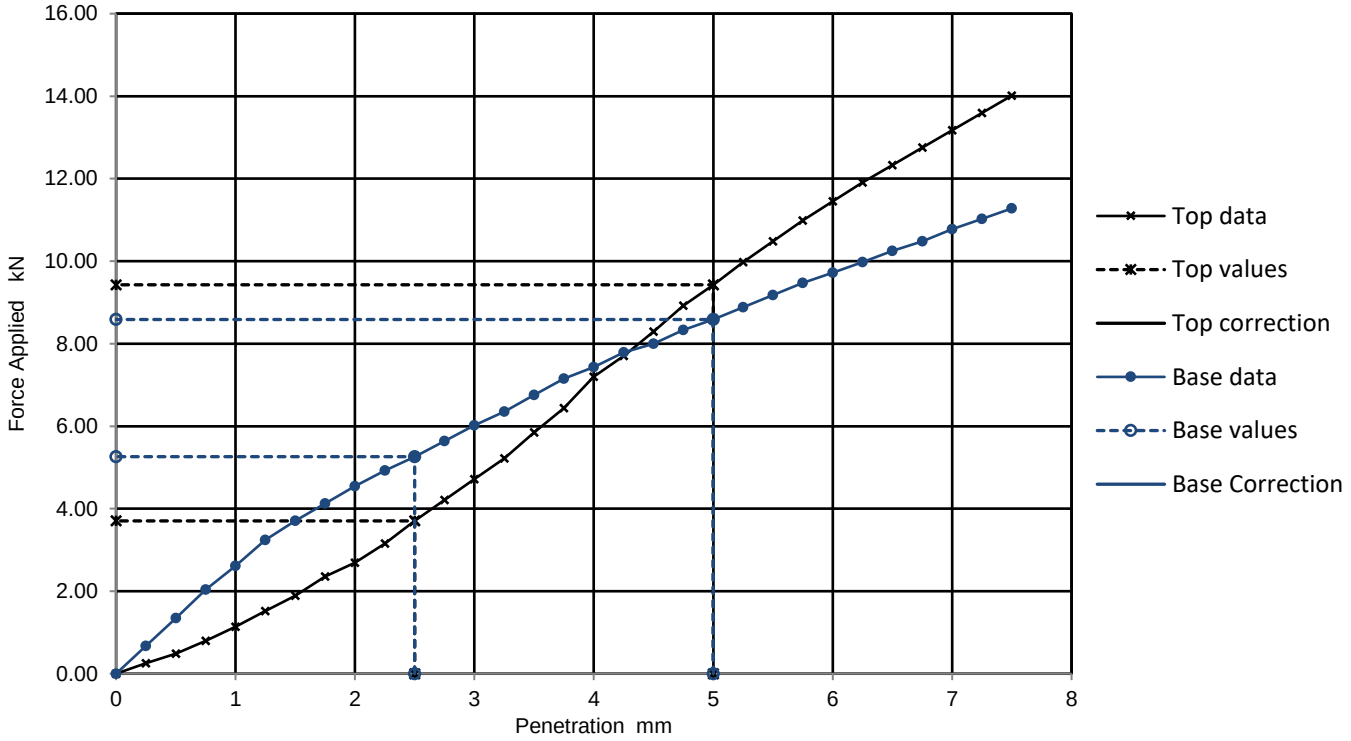
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050539
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.15	Mg/m3	Surcharge applied	kg
	Dry density	1.99	Mg/m3		kPa
	Moisture content	7.9	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		28.0	47.0	47.0	45.0	
BASE		40.0	43.0	43.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	13

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

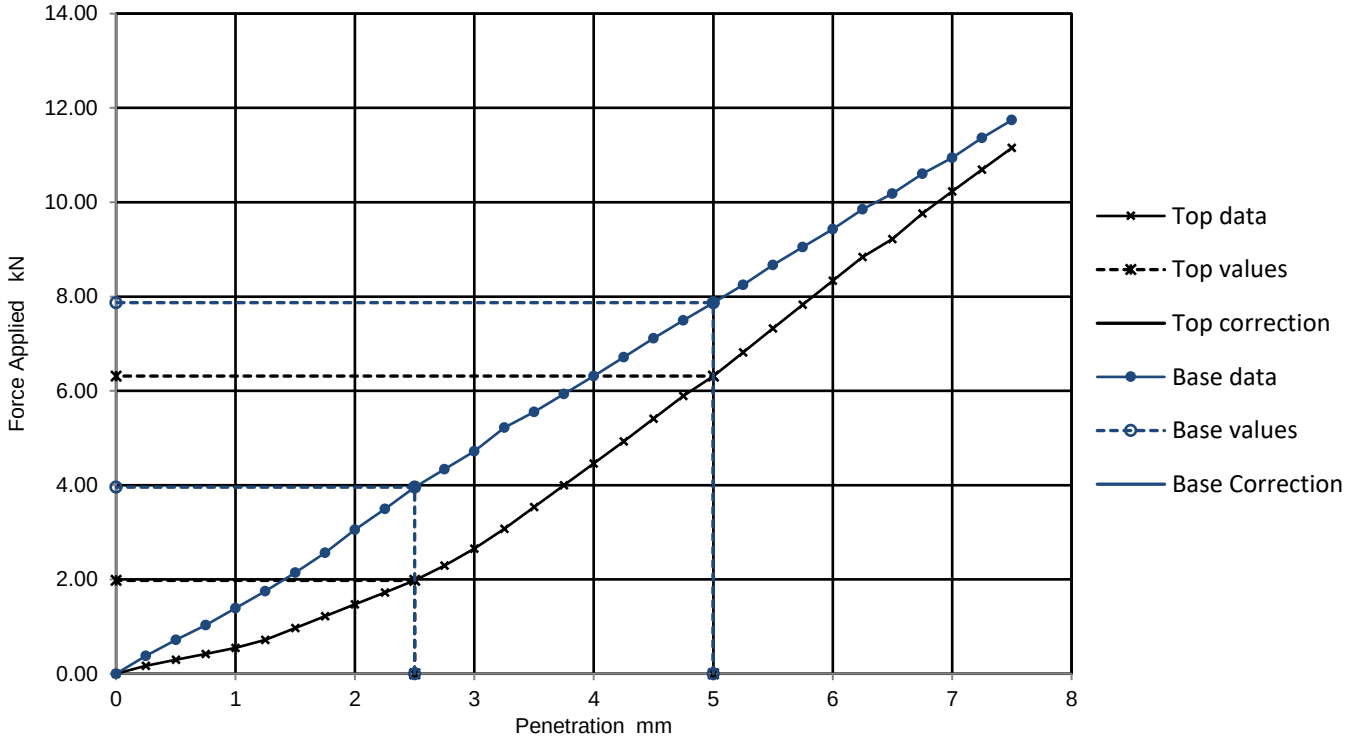
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050539
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.27	Mg/m3	Surcharge applied	2	kg
	Dry density	2.08	Mg/m3		1	kPa
	Moisture content	9.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		15.0	32.0	32.0		
BASE		30.0	39.0	39.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	14

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

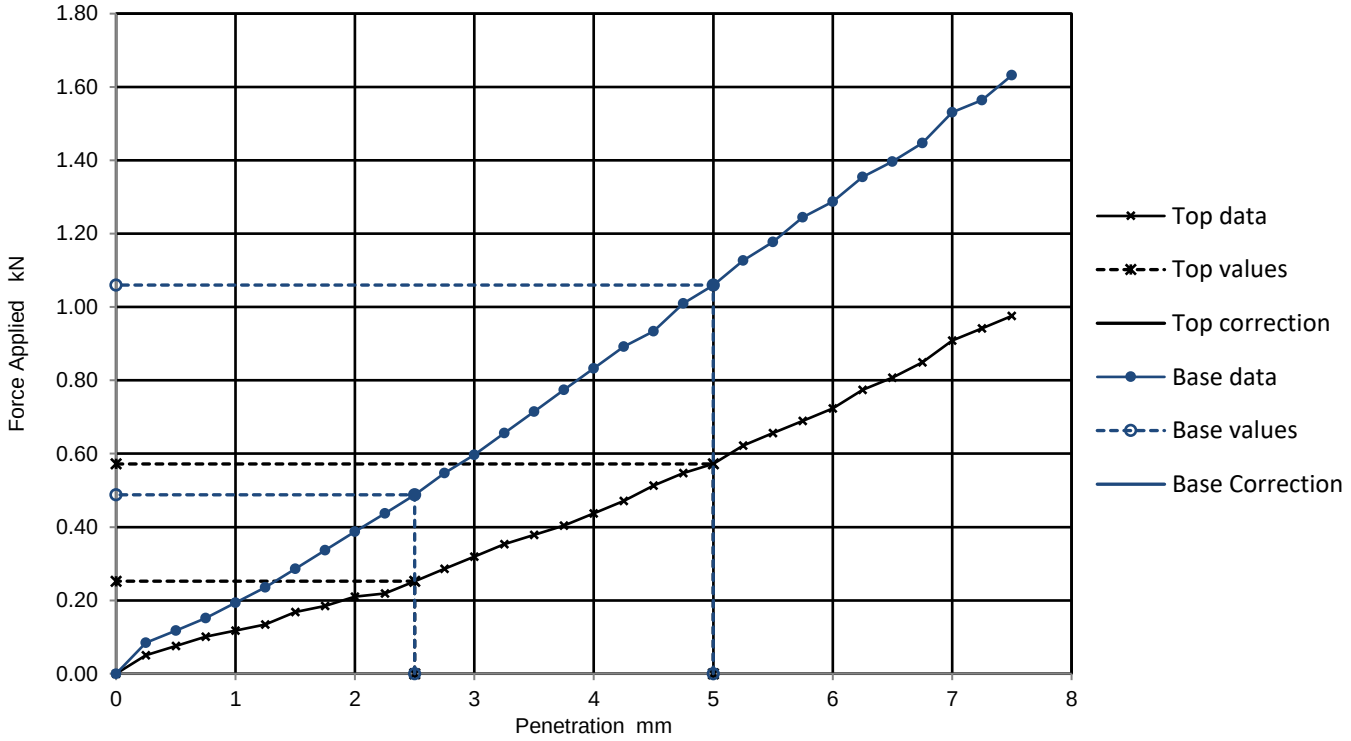
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050539
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.29	Mg/m3	Surcharge applied	2	kg
	Dry density	2.06	Mg/m3		1	kPa
	Moisture content	11.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.9	2.9	2.9		
BASE		3.7	5.3	5.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	15

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

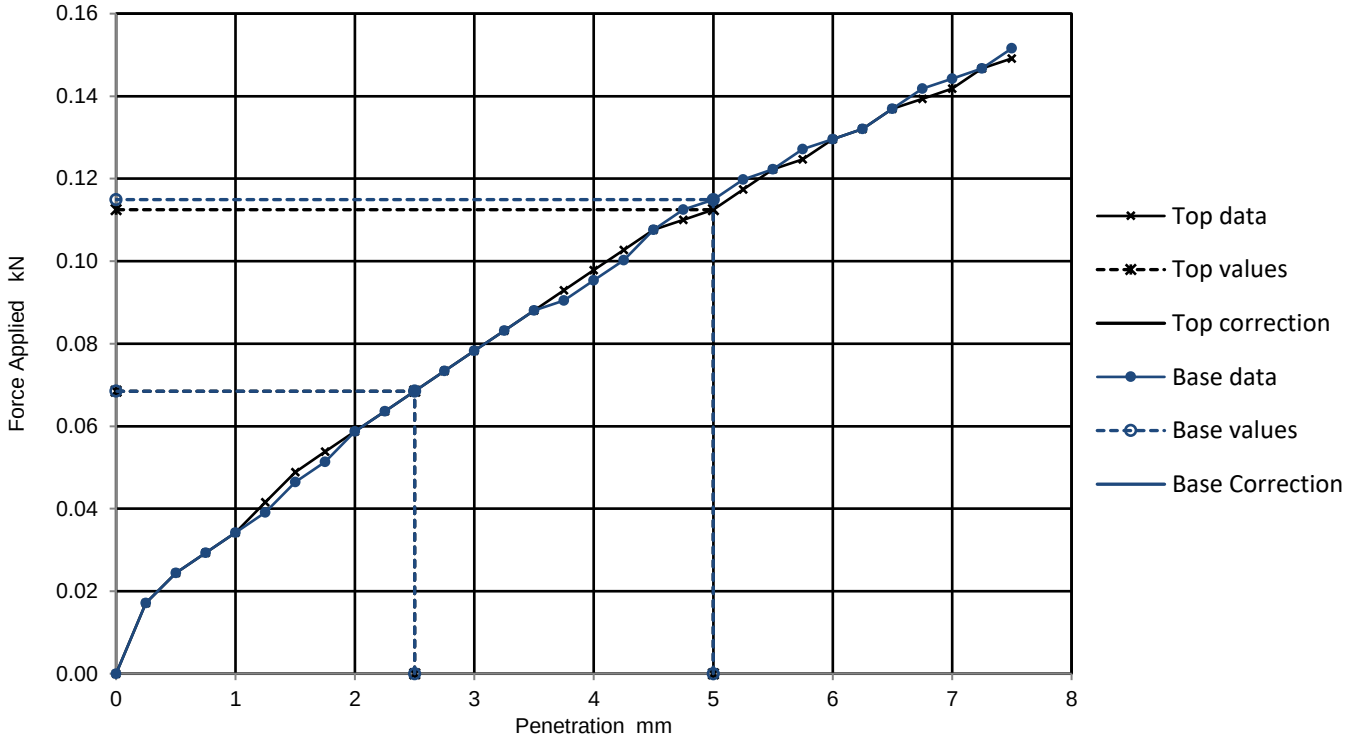
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description	Greyish-brown slightly gravelly sandy SILT.			Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050570
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	13.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.5	0.6	0.6	0.6	
BASE		0.5	0.6	0.6		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	16

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

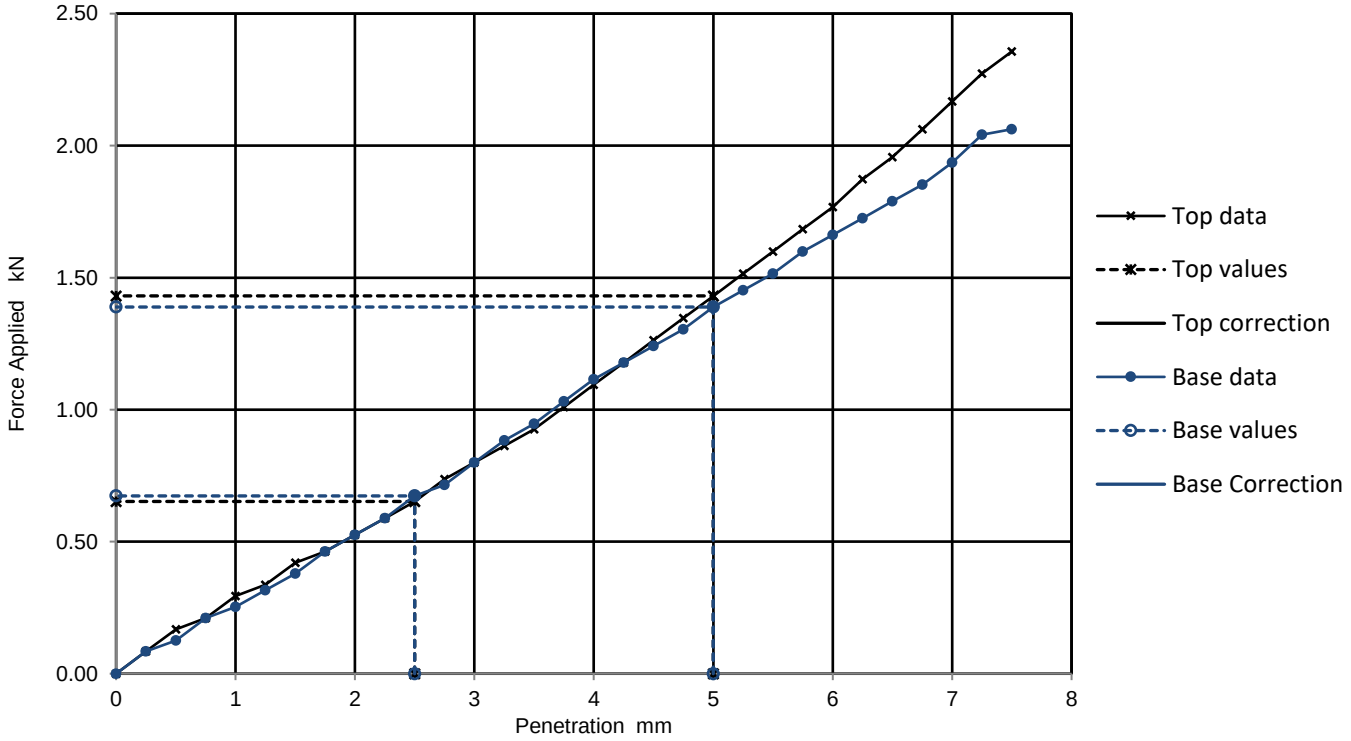
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050570
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.25	Mg/m3	Surcharge applied	kg
	Dry density	2.04	Mg/m3		kPa
	Moisture content	10.3	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.9	7.2	7.2	7.0	
BASE		5.1	6.9	6.9		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	17

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

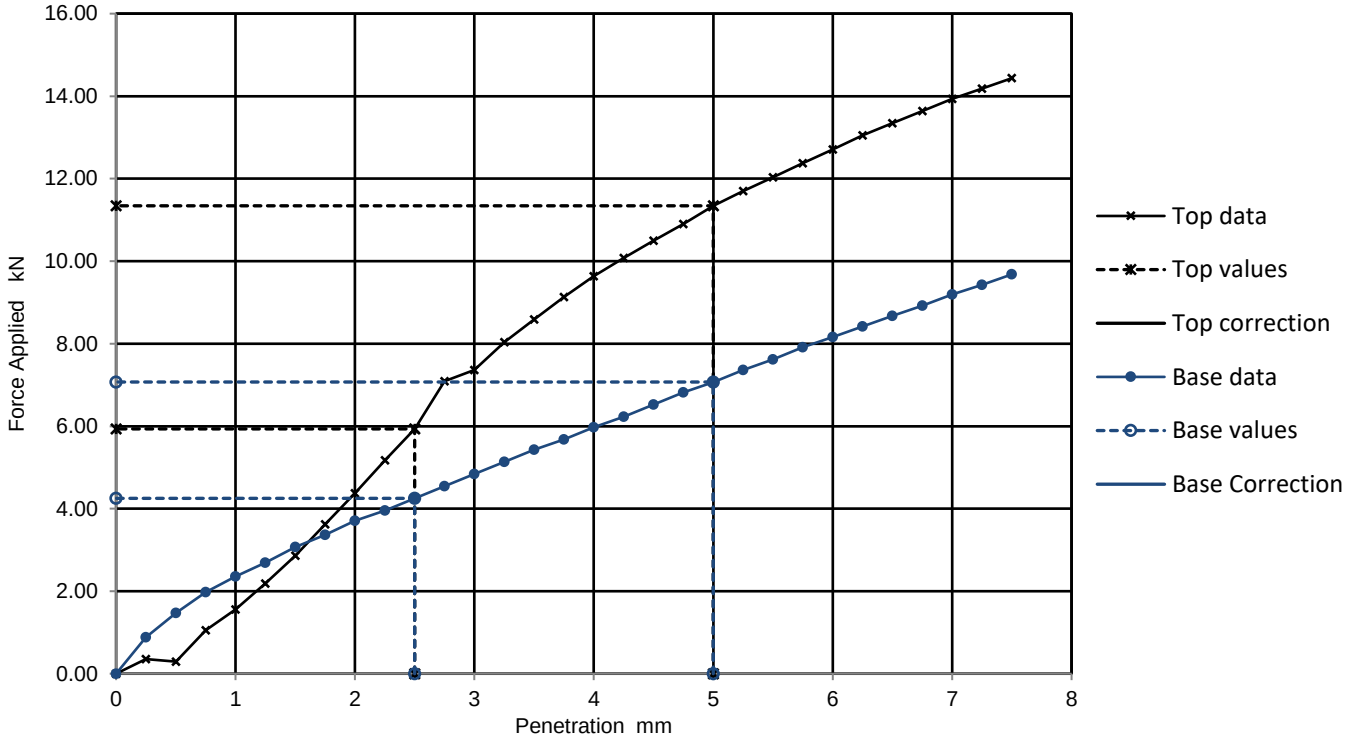
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050570
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	8.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		45.0	57.0	57.0		
BASE		32.0	35.0	35.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	18

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

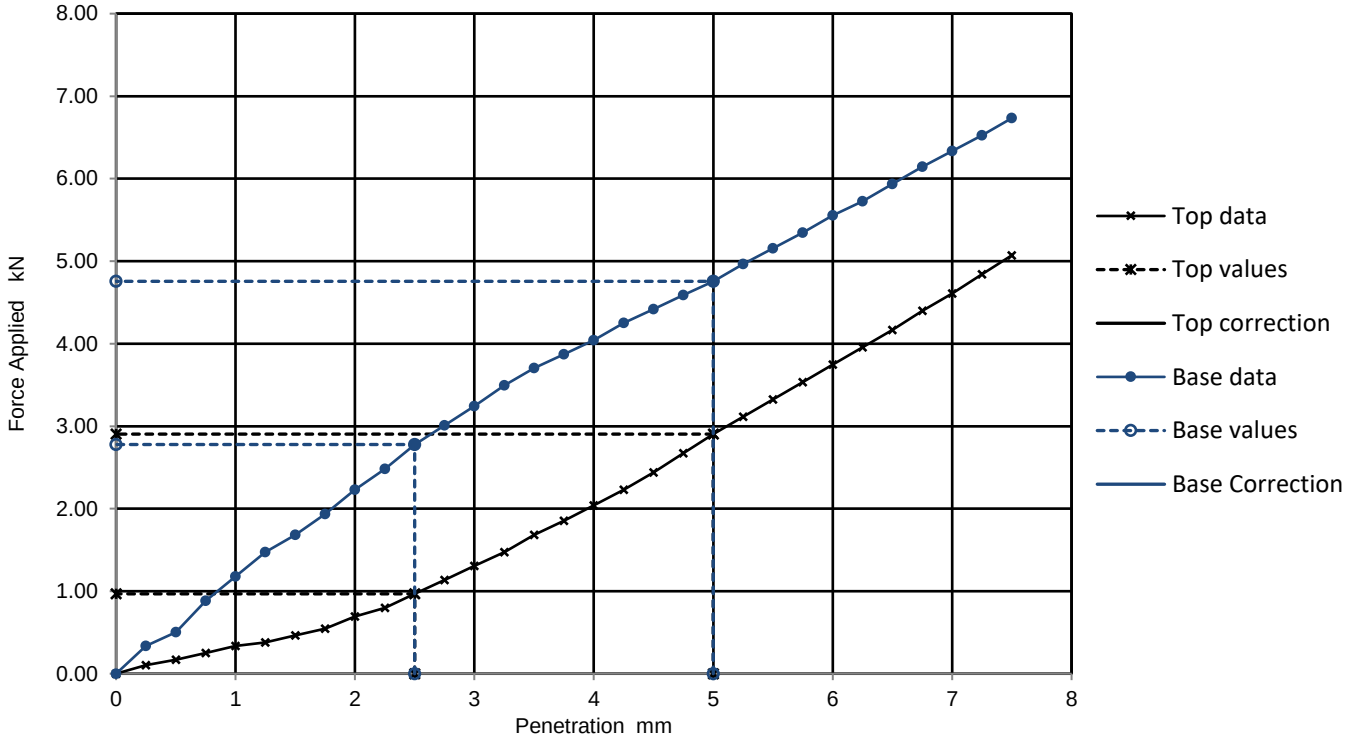
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050570
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.22	Mg/m3	Surcharge applied	2	kg
	Dry density	2.02	Mg/m3		1	kPa
	Moisture content	9.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		7.3	15.0	15.0		
BASE		21.0	24.0	24.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	19

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

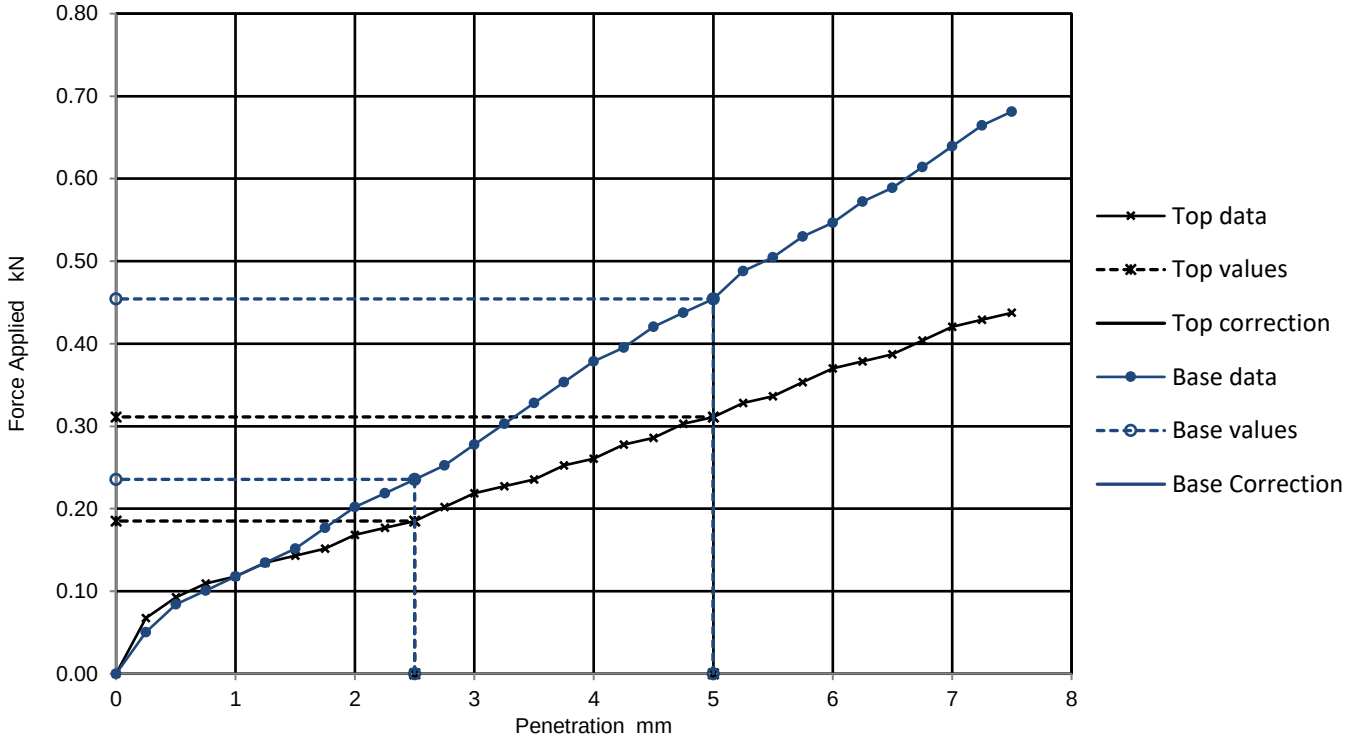
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050570
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.25	Mg/m3	Surcharge applied	2	kg
	Dry density	2.02	Mg/m3		1	kPa
	Moisture content	11.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.4	1.6	1.6		
BASE		1.8	2.3	2.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	20

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

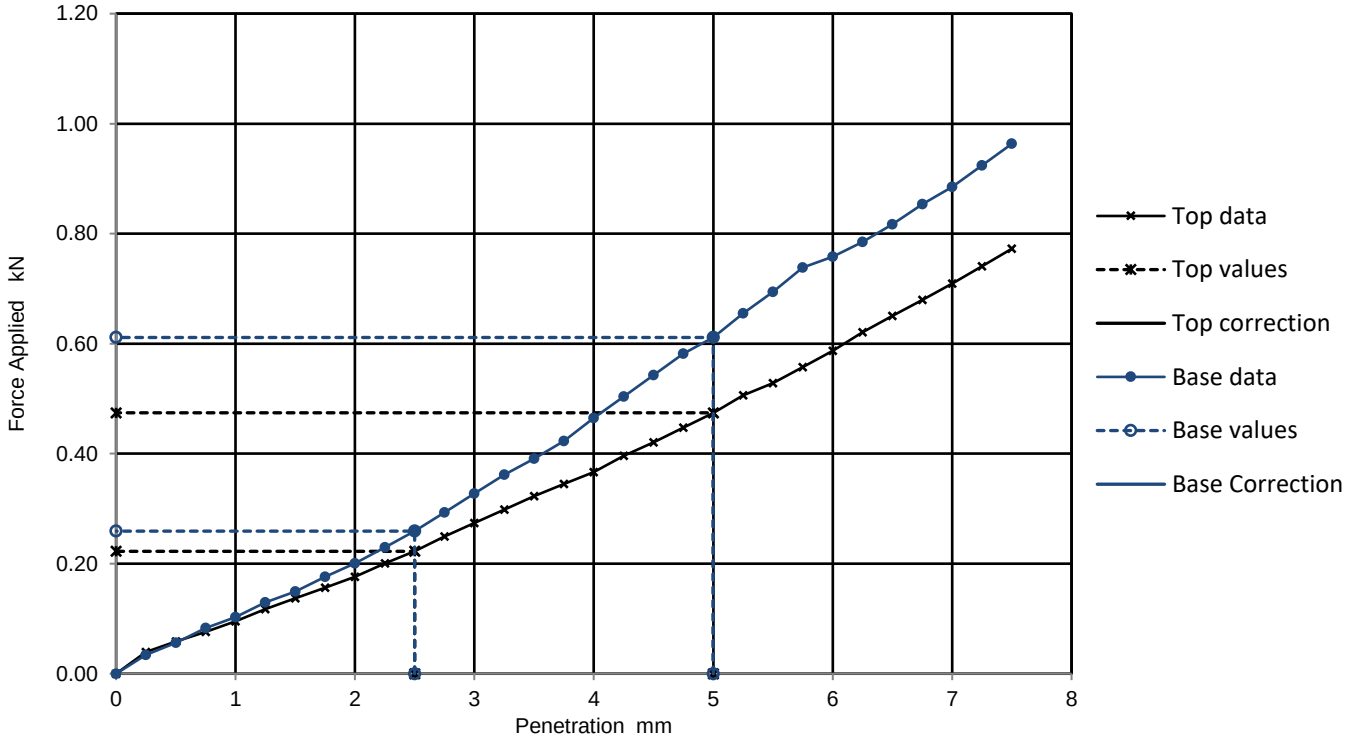
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH112
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description	Brown slightly sandy slightly gravelly SILT.			Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426177
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.17	Mg/m3	Surcharge applied	2	kg
	Dry density	1.90	Mg/m3		1	kPa
	Moisture content	14.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.7	2.4	2.4		
BASE		2.0	3.1	3.1		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	21

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

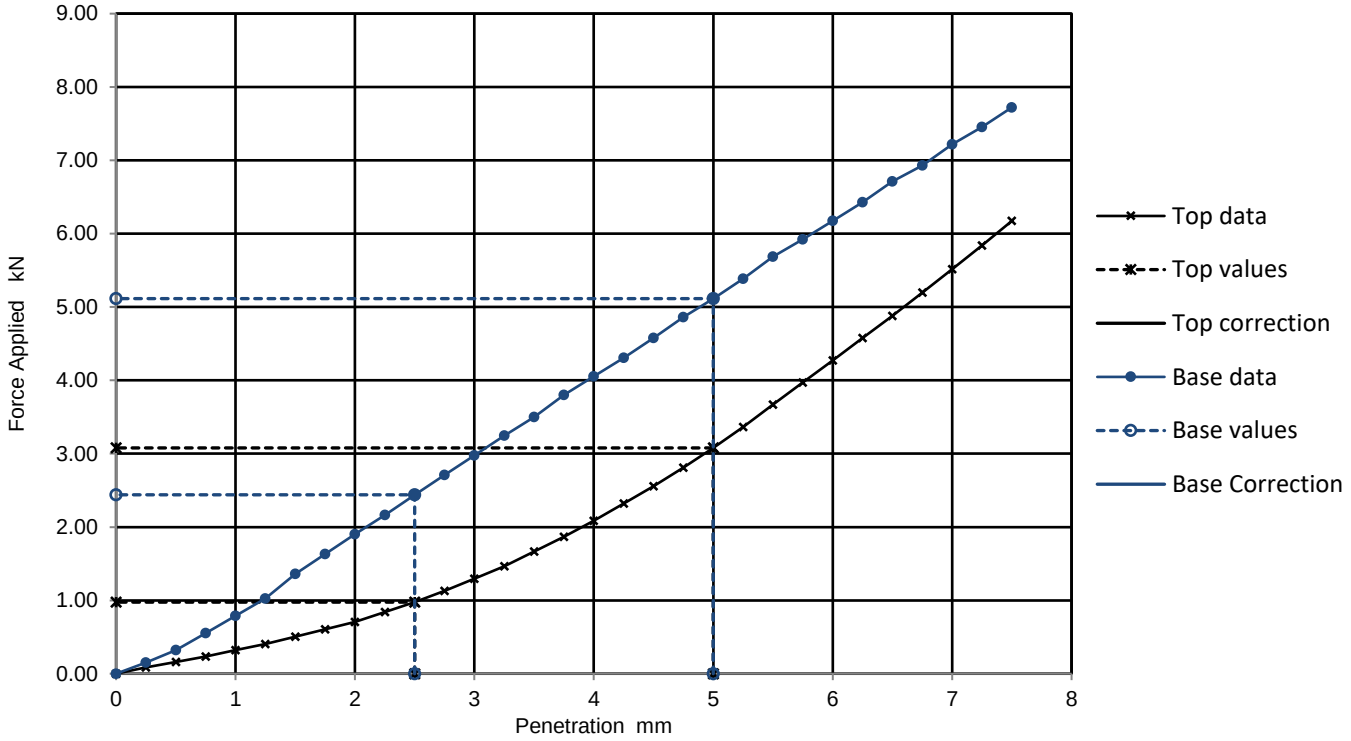
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH112
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426177
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	2	kg
	Dry density	1.88	Mg/m3		1	kPa
	Moisture content	13.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		7.4	15.0	15.0		
BASE		18.0	26.0	26.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	22

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

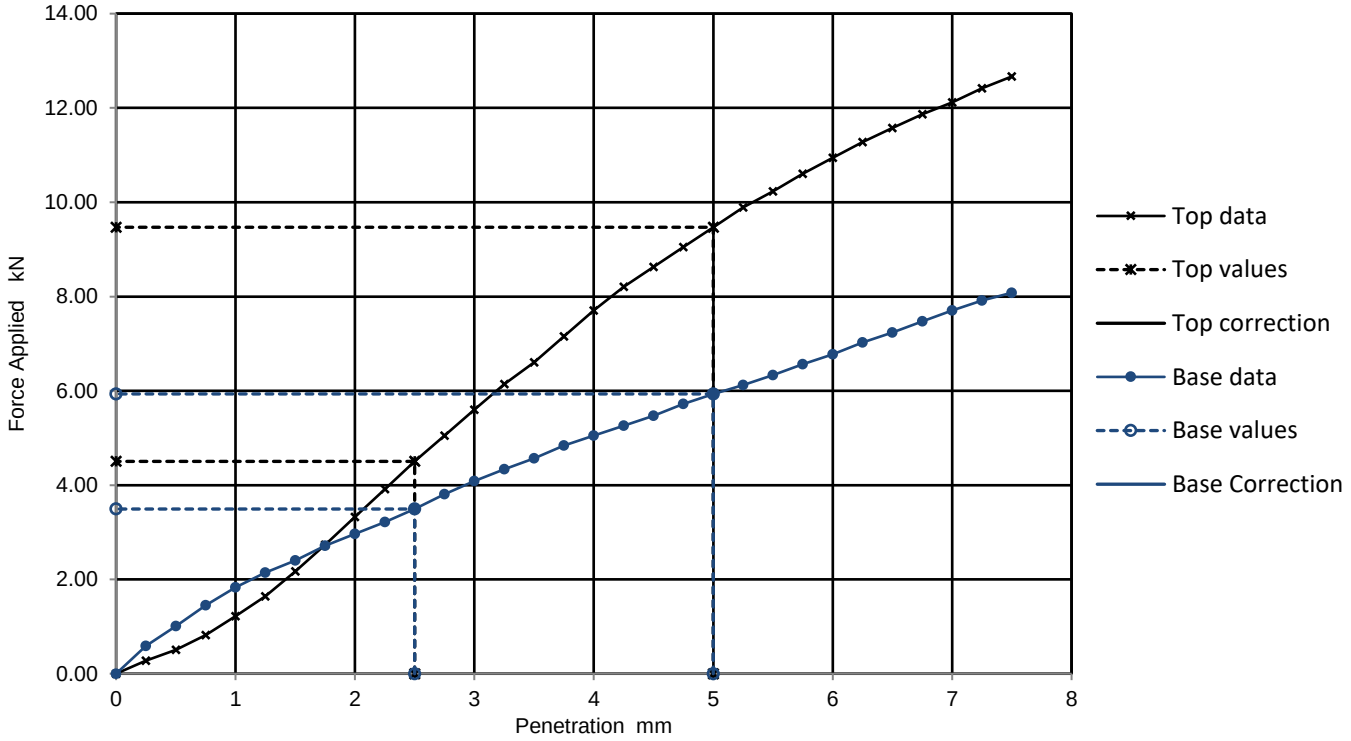
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH112
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426177
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.97	Mg/m3	Surcharge applied	2	kg
	Dry density	1.76	Mg/m3		1	kPa
	Moisture content	12.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		34.0	47.0	47.0		
BASE		26.0	30.0	30.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	23

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

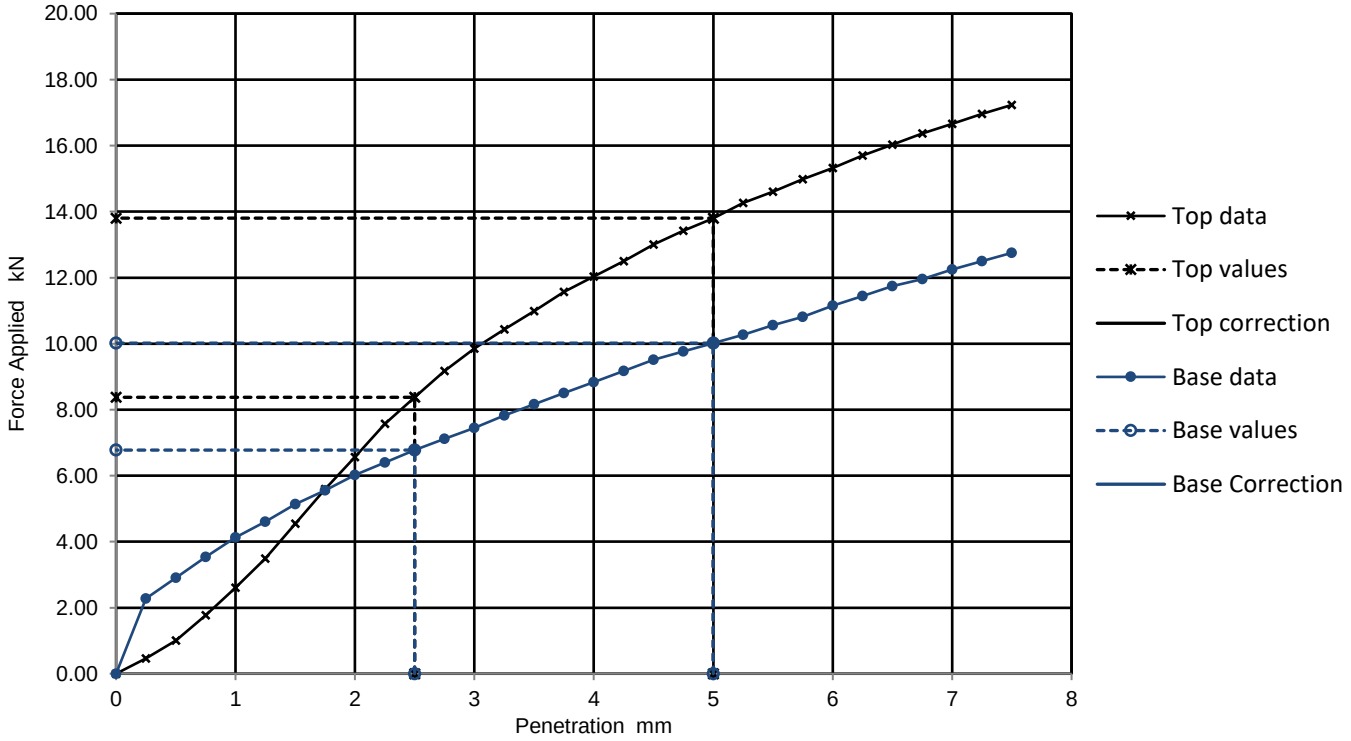
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH112
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426177
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	2	kg
	Dry density	1.81	Mg/m3		1	kPa
	Moisture content	10.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		63.0	69.0	69.0		
BASE		51.0	50.0	51.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	24

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

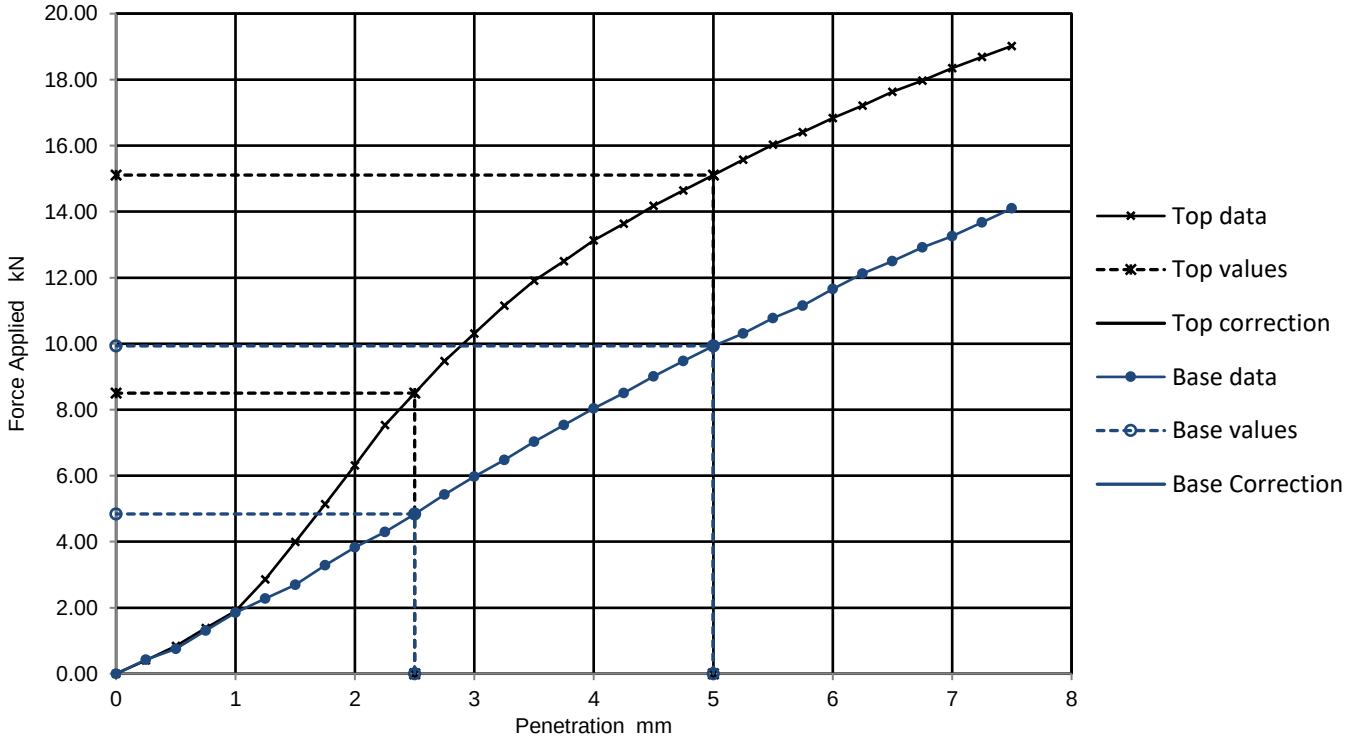
IRISH DRILLING LIMITED	**California Bearing Ratio (CBR)**			Job Ref	2023OY104
				Borehole/Pit No.	BH112
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426177
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.82	Mg/m3		1	kPa
	Moisture content	11.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		64.0	76.0	76.0		
BASE		37.0	50.0	50.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	25

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

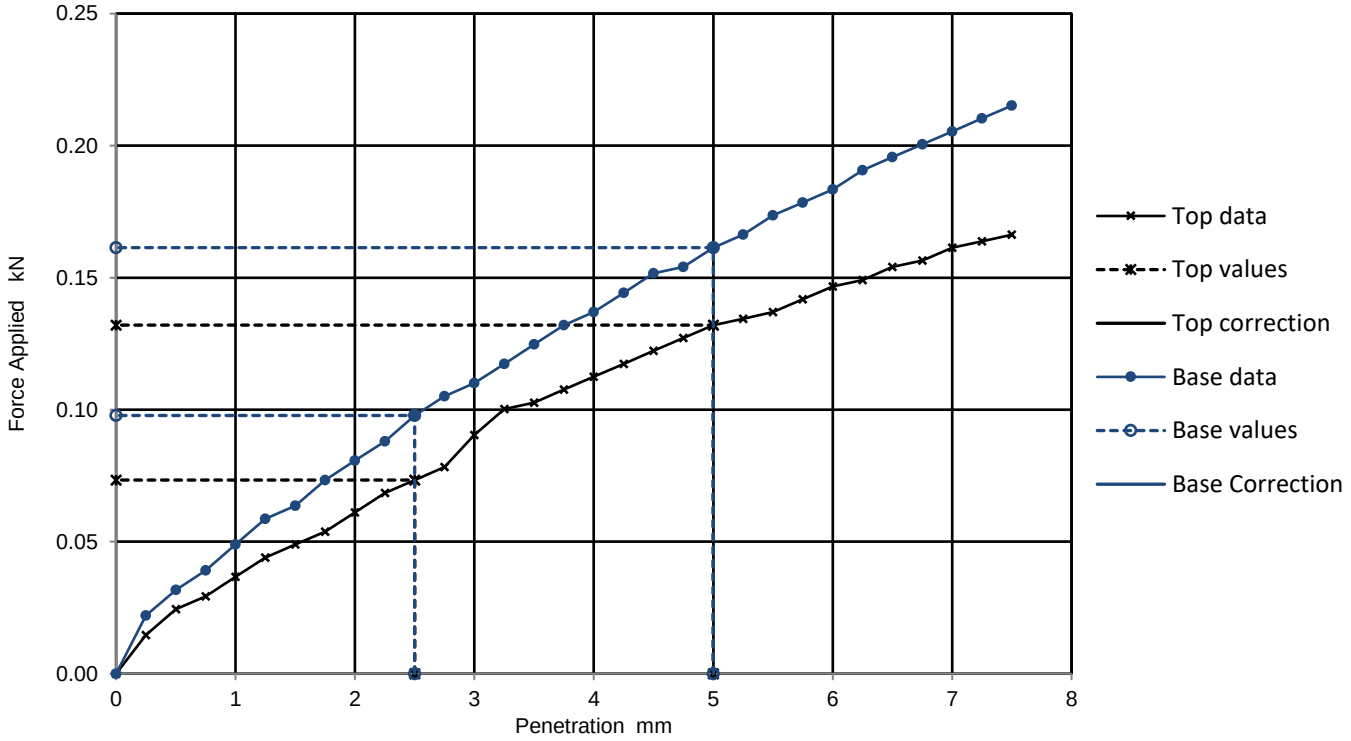
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH117
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description	Brownish-grey slightly gravelly sandy SILT.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023052381
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.20	Mg/m3	Surcharge applied	2	kg
	Dry density	1.93	Mg/m3		1	kPa
	Moisture content	13.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.6	0.7	0.7		
BASE		0.7	0.8	0.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	26

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

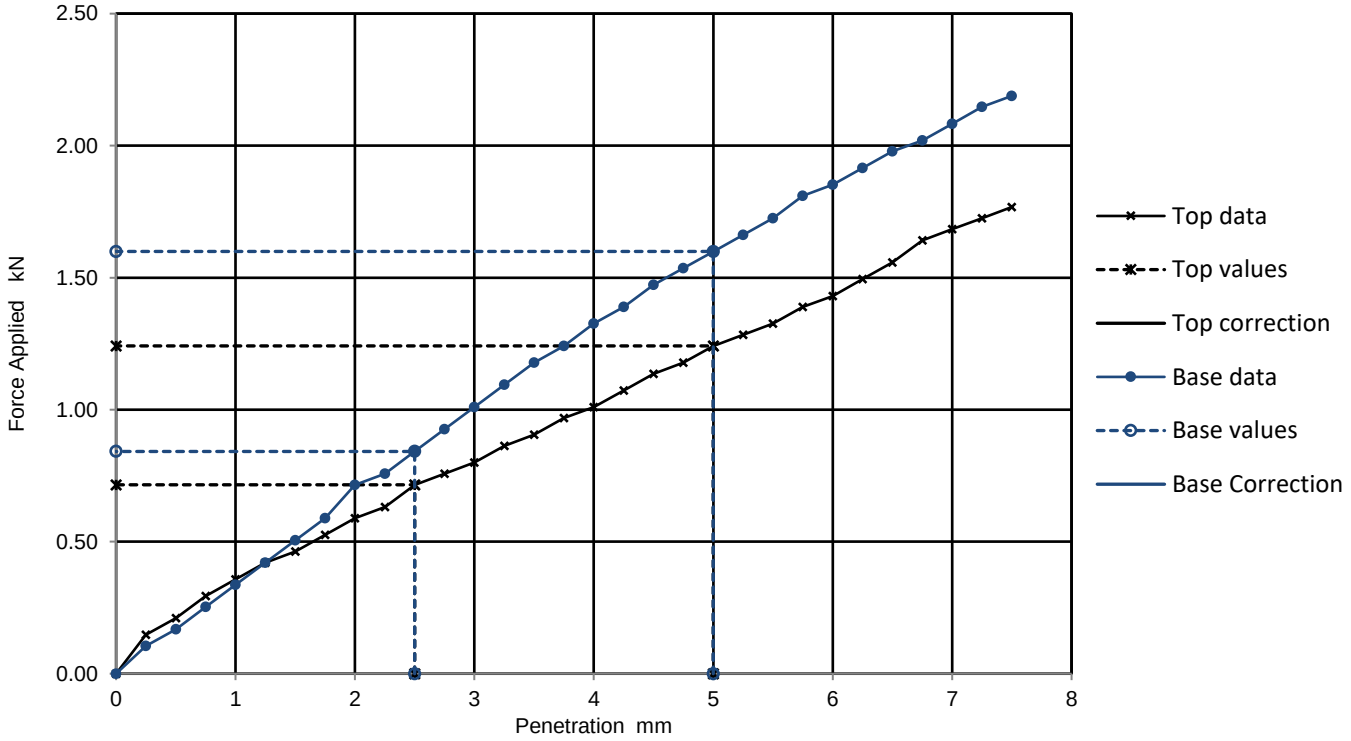
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH117
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023052381
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.22	Mg/m3	Surcharge applied	2	kg
	Dry density	2.00	Mg/m3		1	kPa
	Moisture content	11.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		5.4	6.2	6.2		
BASE		6.4	8.0	8.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	27

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

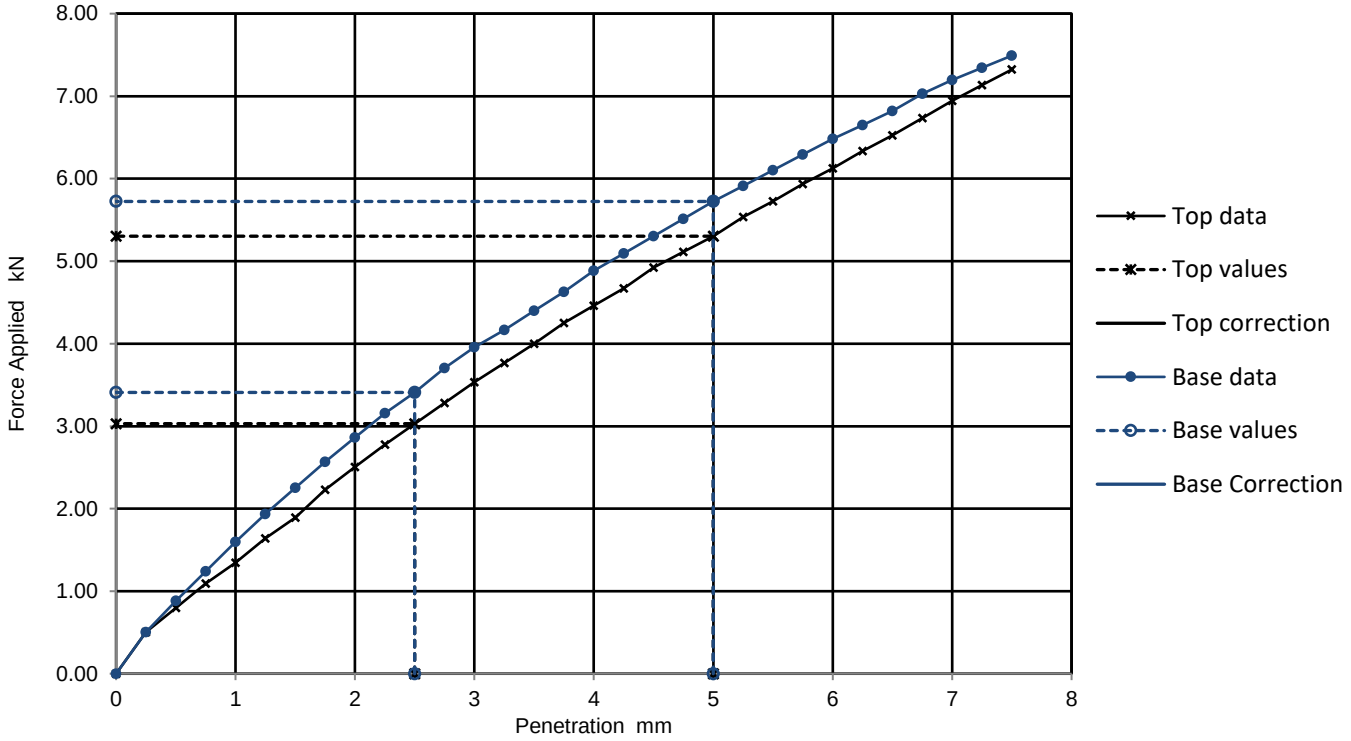
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH117
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023052381
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	kg
	Dry density	1.96	Mg/m3		kPa
	Moisture content	10.3	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		23.0	27.0	27.0	28.0	
BASE		26.0	29.0	29.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	28

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

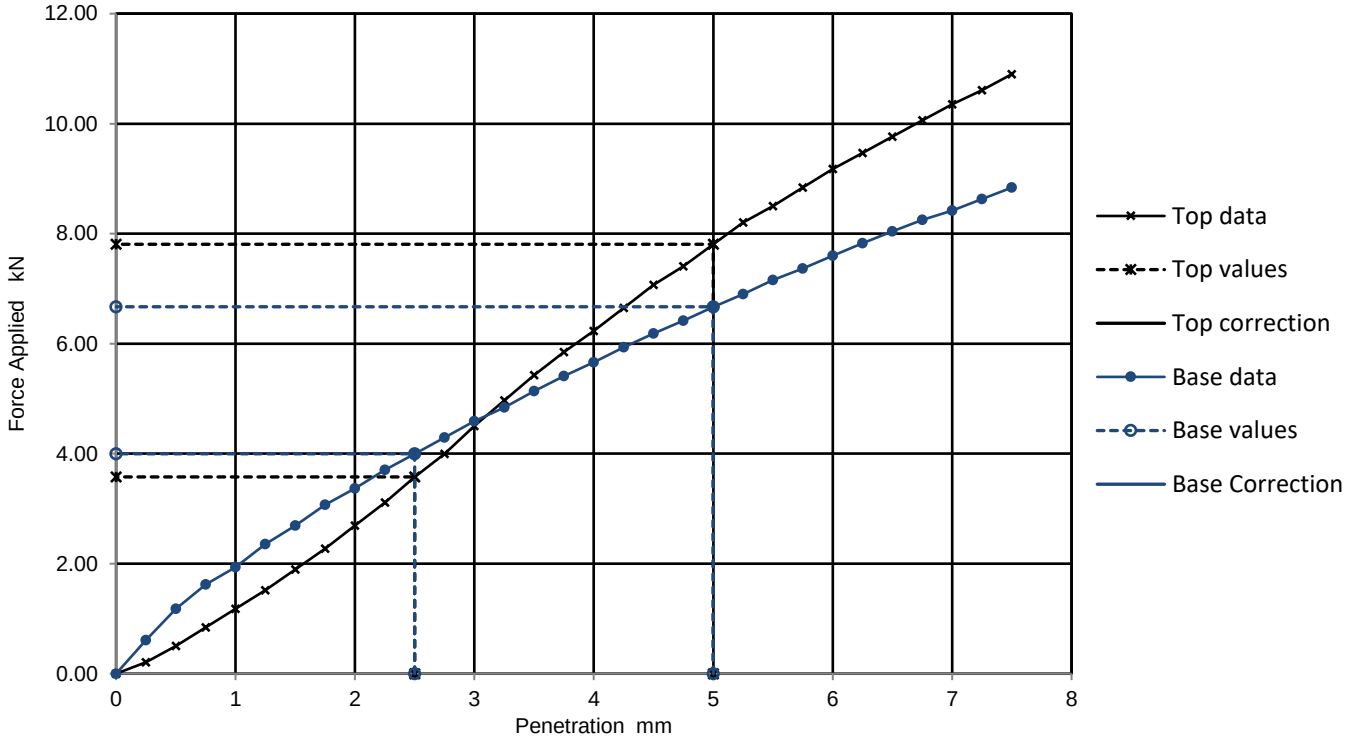
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH117
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023052381
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition				Soaking details	Not soaked	
Details				Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed			%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.11	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	7.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		27.0	39.0	39.0	36.0	
BASE		30.0	33.0	33.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	29

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

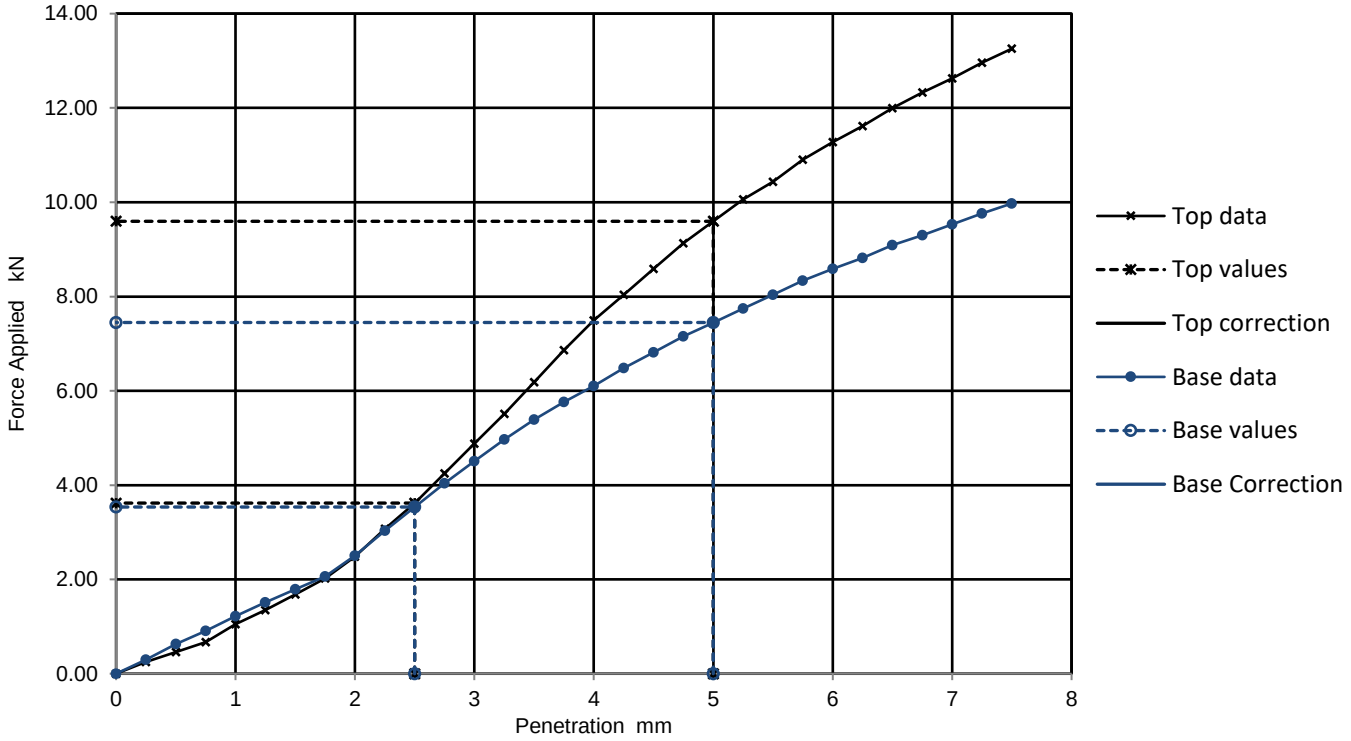
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH117
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023052381
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.07	Mg/m3	Surcharge applied	2	kg
	Dry density	1.93	Mg/m3		1	kPa
	Moisture content	7.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		27.0	48.0	48.0		
BASE		27.0	37.0	37.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	30

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

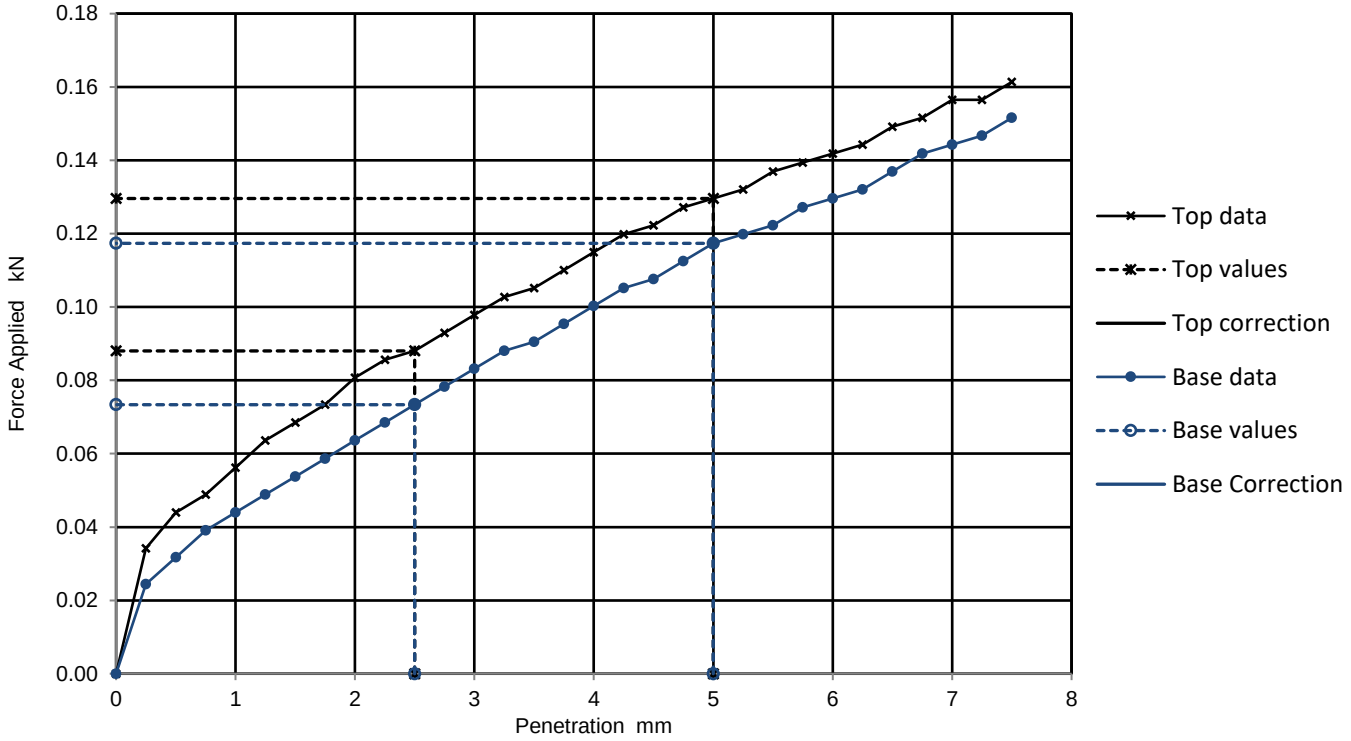
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS01
Site Name	Derrygreenagh Power			Sample No.	11
Soil Description	Grey and black slightly sandy gravelly SILT and PEAT.			Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060710
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	12.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.7	0.7	0.7	0.6	
BASE		0.6	0.6	0.6		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	31

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

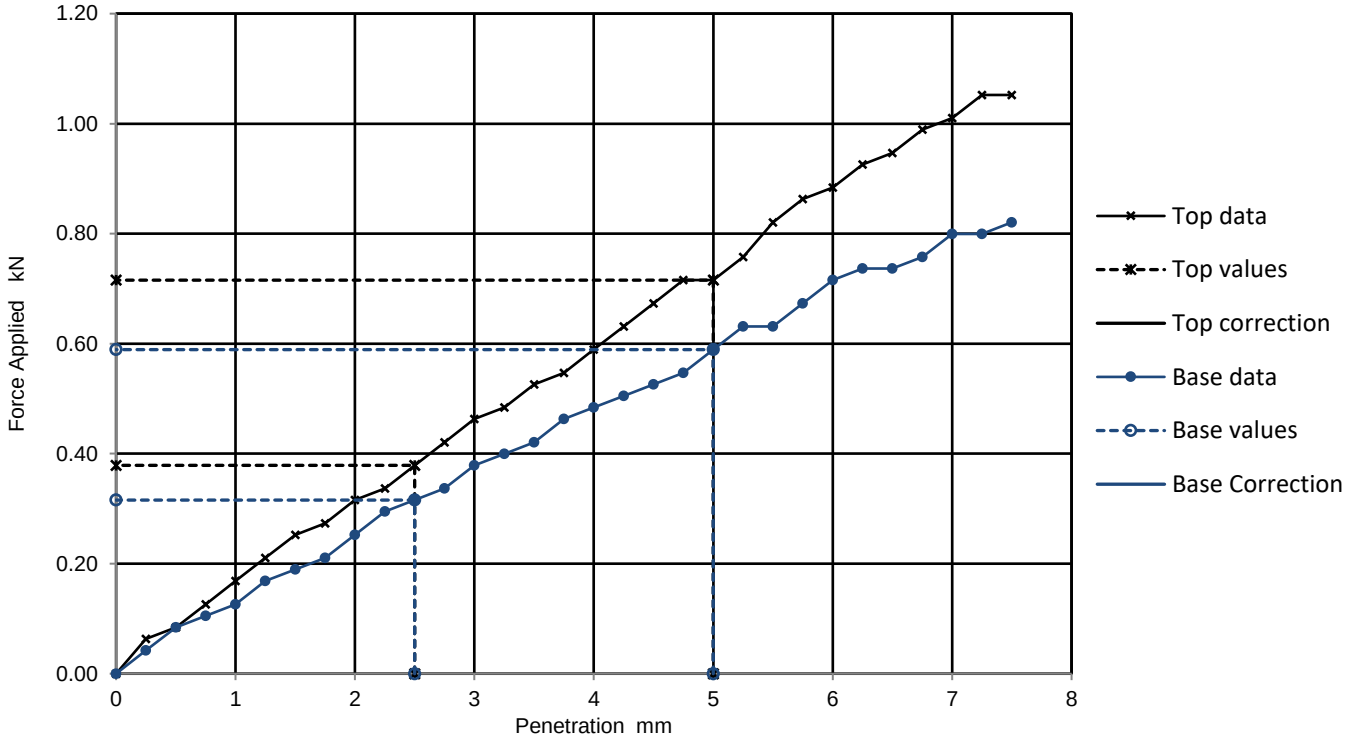
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS01
Site Name	Derrygreenagh Power			Sample No.	11
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060710
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.29	Mg/m3	Surcharge applied	2	kg
	Dry density	2.08	Mg/m3		1	kPa
	Moisture content	10.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.9	3.6	3.6	3.3	
BASE		2.4	2.9	2.9		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	32

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

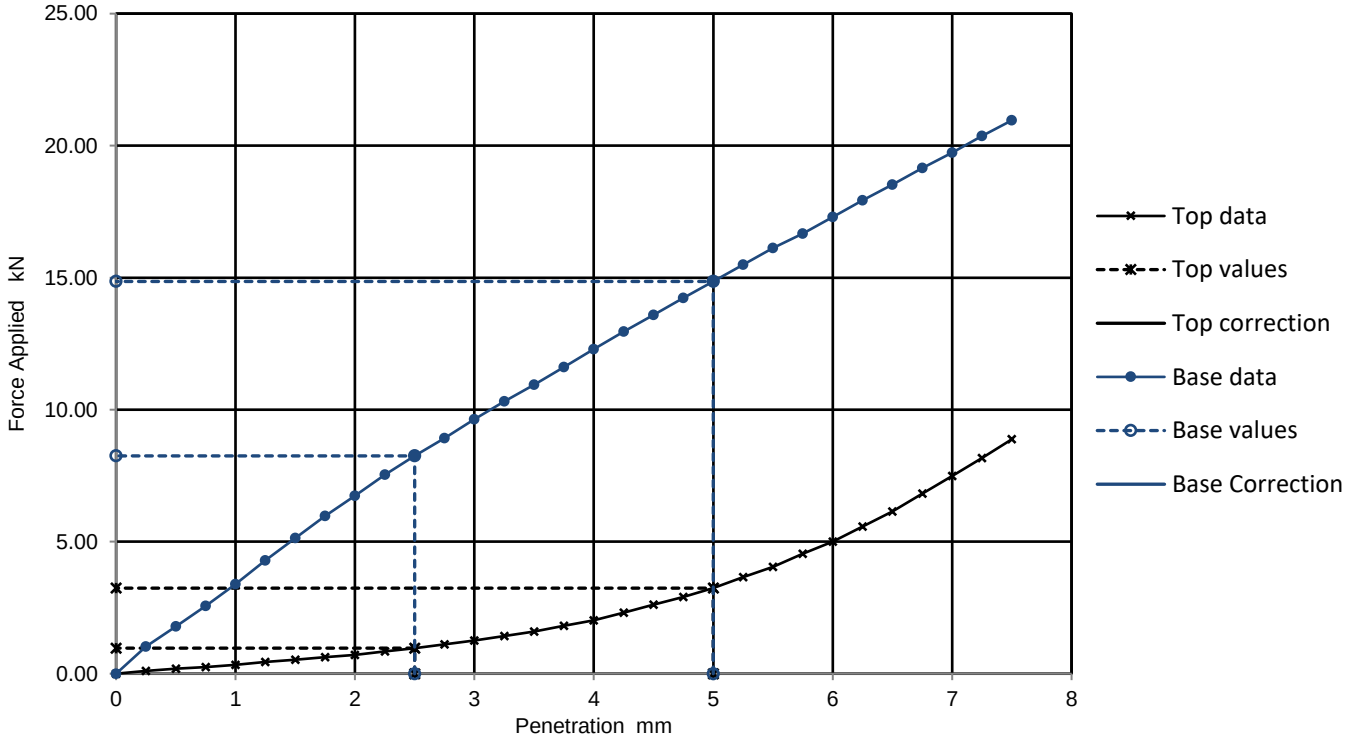
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS01
Site Name	Derrygreenagh Power			Sample No.	11
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060710
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.32	Mg/m3	Surcharge applied	2	kg
	Dry density	2.15	Mg/m3		1	kPa
	Moisture content	8.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		7.3	16.0	16.0		
BASE		62.0	74.0	74.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	33

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

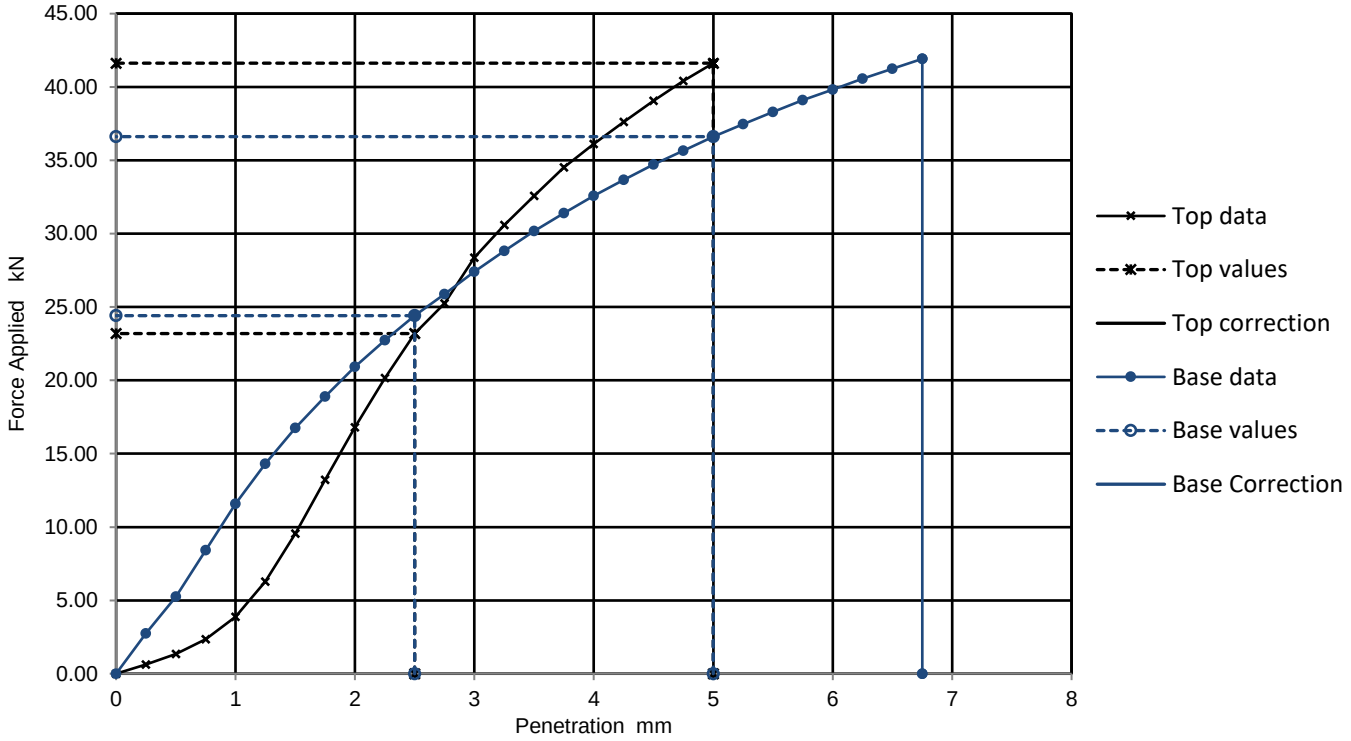
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS01
Site Name	Derrygreenagh Power			Sample No.	11
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060710
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.30	Mg/m3	Surcharge applied	2	kg
	Dry density	2.15	Mg/m3		1	kPa
	Moisture content	6.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		180.0	210.0	210.0	200.0	
BASE		180.0	180.0	180.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	34

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

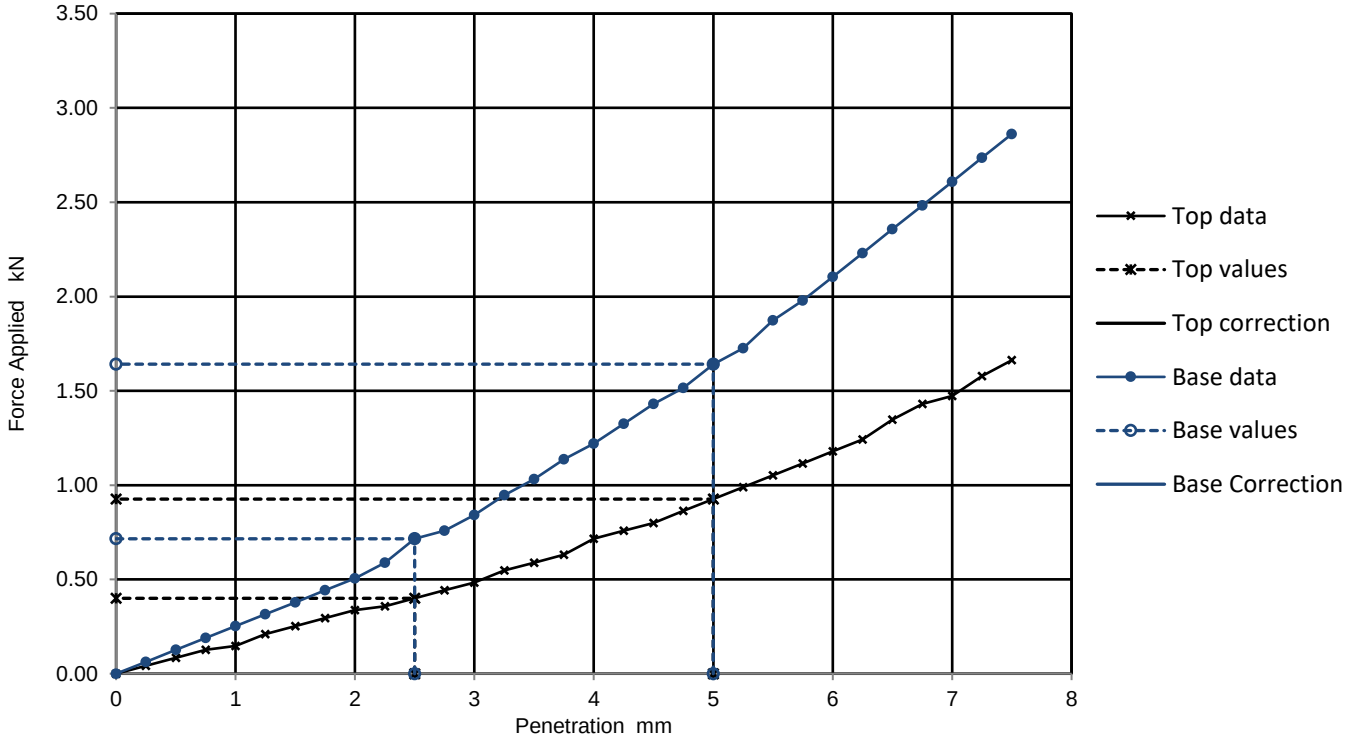
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS01
Site Name	Derrygreenagh Power			Sample No.	11
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060710
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.31	Mg/m3	Surcharge applied	2	kg
	Dry density	2.12	Mg/m3		1	kPa
	Moisture content	8.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.0	4.6	4.6		
BASE		5.4	8.2	8.2		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	35

Lab Sheet Reference : 01/11/2023

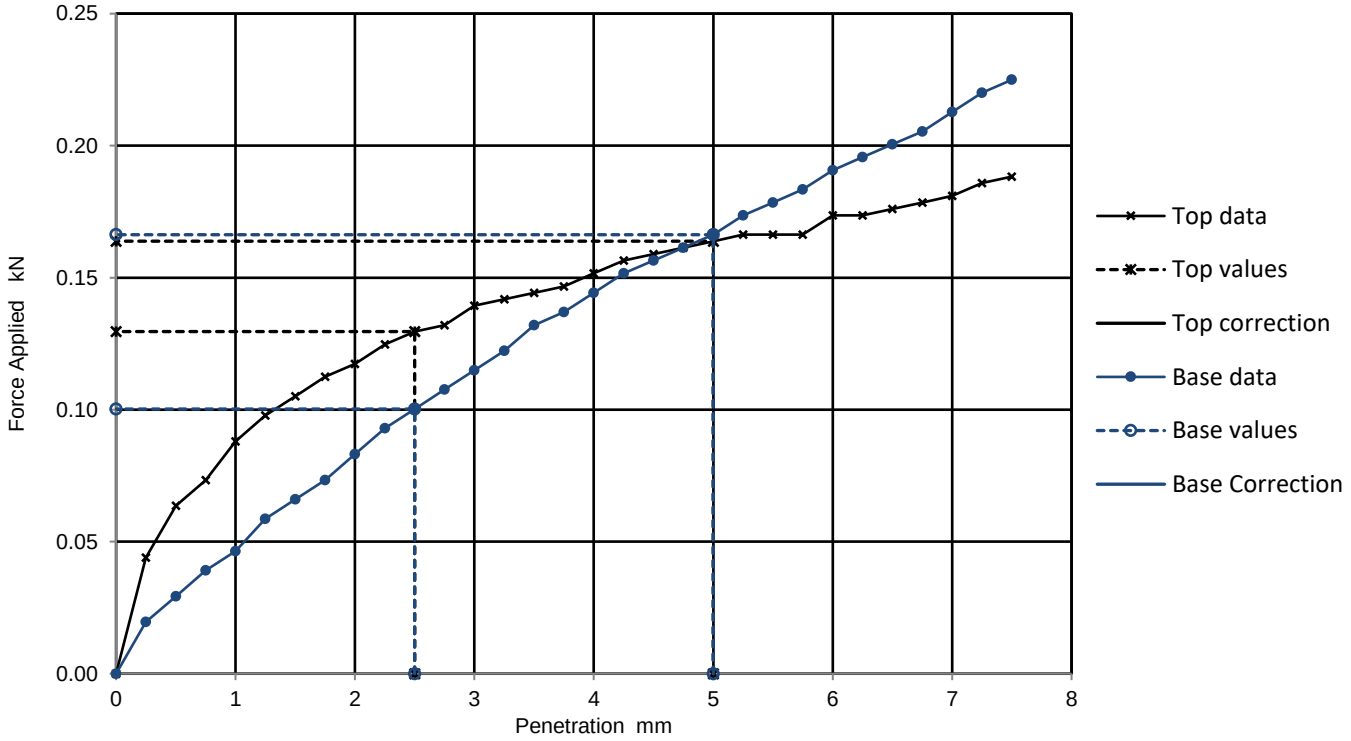
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS02
Site Name	Derrygreenagh Power			Sample No.	9
Soil Description	Light grey slightly gravelly sandy SILT.			Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305188
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition				Soaking details	Not soaked	
Details				Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed			%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	14.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.0	0.8	1.0	0.9	
BASE		0.8	0.8	0.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	36

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

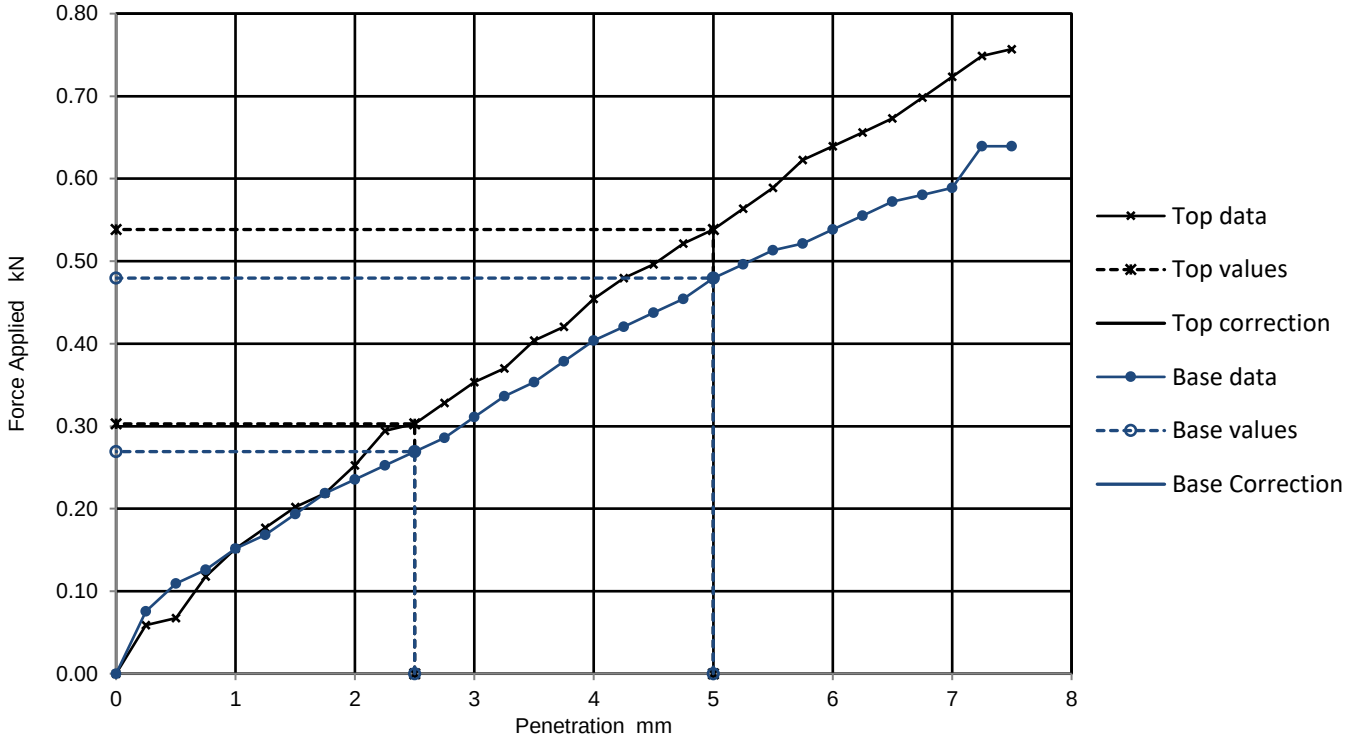
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS02
Site Name	Derrygreenagh Power			Sample No.	9
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305188
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.27	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	11.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.3	2.7	2.7	2.5	
BASE		2.0	2.4	2.4		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	37

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

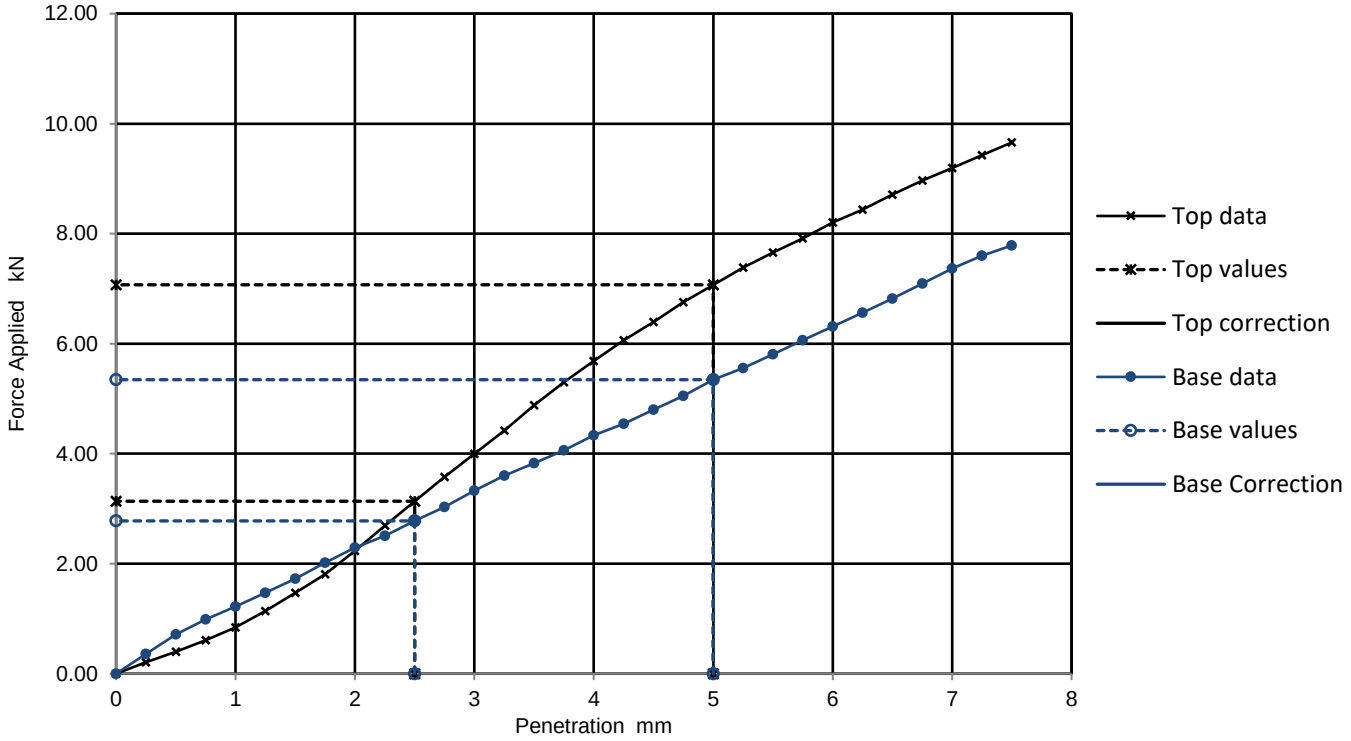
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS02
Site Name	Derrygreenagh Power			Sample No.	9
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305188
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	2	kg
	Dry density	1.97	Mg/m3		1	kPa
	Moisture content	9.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		24.0	35.0	35.0		
BASE		21.0	27.0	27.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	38

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

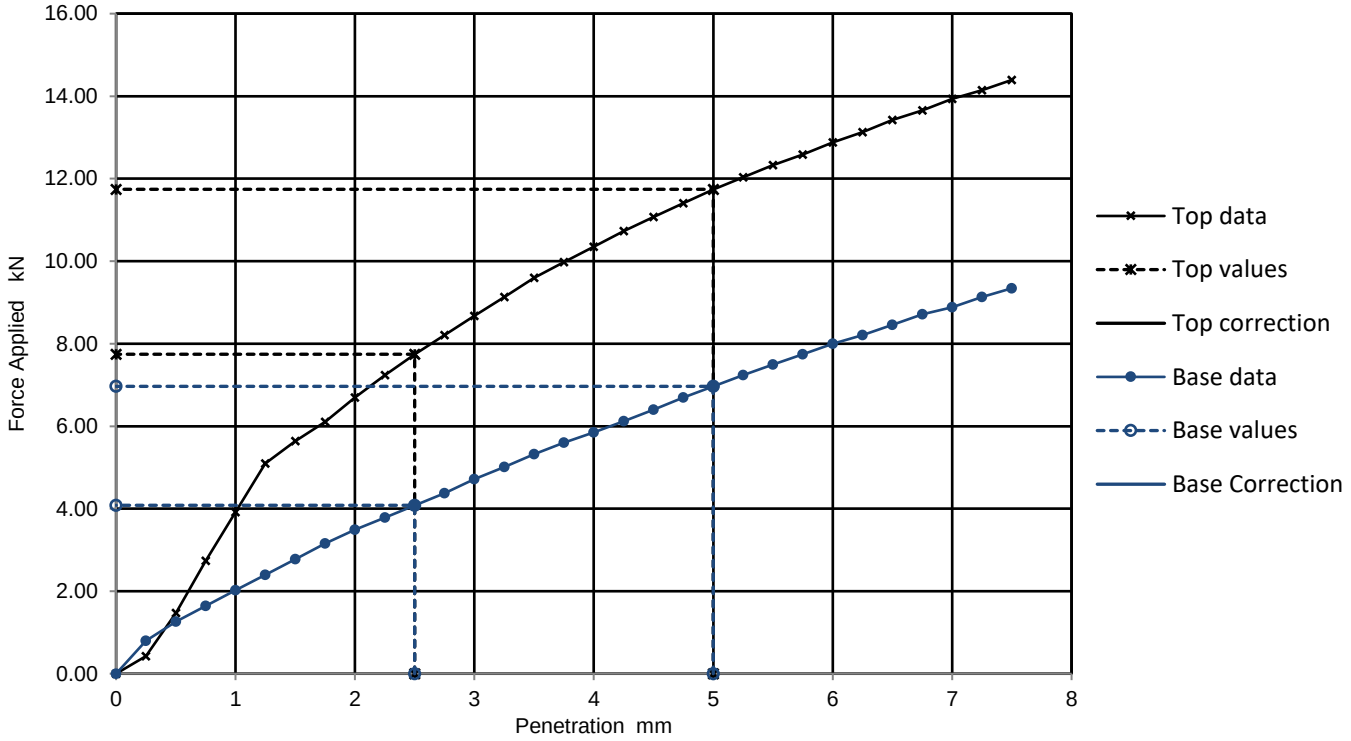
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS02
Site Name	Derrygreenagh Power			Sample No.	9
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305188
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.11	Mg/m3	Surcharge applied	2	kg
	Dry density	1.95	Mg/m3		1	kPa
	Moisture content	8.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		59.0	59.0	59.0		
BASE		31.0	35.0	35.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	39

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

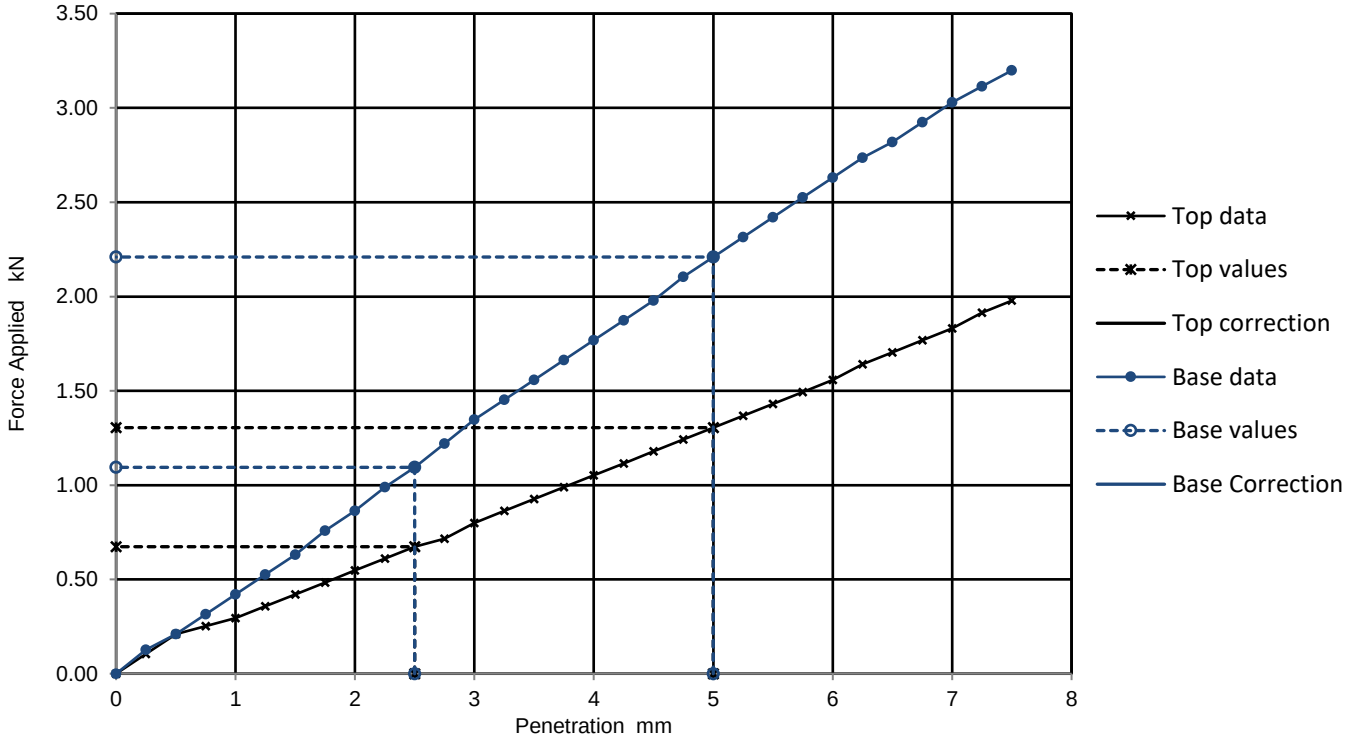
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS02
Site Name	Derrygreenagh Power			Sample No.	9
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305188
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.27	Mg/m3	Surcharge applied	2	kg
	Dry density	2.07	Mg/m3		1	kPa
	Moisture content	9.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		5.1	6.5	6.5		
BASE		8.3	11.0	11.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	40

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

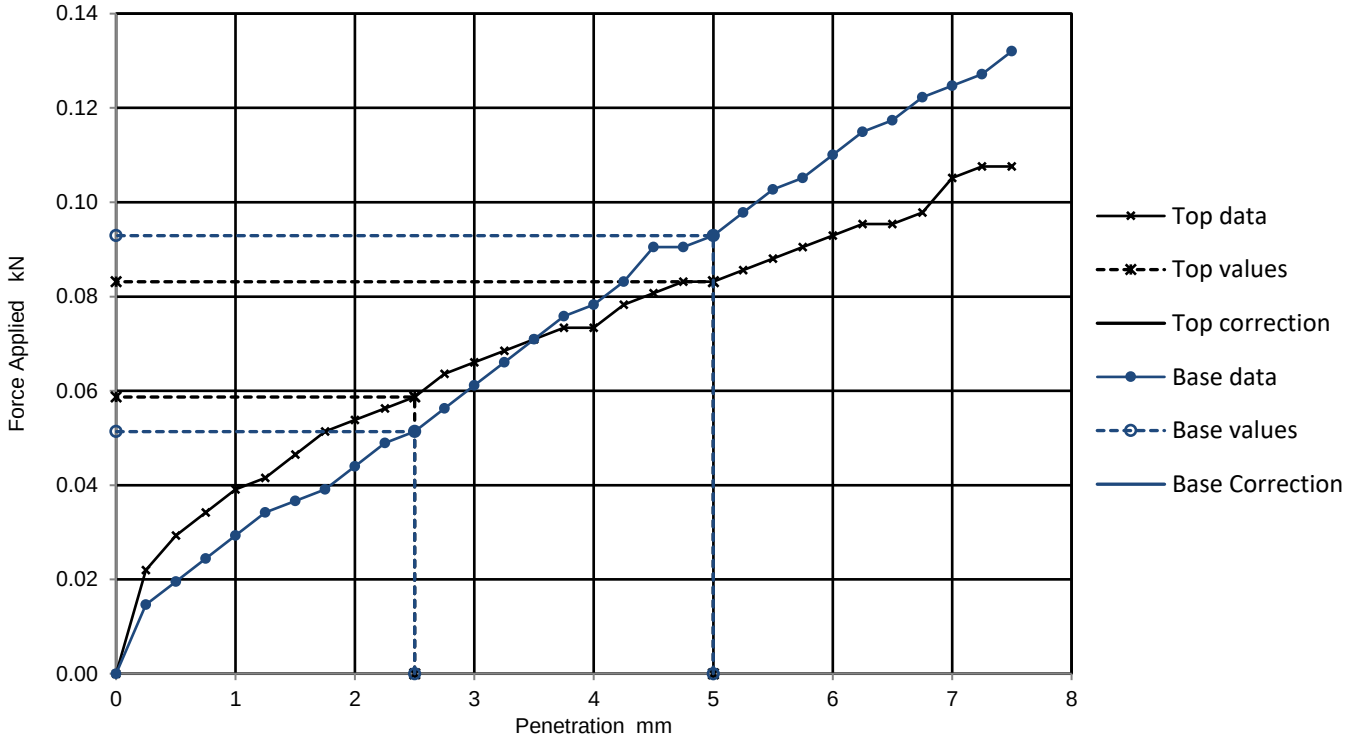
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description	Grey gravelly SILT.			Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081444
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	1.94	Mg/m3		1	kPa
	Moisture content	14.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.4	0.4	0.4	0.5	
BASE		0.4	0.5	0.5		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	41

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

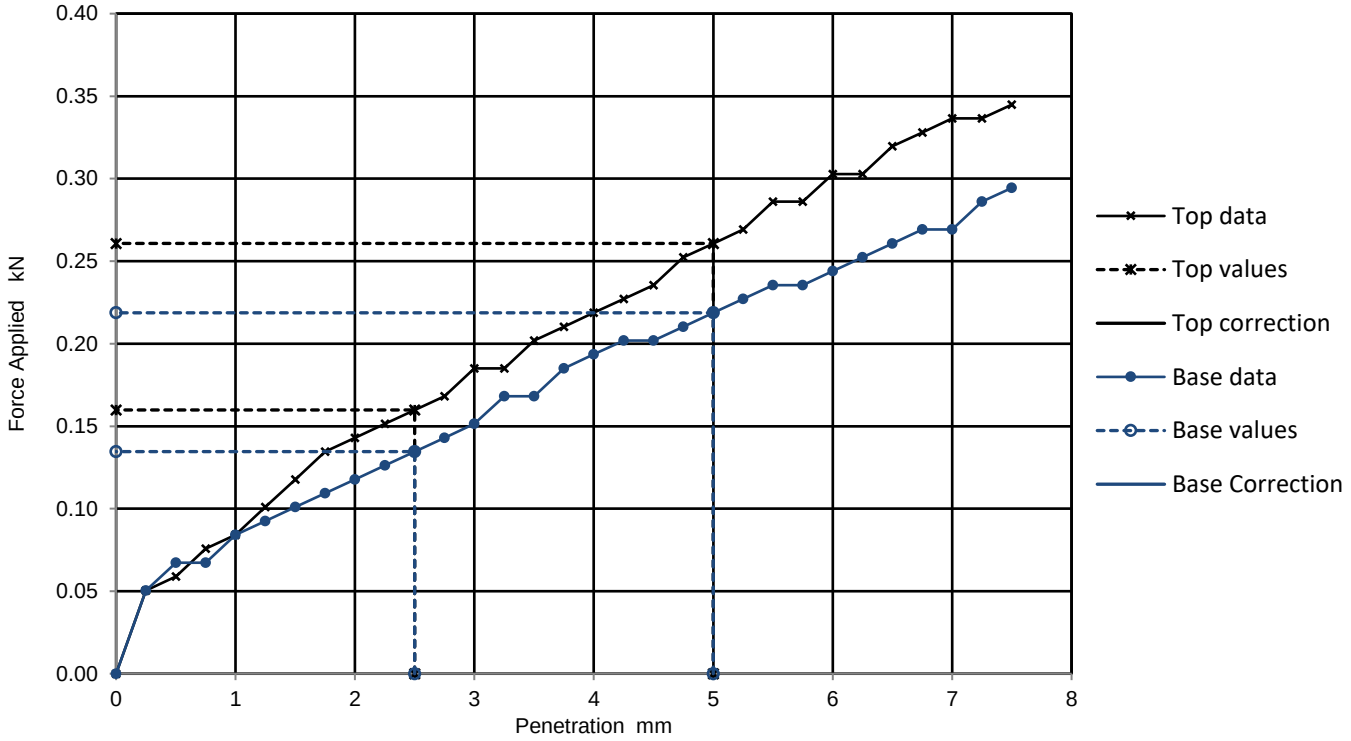
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081444
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.27	Mg/m3	Surcharge applied	2	kg
	Dry density	2.06	Mg/m3		1	kPa
	Moisture content	10.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.2	1.3	1.3	1.2	
BASE		1.0	1.1	1.1		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	42

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

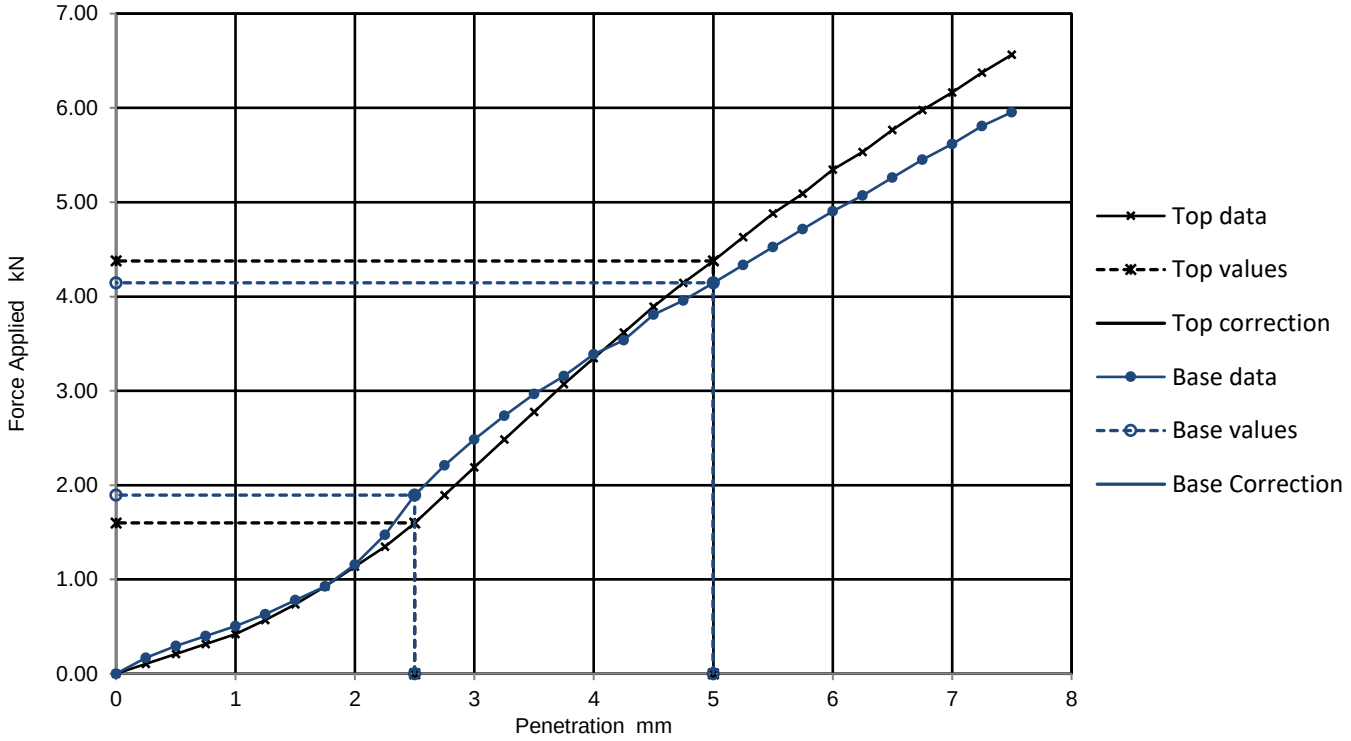
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081444
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	2	kg
	Dry density	1.99	Mg/m3		1	kPa
	Moisture content	8.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		12.0	22.0	22.0	21.0	
BASE		14.0	21.0	21.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	43

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

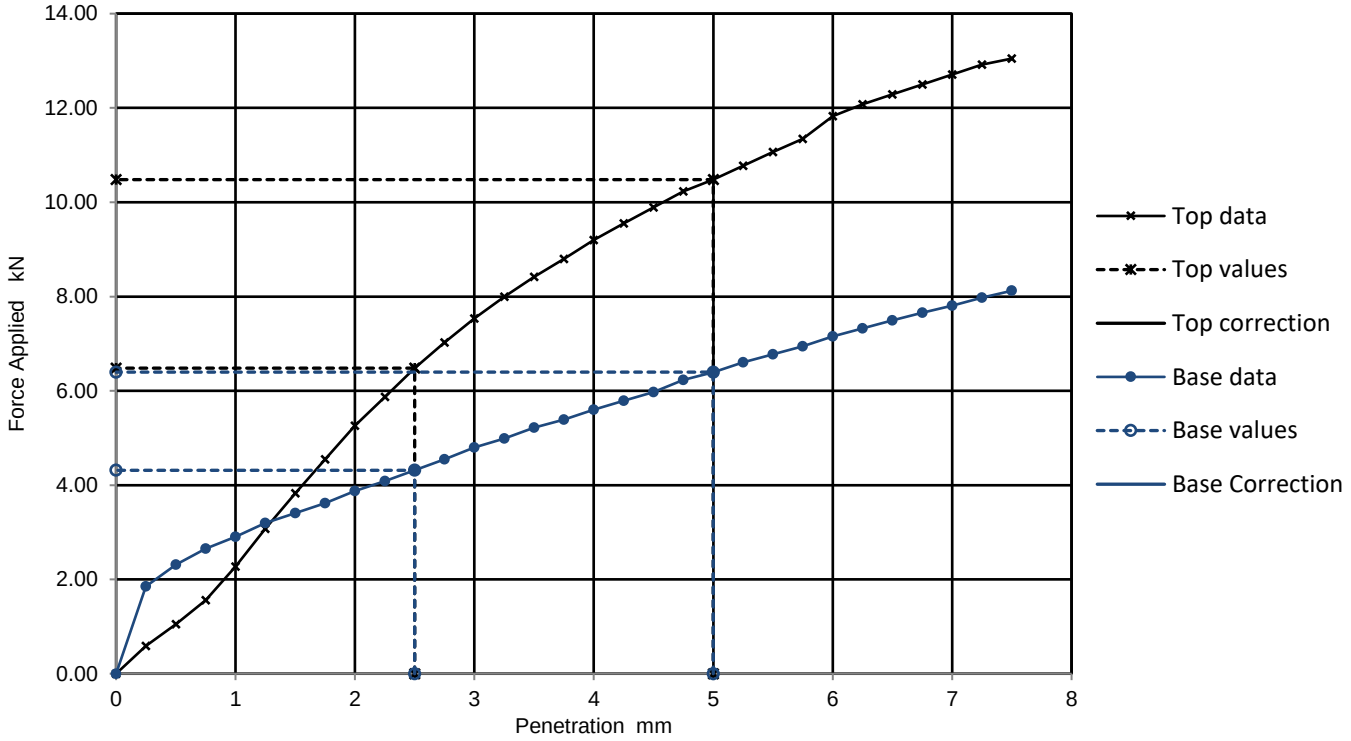
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081444
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.10	Mg/m3	Surcharge applied	kg
	Dry density	1.96	Mg/m3		kPa
	Moisture content	7.3	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		49.0	52.0	52.0		
BASE		33.0	32.0	33.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	44

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

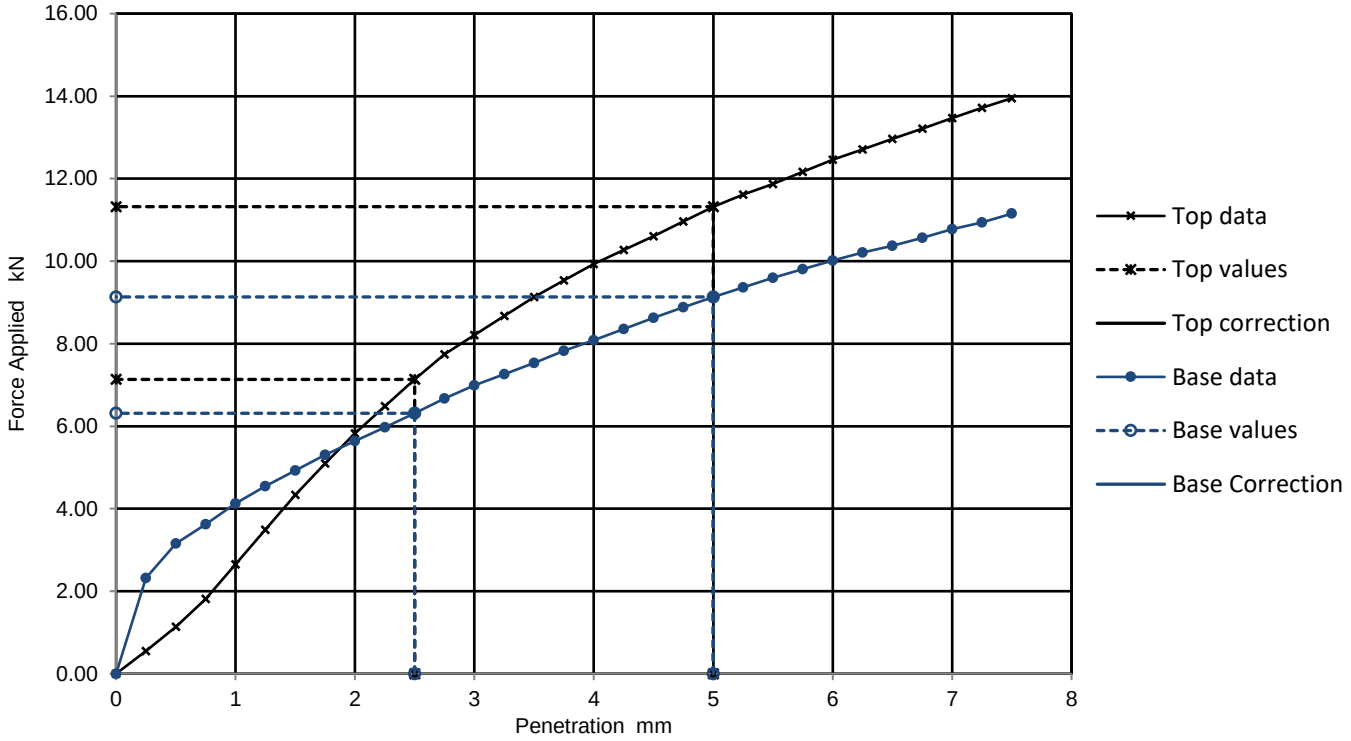
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081444
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.03	Mg/m3	Surcharge applied	2	kg
	Dry density	1.90	Mg/m3		1	kPa
	Moisture content	6.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		54.0	57.0	57.0	52.0	
BASE		48.0	46.0	48.0		

General remarks	Test specific remarks	Approved
		BCD

Fig No.	1
QC From R9	
Sheet No	45

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

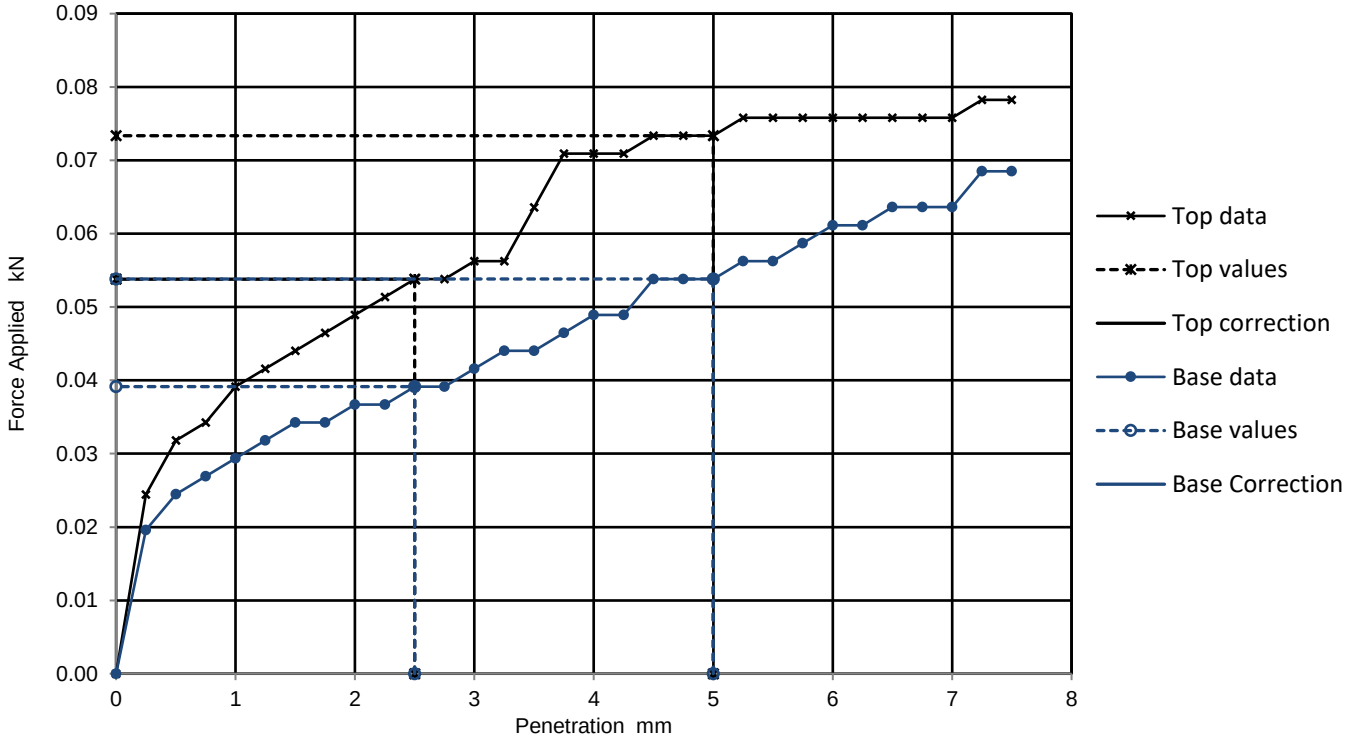
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description	Light greyish-brown slightly gravelly slightly sandy SILT.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081471
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	14.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.4	0.4	0.4		
BASE		0.3	0.3	0.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	46

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

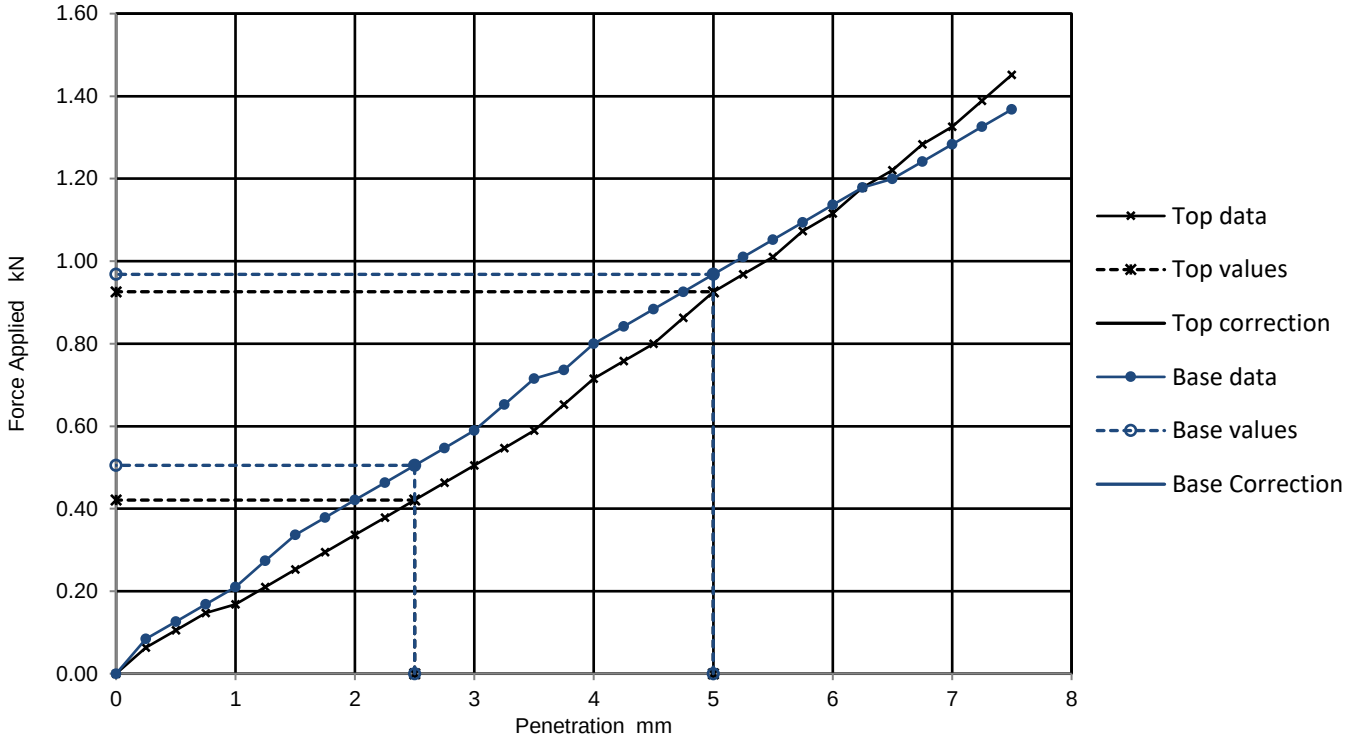
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081471
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.31	Mg/m3	Surcharge applied	2	kg
	Dry density	2.10	Mg/m3		1	kPa
	Moisture content	10.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.2	4.6	4.6	4.7	
BASE		3.8	4.8	4.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	47

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

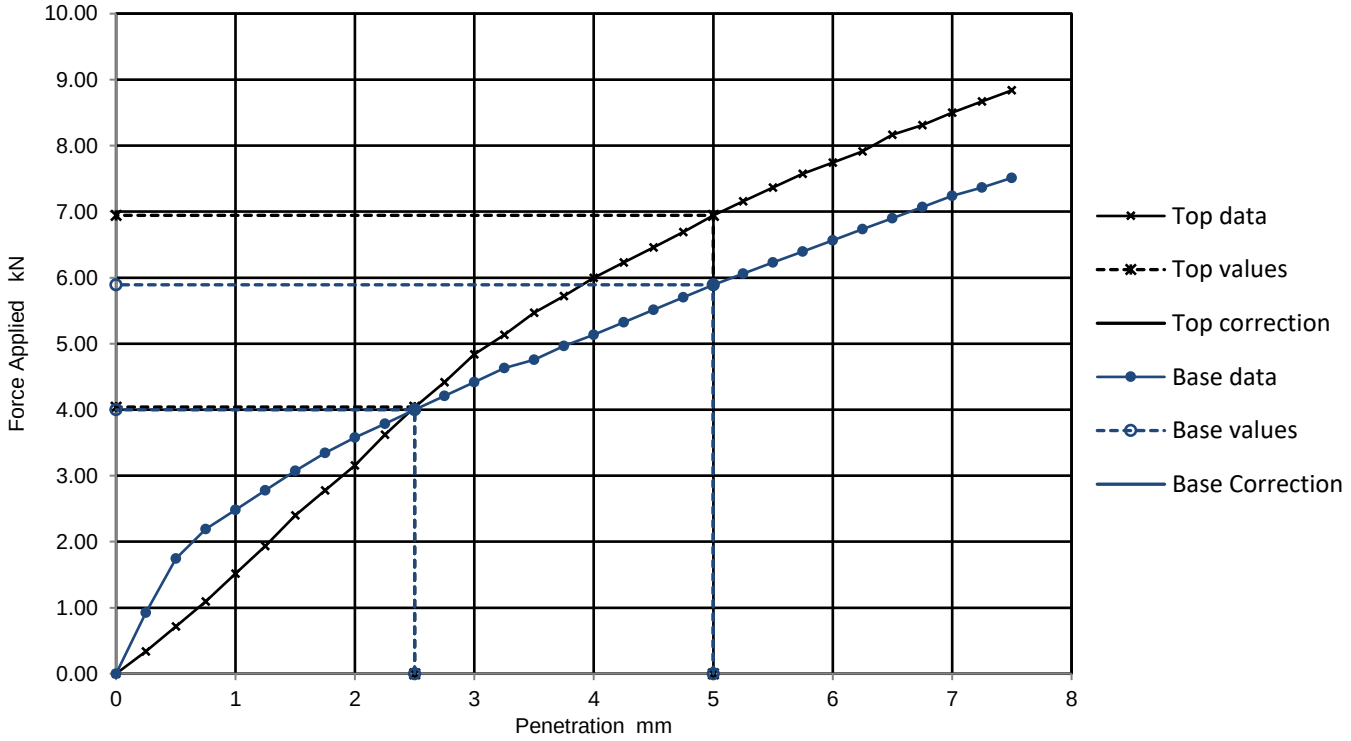
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081471
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.10	Mg/m3	Surcharge applied	2	kg
	Dry density	1.95	Mg/m3		1	kPa
	Moisture content	7.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		31.0	35.0	35.0	33.0	
BASE		30.0	29.0	30.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	48

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

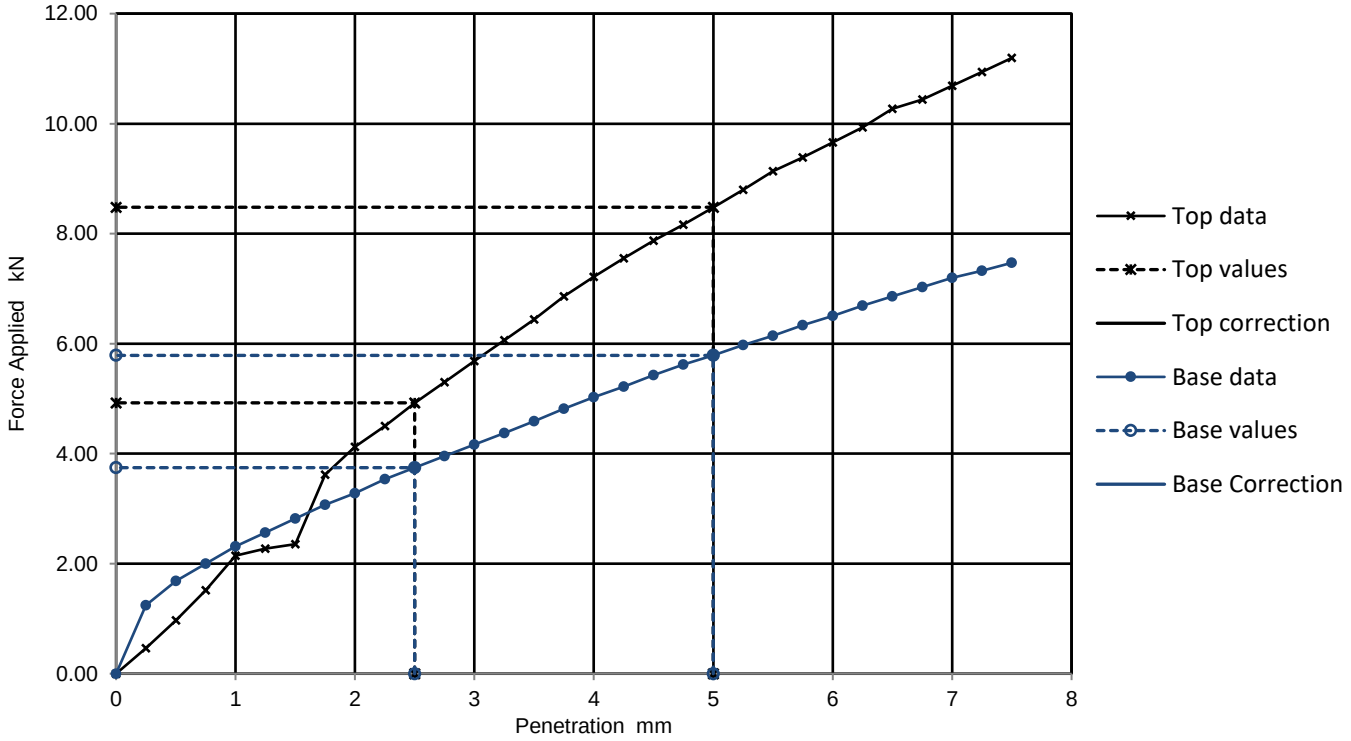
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081471
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.04	Mg/m3	Surcharge applied	2	kg
	Dry density	1.92	Mg/m3		1	kPa
	Moisture content	6.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		37.0	42.0	42.0		
BASE		28.0	29.0	29.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	49

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

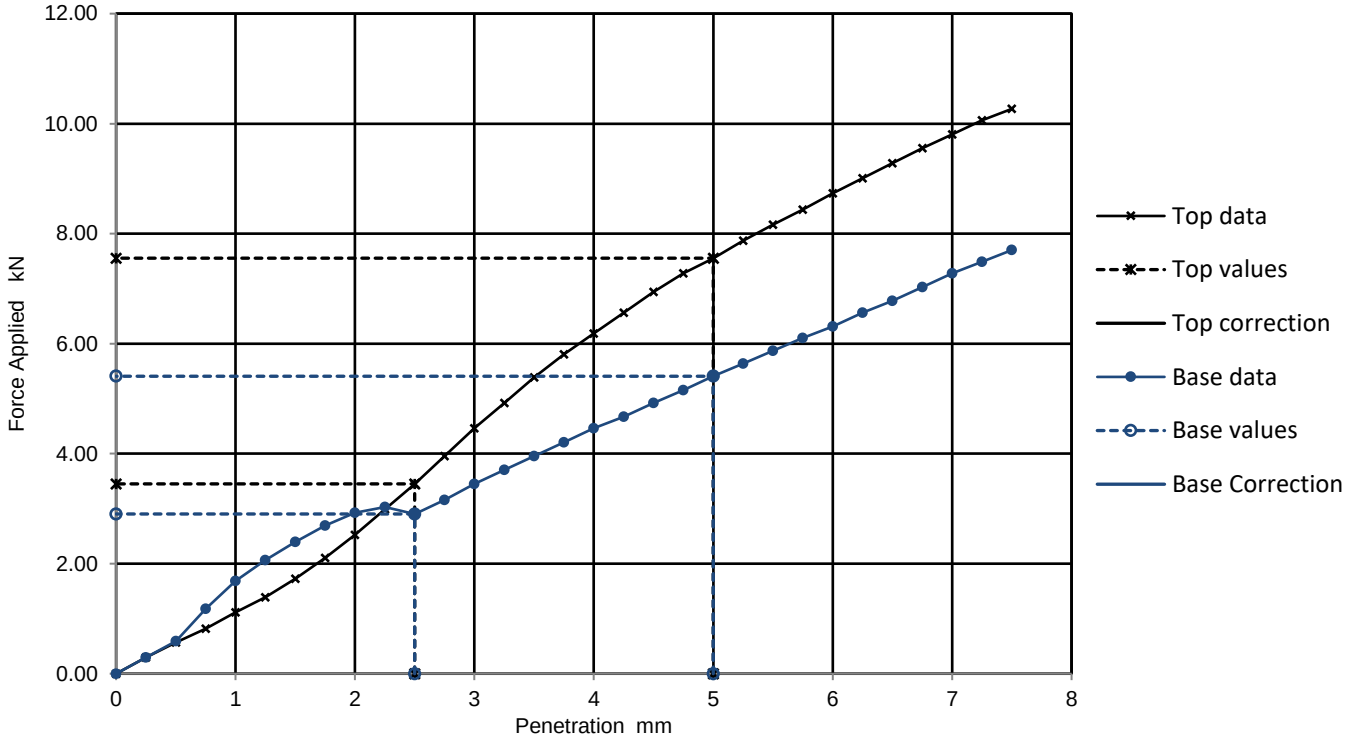
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081471
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.20	Mg/m3	Surcharge applied	2	kg
	Dry density	2.03	Mg/m3		1	kPa
	Moisture content	8.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		26.0	38.0	38.0		
BASE		22.0	27.0	27.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	50

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

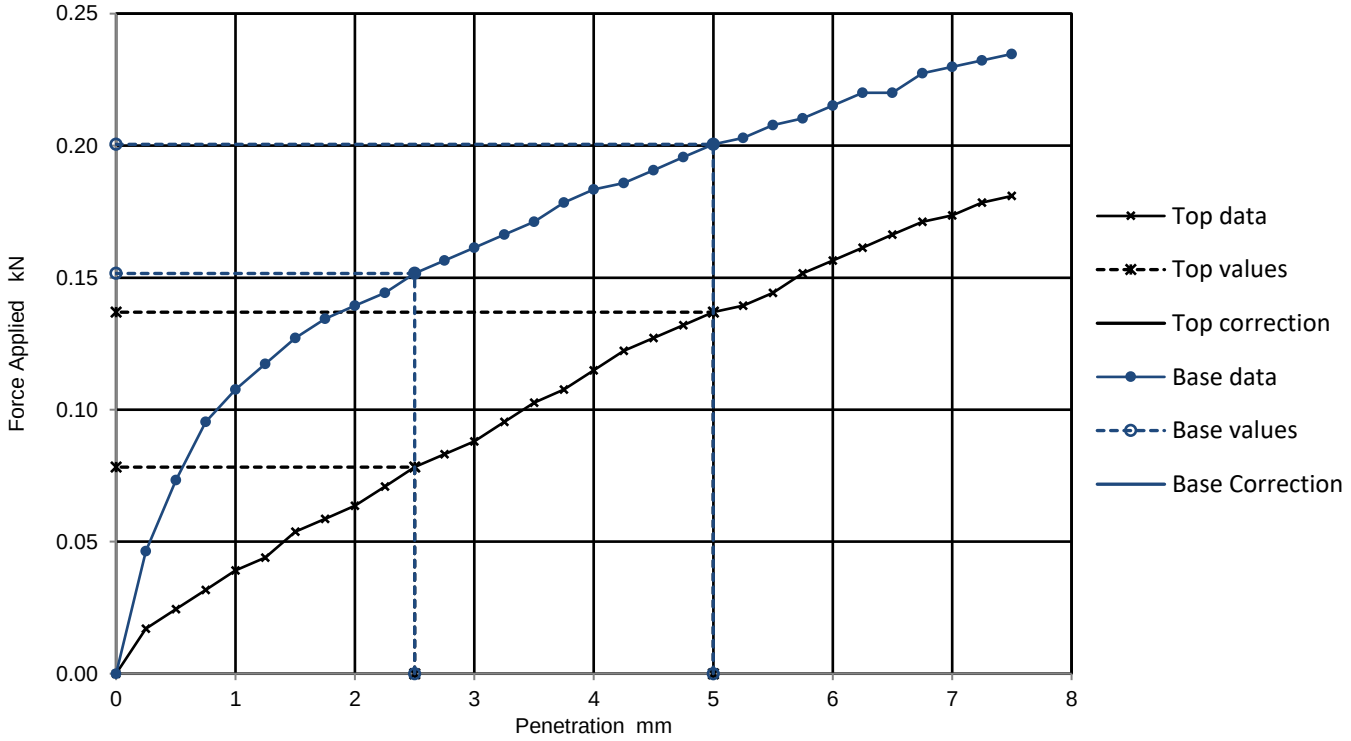
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description	Greenish-grey slightly gravelly sandy SILT.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230814108
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.30	Mg/m3	Surcharge applied	2	kg
	Dry density	2.05	Mg/m3		1	kPa
	Moisture content	12.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.6	0.7	0.7		
BASE		1.1	1.0	1.1		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	51

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

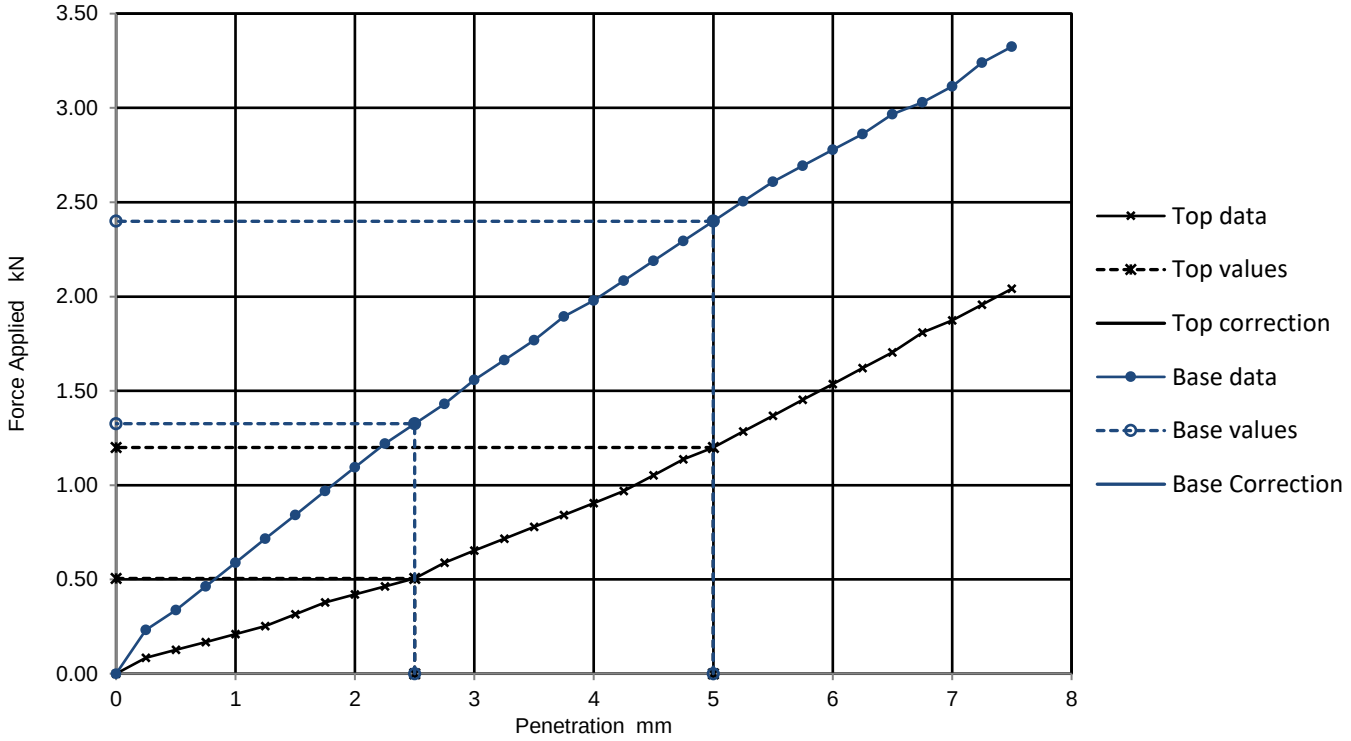
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230814108
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.33	Mg/m3	Surcharge applied	2	kg
	Dry density	2.13	Mg/m3		1	kPa
	Moisture content	9.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.8	6.0	6.0		
BASE		10.0	12.0	12.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	52

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

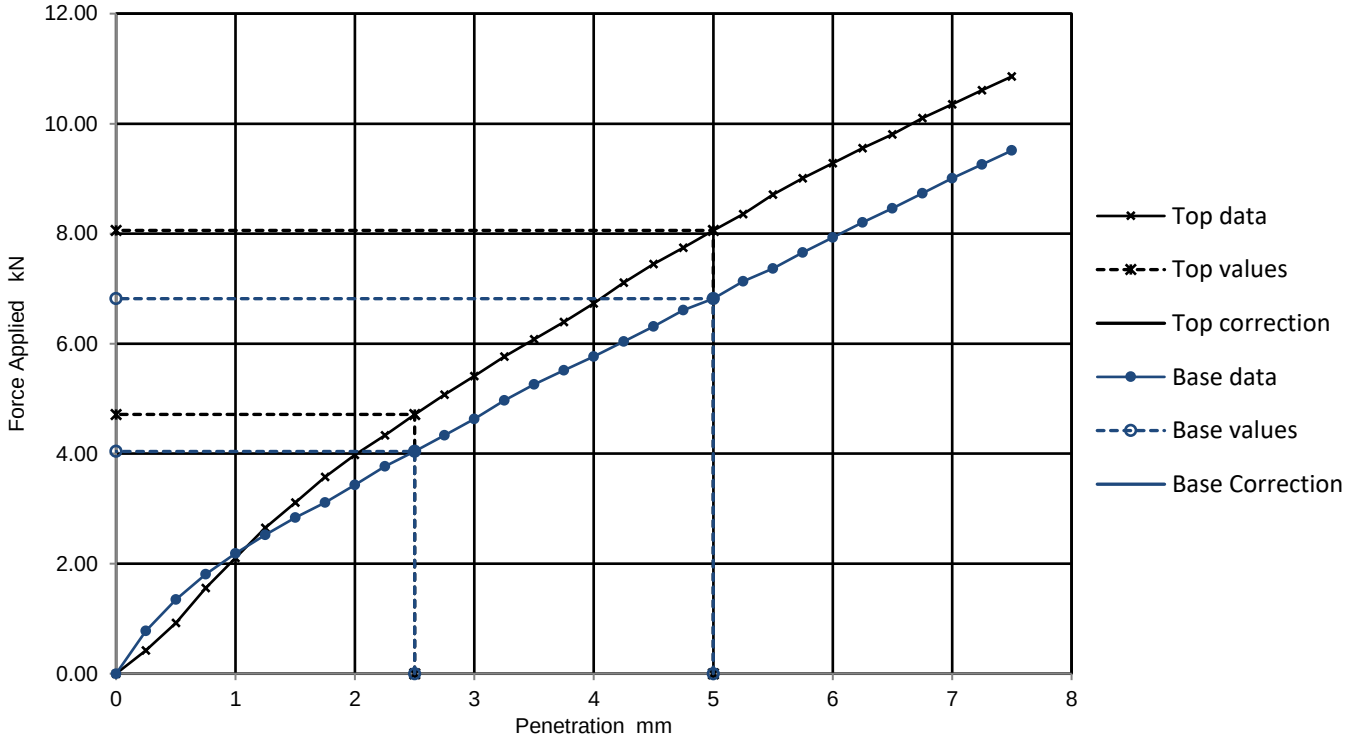
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230814108
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	2	kg
	Dry density	2.01	Mg/m3		1	kPa
	Moisture content	6.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		36.0	40.0	40.0	37.0	
BASE		31.0	34.0	34.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	53

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

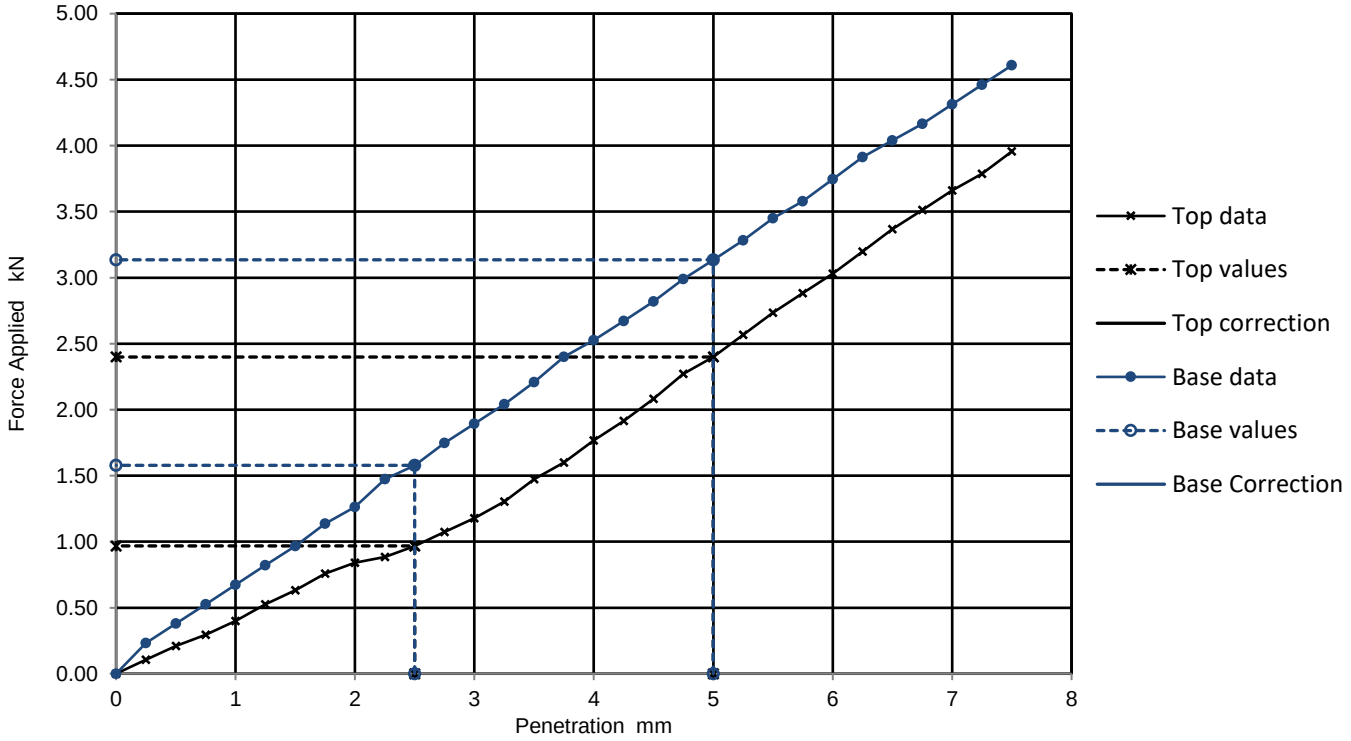
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230814108
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.32	Mg/m3	Surcharge applied	2	kg
	Dry density	2.12	Mg/m3		1	kPa
	Moisture content	9.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		7.3	12.0	12.0		
BASE		12.0	16.0	16.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	54

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

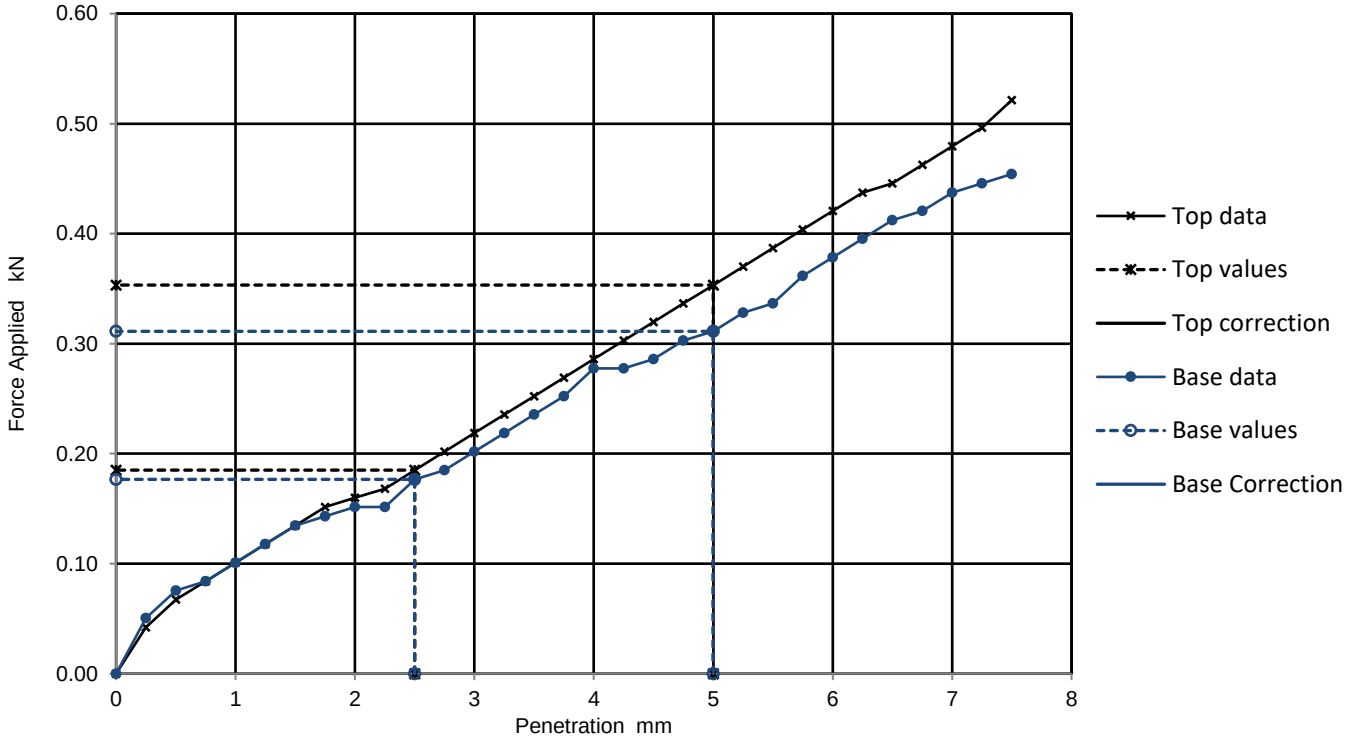
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230814108
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.33	Mg/m3	Surcharge applied	2	kg
	Dry density	2.11	Mg/m3		1	kPa
	Moisture content	10.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.4	1.8	1.8	1.7	
BASE		1.3	1.6	1.6		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	55

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

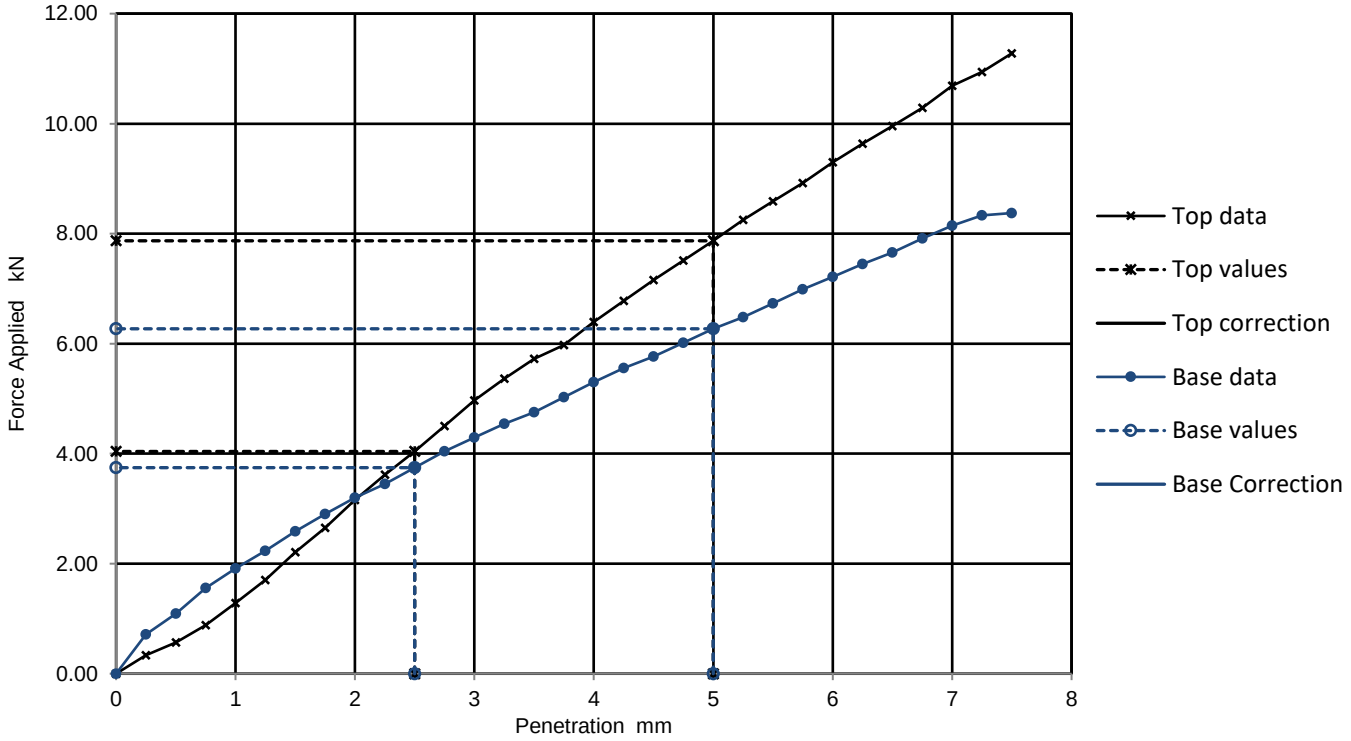
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT04
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Brownish-grey silty very gravelly medium and coarse SAND.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062235
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	2	kg
	Dry density	1.94	Mg/m3		1	kPa
	Moisture content	6.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		31.0	39.0	39.0		
BASE		28.0	31.0	31.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	56

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

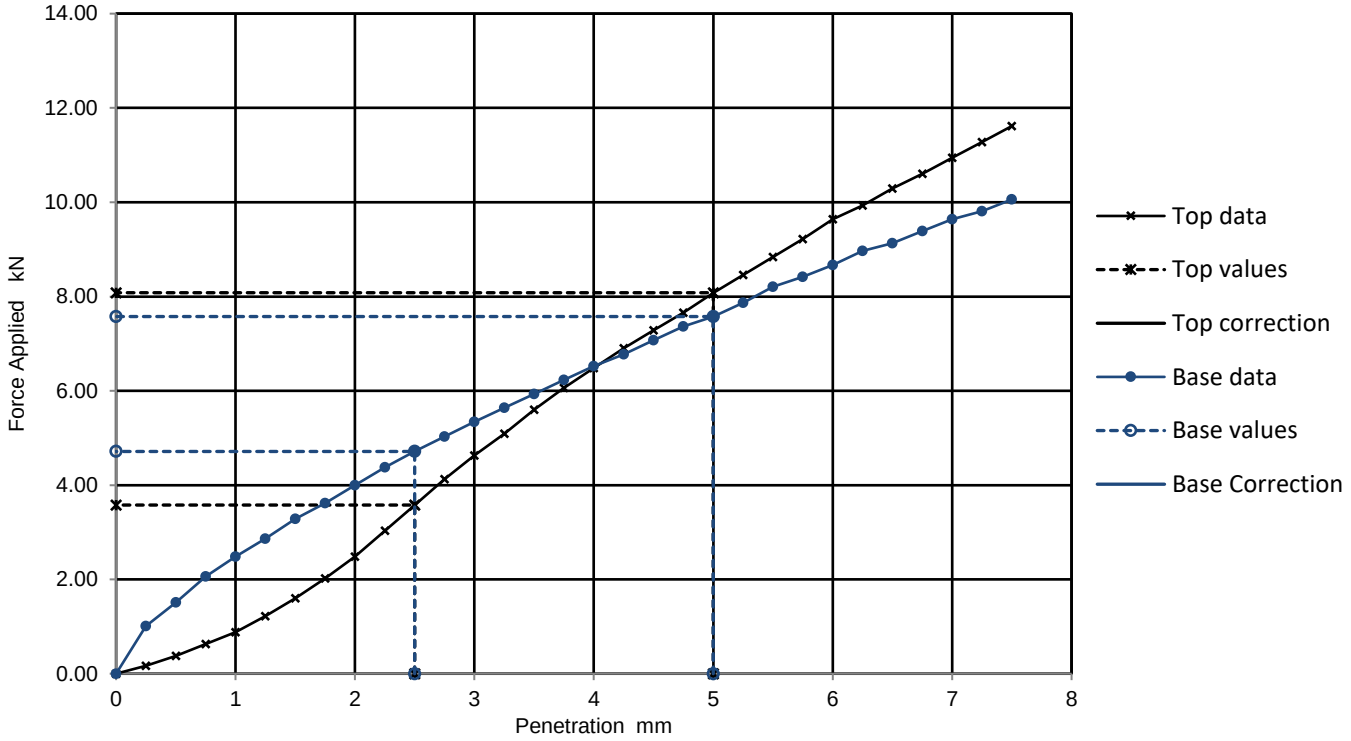
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT04
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062235
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	8.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		27.0	40.0	40.0	39.0	
BASE		36.0	38.0	38.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	57

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

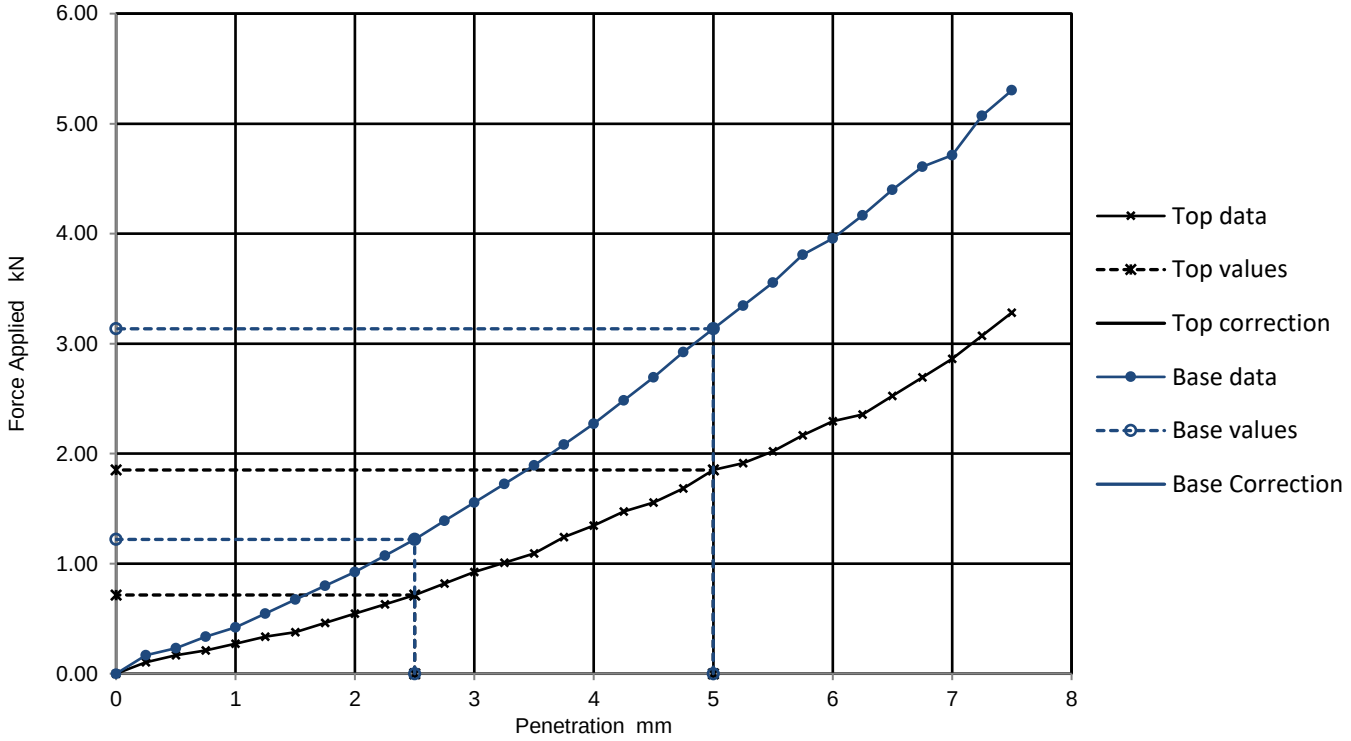
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT04
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062235
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	2.00	Mg/m3		1	kPa
	Moisture content	11.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		5.4	9.3	9.3		
BASE		9.2	16.0	16.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	58

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

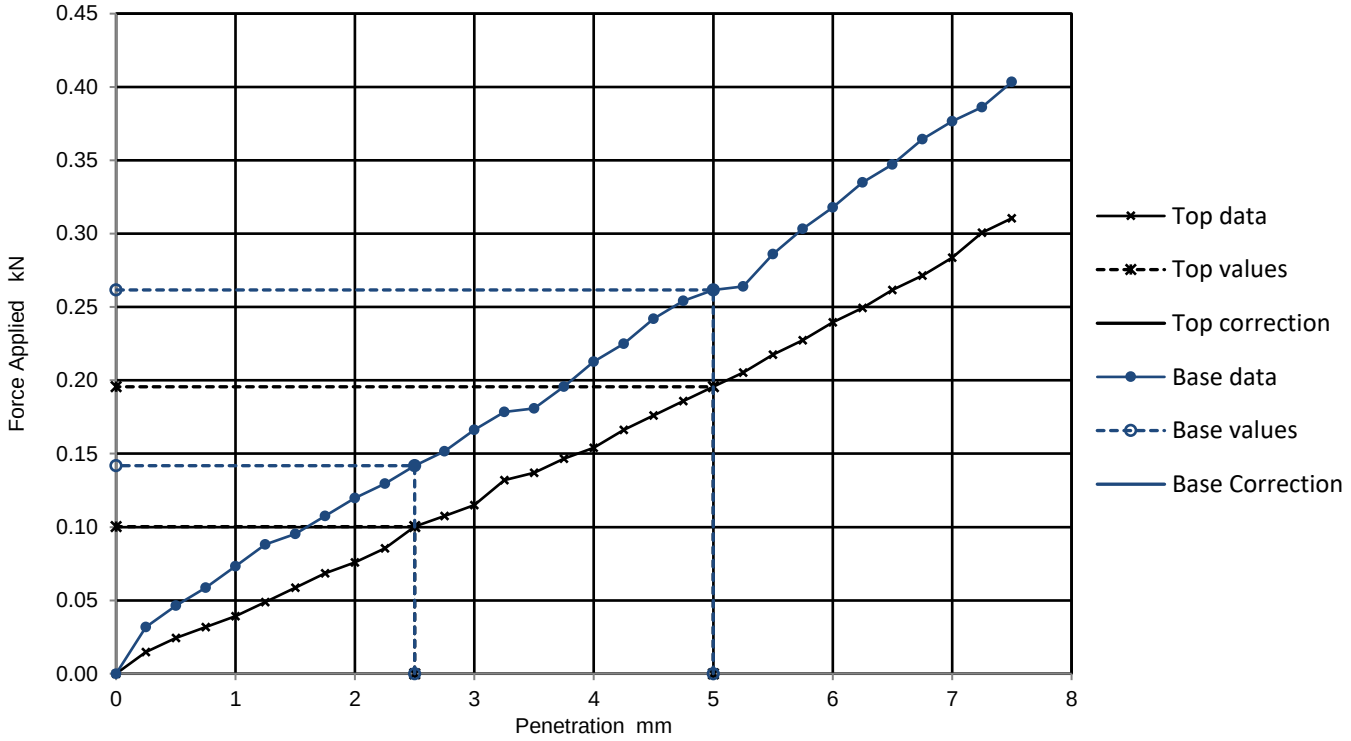
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT04
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062235
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	1.94	Mg/m3		1	kPa
	Moisture content	15.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.8	1.0	1.0		
BASE		1.1	1.3	1.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	59

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

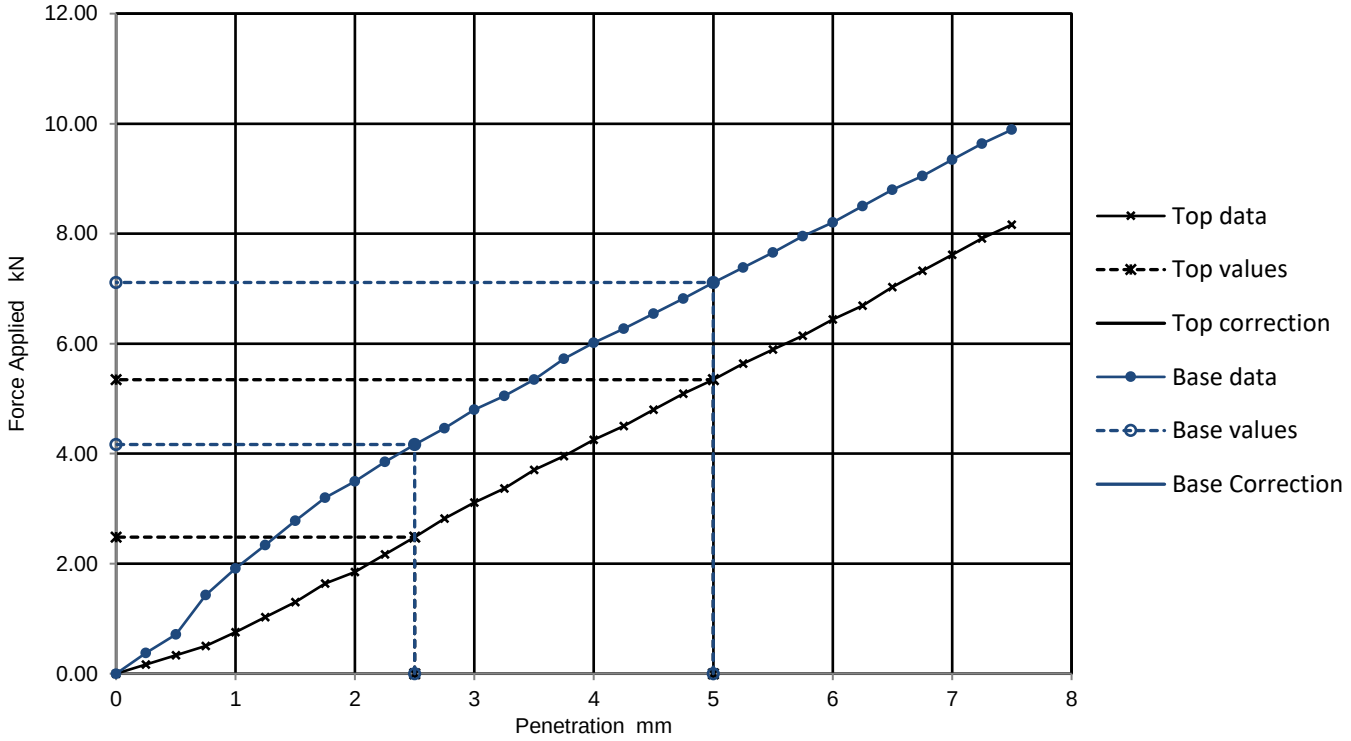
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT04
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062235
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.18	Mg/m3	Surcharge applied	2	kg
	Dry density	1.95	Mg/m3		1	kPa
	Moisture content	11.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		19.0	27.0	27.0		
BASE		32.0	36.0	36.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	60

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

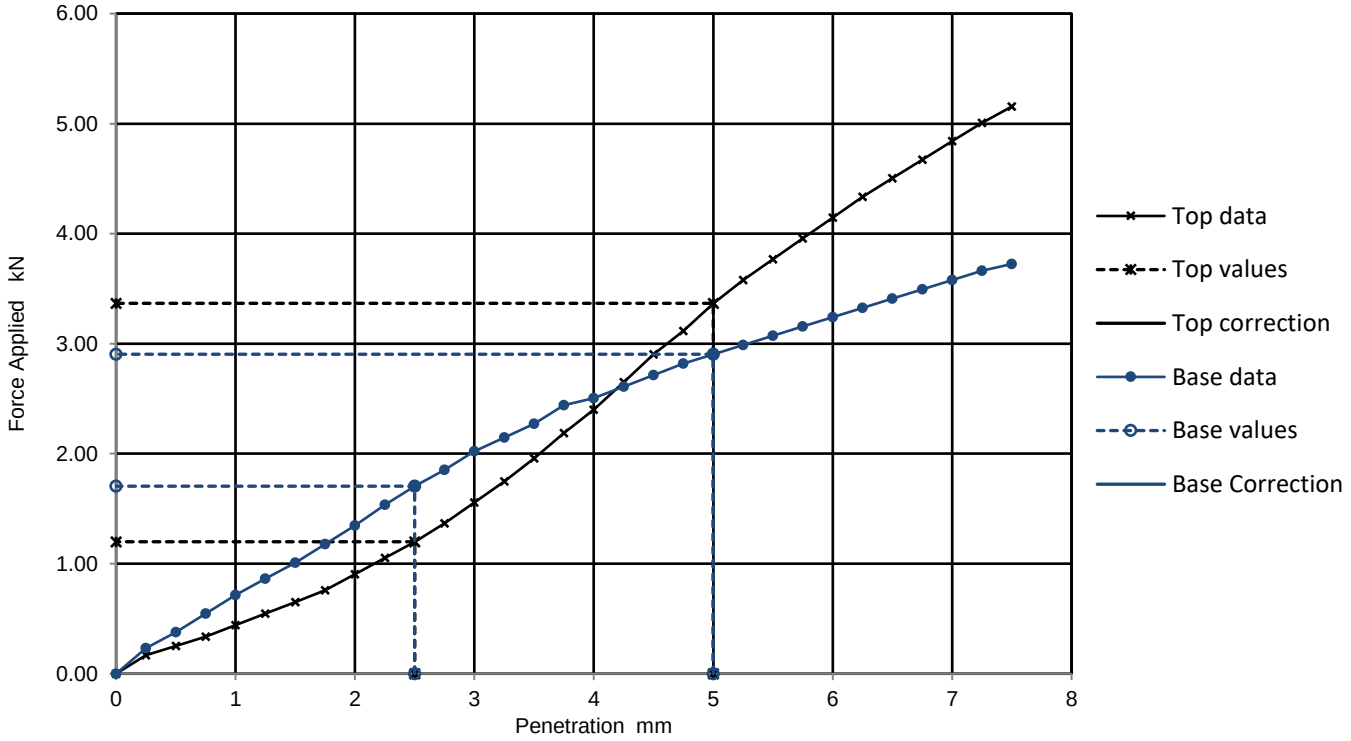
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT05
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description	Greyish-brown slightly gravelly sandy SILT. SAND is fine.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607171
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.70	Mg/m3	Surcharge applied	2	kg
	Dry density	1.52	Mg/m3		1	kPa
	Moisture content	11.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		9.1	17.0	17.0	16.0	
BASE		13.0	15.0	15.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	61

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

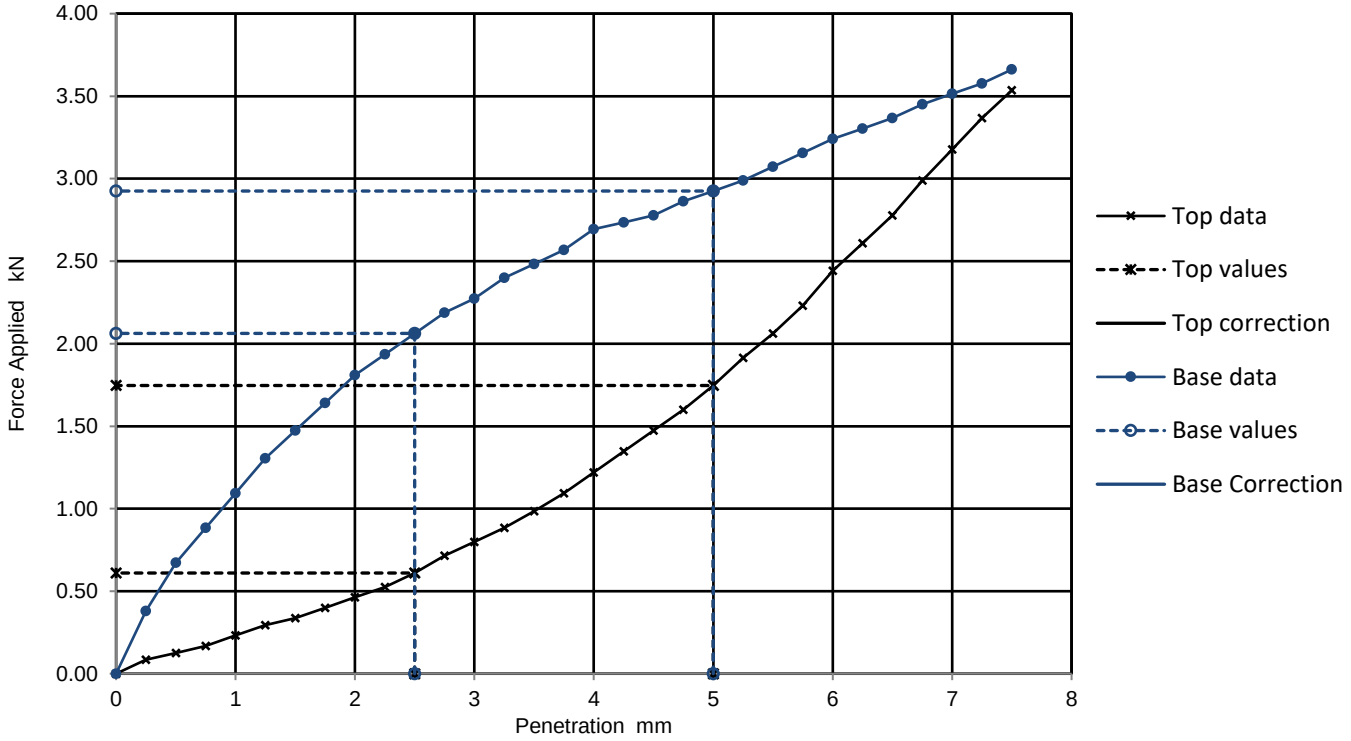
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT05
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607171
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.67	Mg/m3	Surcharge applied	2	kg
	Dry density	1.50	Mg/m3		1	kPa
	Moisture content	11.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.6	8.7	8.7		
BASE		16.0	15.0	16.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	62

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

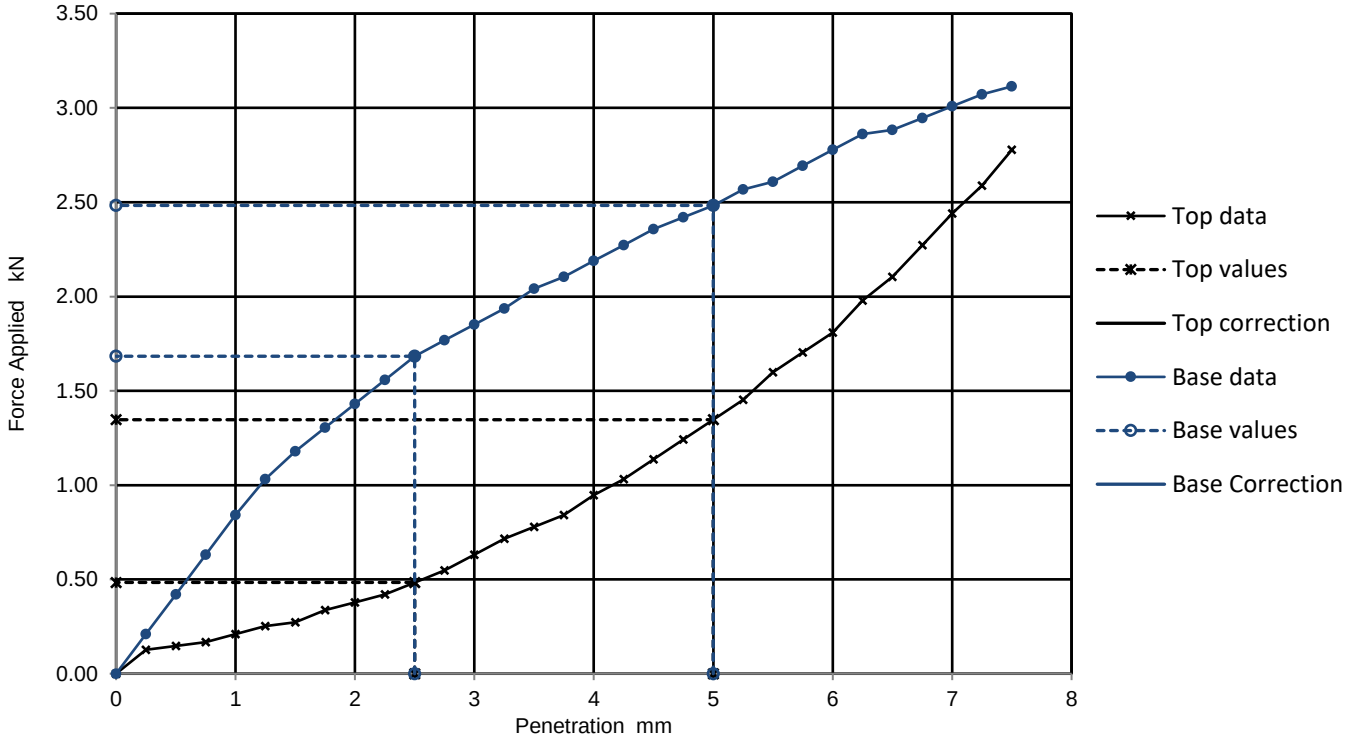
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT05
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607171
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.63	Mg/m3	Surcharge applied	kg
	Dry density	1.46	Mg/m3		kPa
	Moisture content	11.6	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.7	6.7	6.7		
BASE		13.0	12.0	13.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	63

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

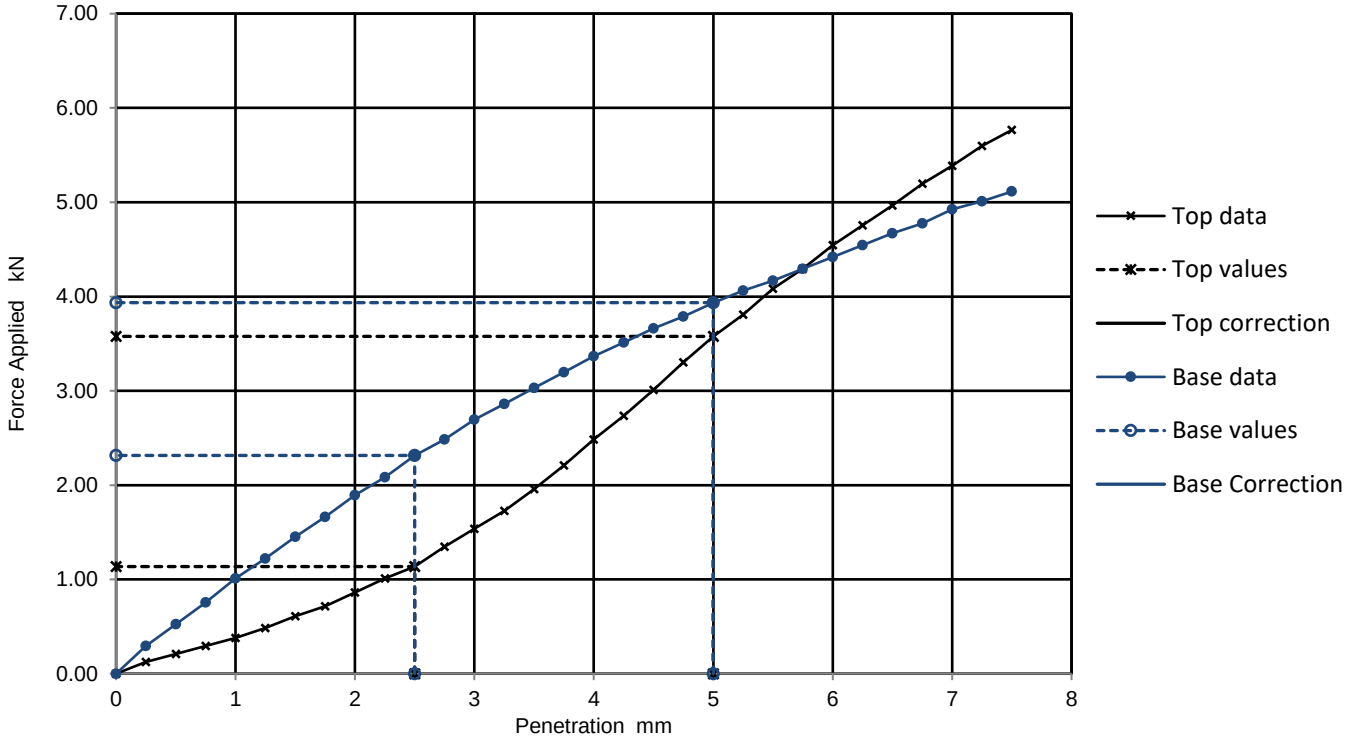
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT05
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607171
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.68	Mg/m3	Surcharge applied	2	kg
	Dry density	1.53	Mg/m3		1	kPa
	Moisture content	10.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		8.6	18.0	18.0	19.0	
BASE		18.0	20.0	20.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	64

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

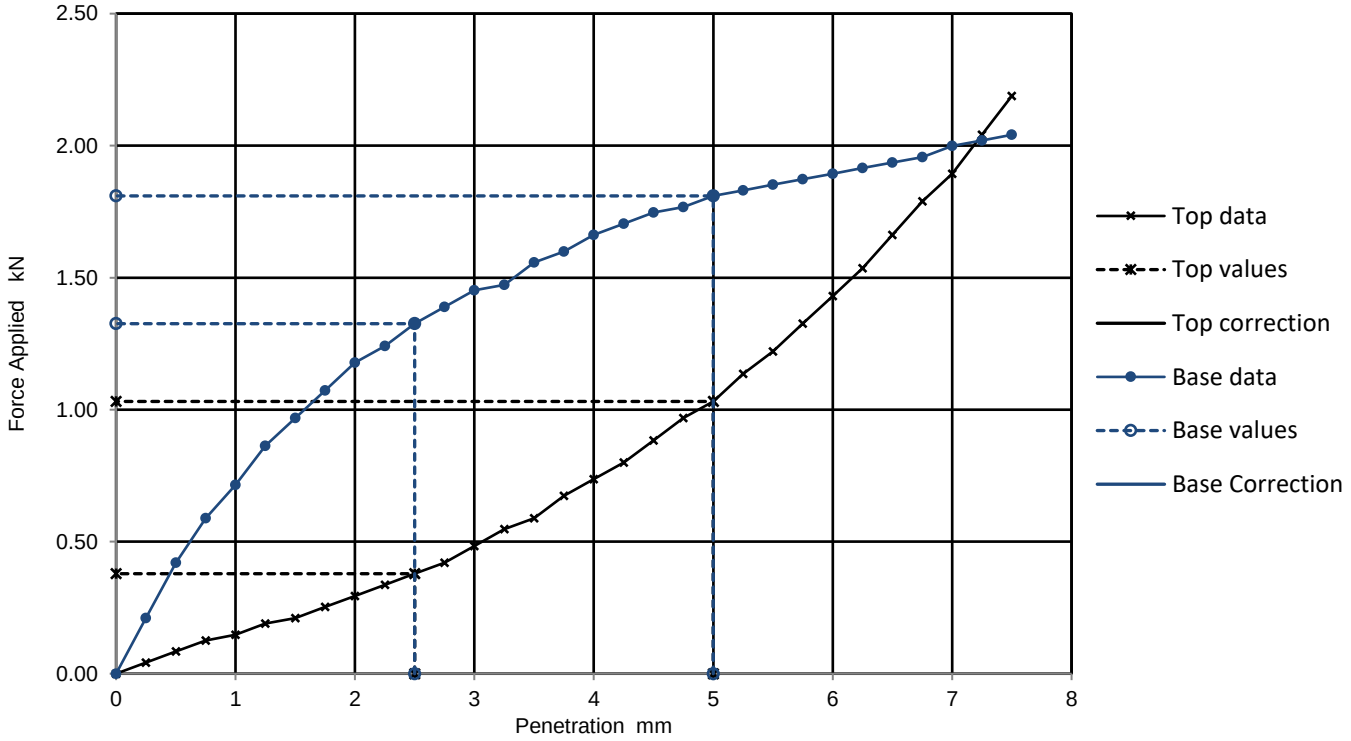
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT05
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607171
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.58	Mg/m3	Surcharge applied	2	kg
	Dry density	1.44	Mg/m3		1	kPa
	Moisture content	9.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.9	5.2	5.2		
BASE		10.0	9.0	10.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	65

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

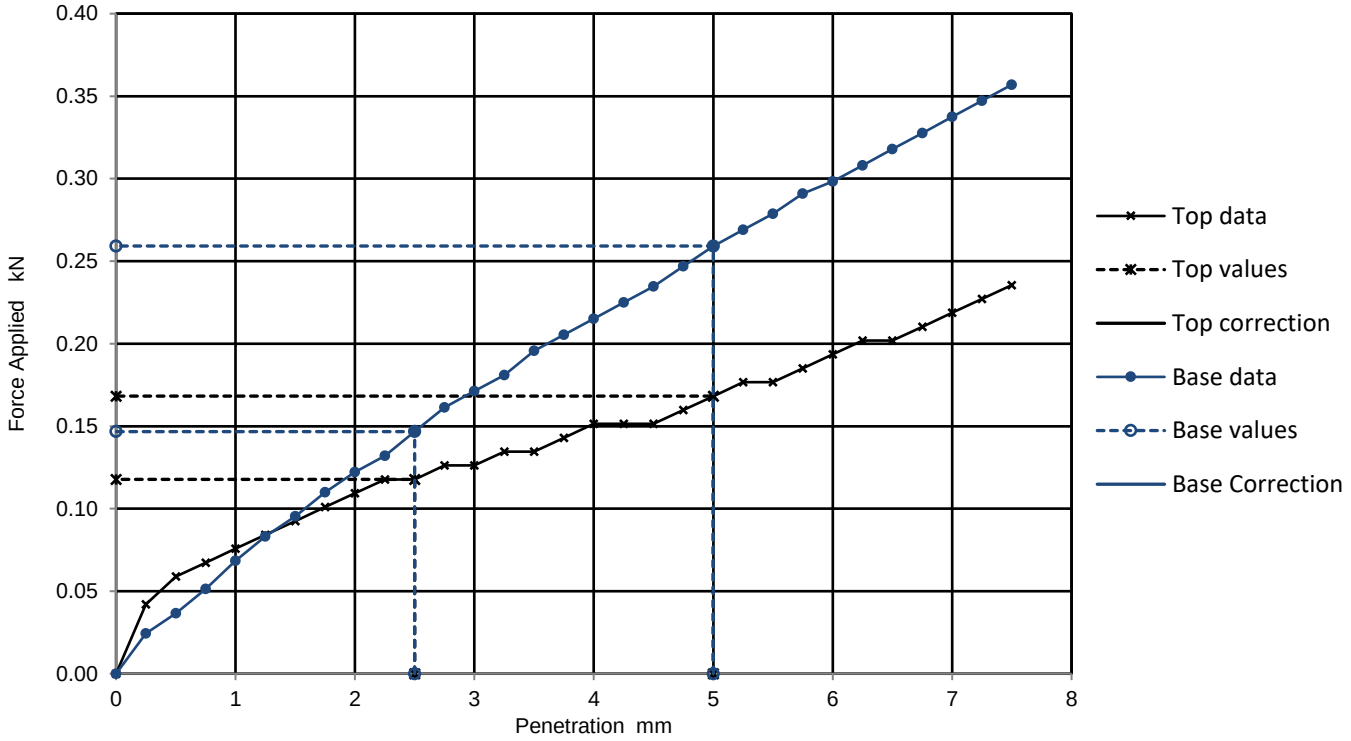
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT06
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Blackish-grey very silty coarse SAND and fine GRAVEL.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062251
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.07	Mg/m3	Surcharge applied	2	kg
	Dry density	1.73	Mg/m3		1	kPa
	Moisture content	19.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.9	0.8	0.9		
BASE		1.1	1.3	1.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	66

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

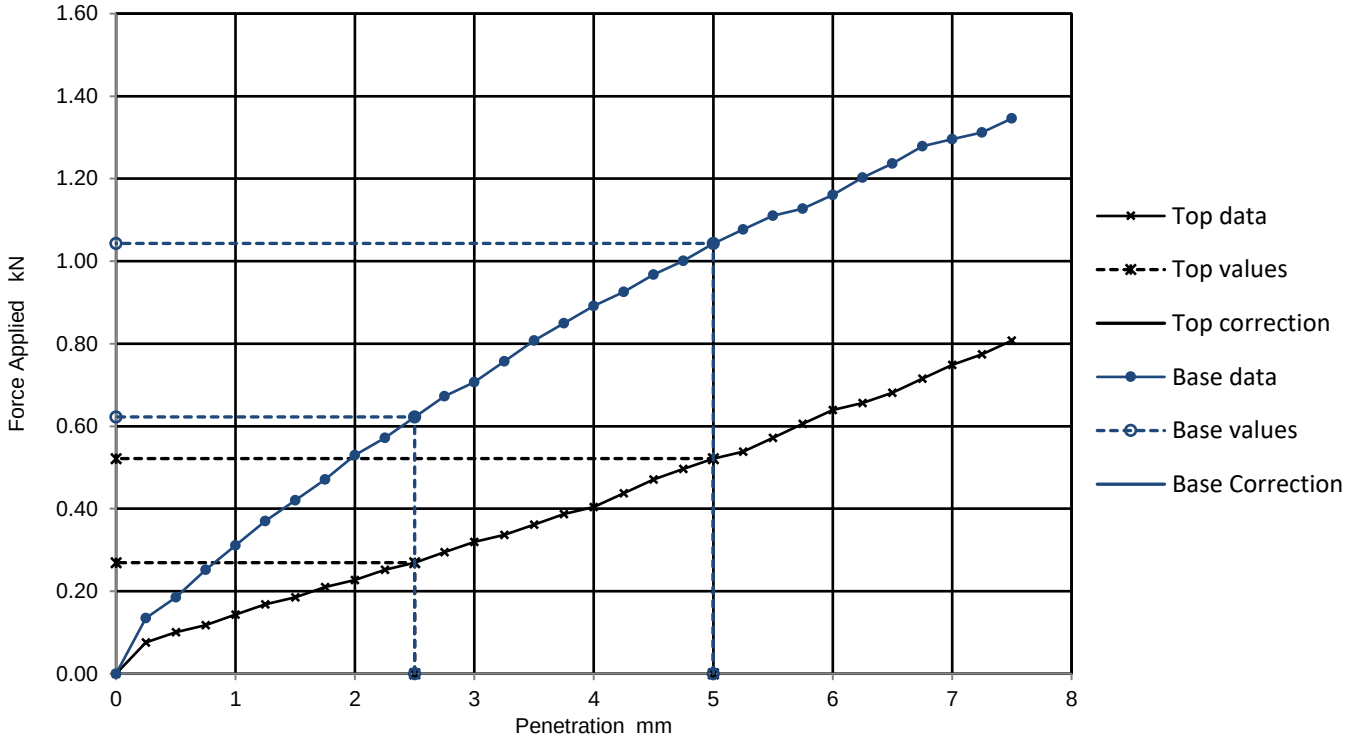
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT06
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062251
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.10	Mg/m3	Surcharge applied	2	kg
	Dry density	1.81	Mg/m3		1	kPa
	Moisture content	16.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.0	2.6	2.6		
BASE		4.7	5.2	5.2		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	67

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

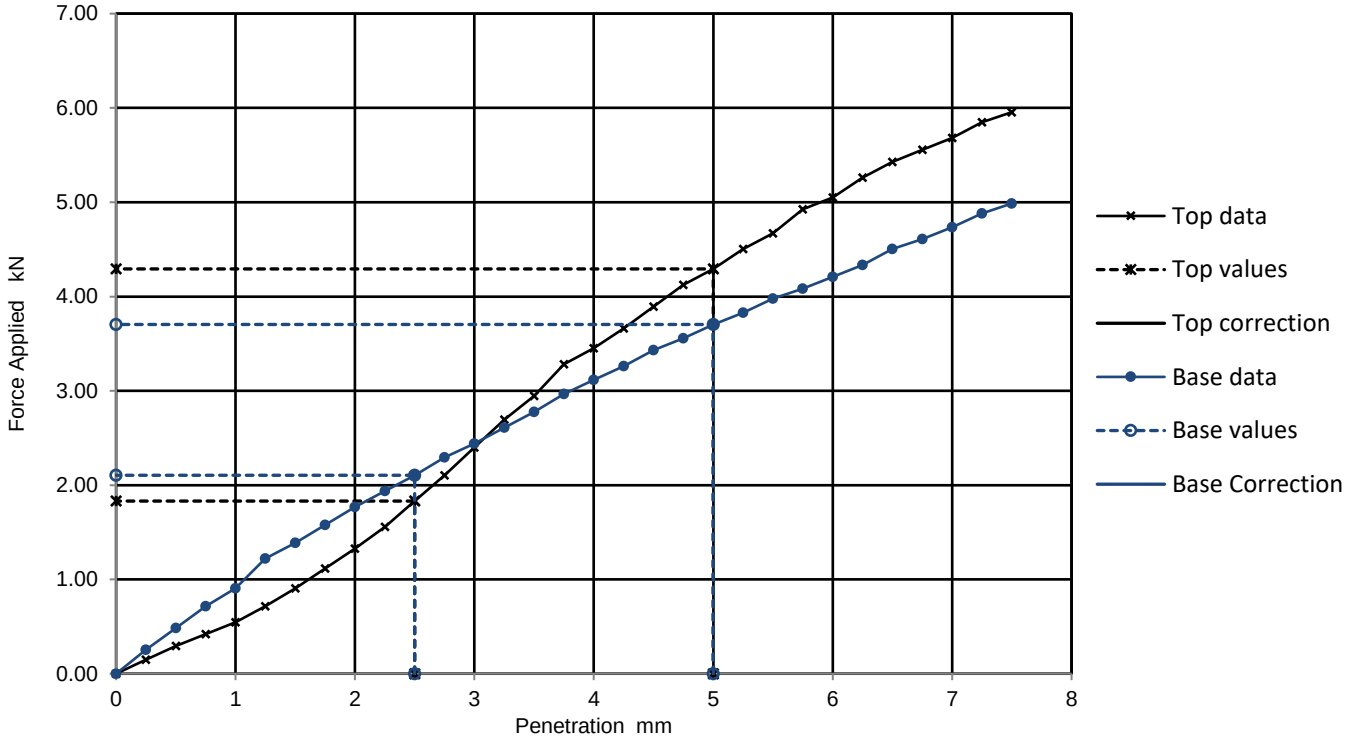
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT06
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062251
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	2	kg
	Dry density	1.85	Mg/m3		1	kPa
	Moisture content	12.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		14.0	21.0	21.0	20.0	
BASE		16.0	19.0	19.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	68

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

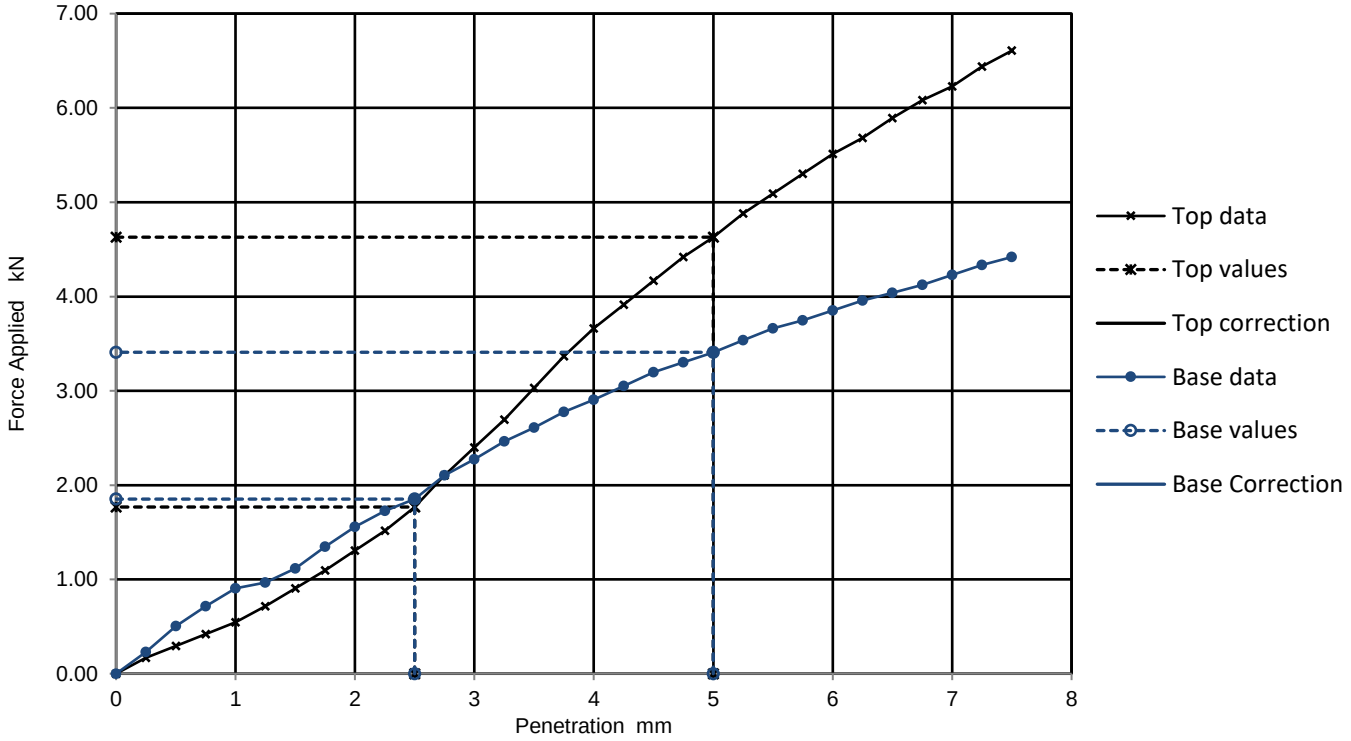
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT06
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062251
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.86	Mg/m3		1	kPa
	Moisture content	8.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		13.0	23.0	23.0		
BASE		14.0	17.0	17.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	69

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

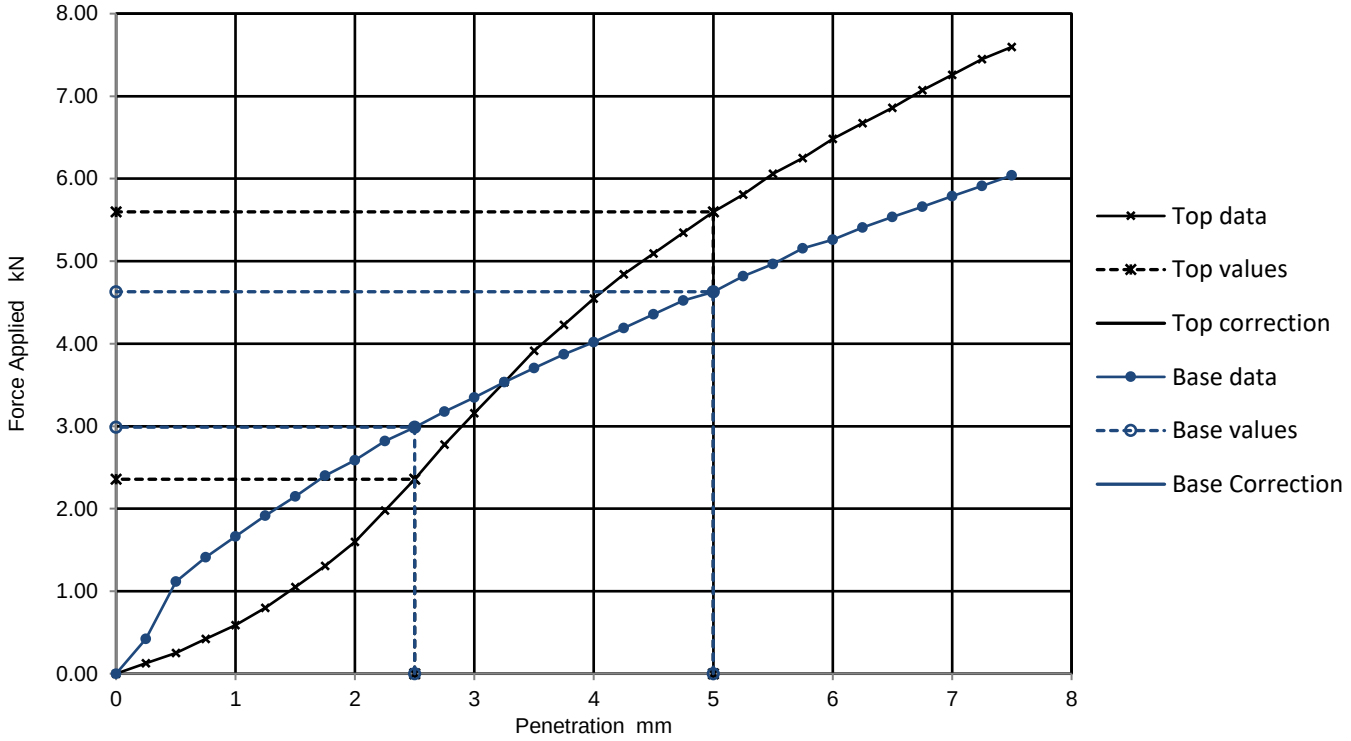
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT06
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062251
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.85	Mg/m3		1	kPa
	Moisture content	9.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		18.0	28.0	28.0	26.0	
BASE		23.0	23.0	23.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	70

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

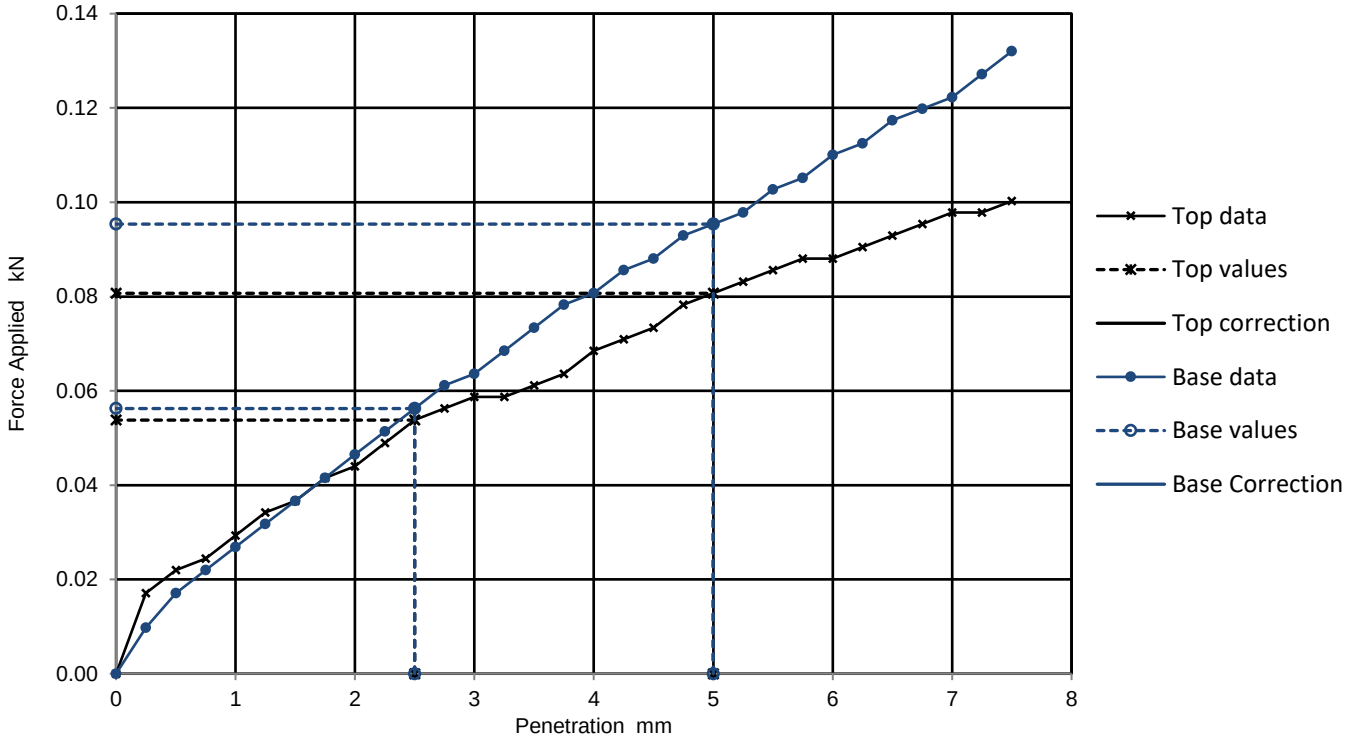
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT07
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Black and grey silty SAND and GRAVEL.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607190
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.83	Mg/m3	Surcharge applied	2	kg
	Dry density	1.39	Mg/m3		1	kPa
	Moisture content	31.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.4	0.4	0.4	0.4	
BASE		0.4	0.5	0.5		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	71

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

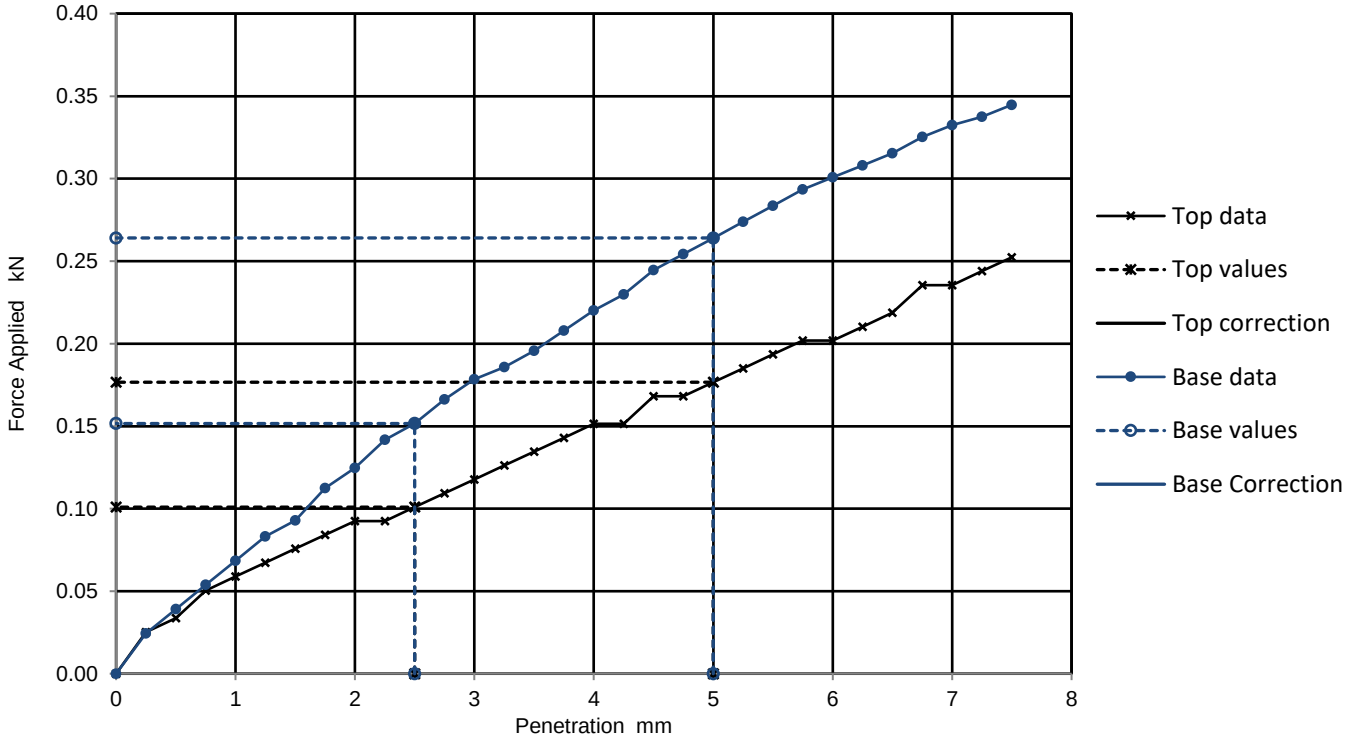
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT07
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607190
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.89	Mg/m3	Surcharge applied	2	kg
	Dry density	1.44	Mg/m3		1	kPa
	Moisture content	31.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.8	0.9	0.9		
BASE		1.1	1.3	1.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	72

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

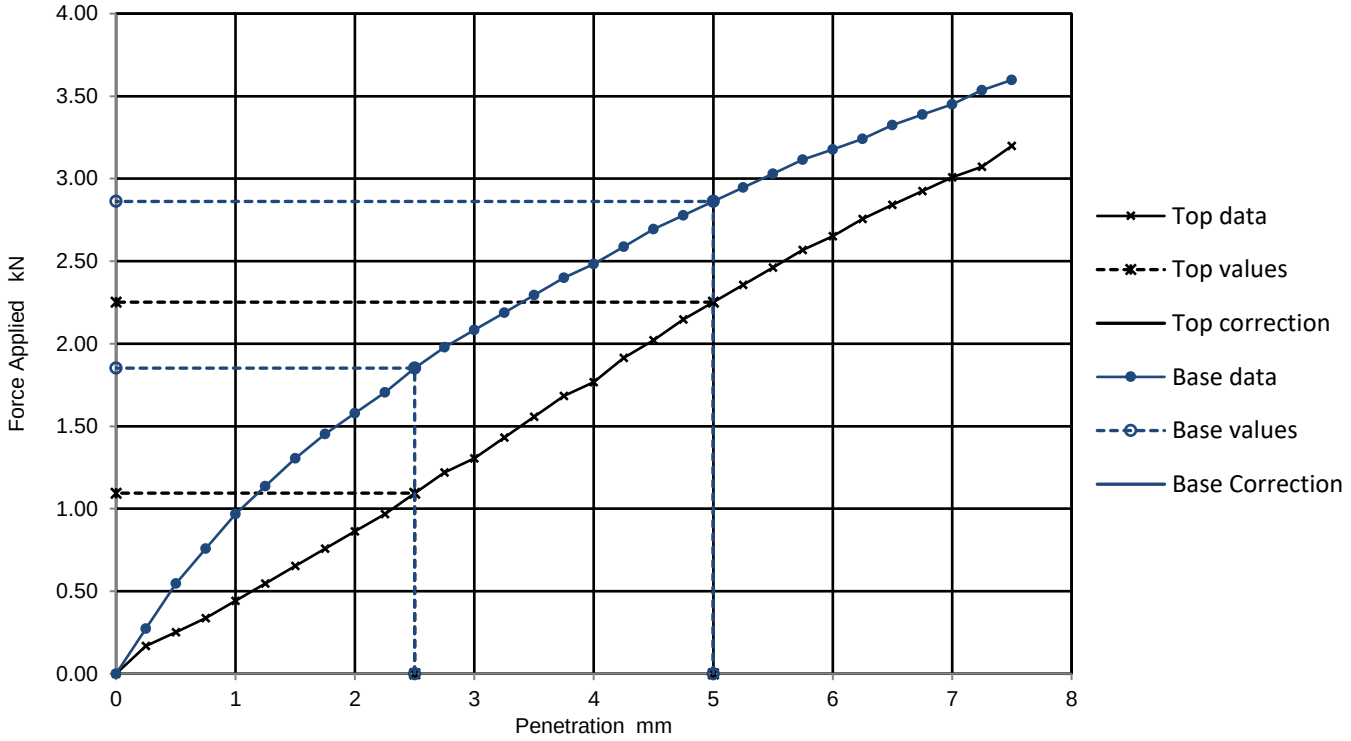
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT07
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607190
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.94	Mg/m3	Surcharge applied	2	kg
	Dry density	1.60	Mg/m3		1	kPa
	Moisture content	20.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		8.3	11.0	11.0		
BASE		14.0	14.0	14.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	73

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

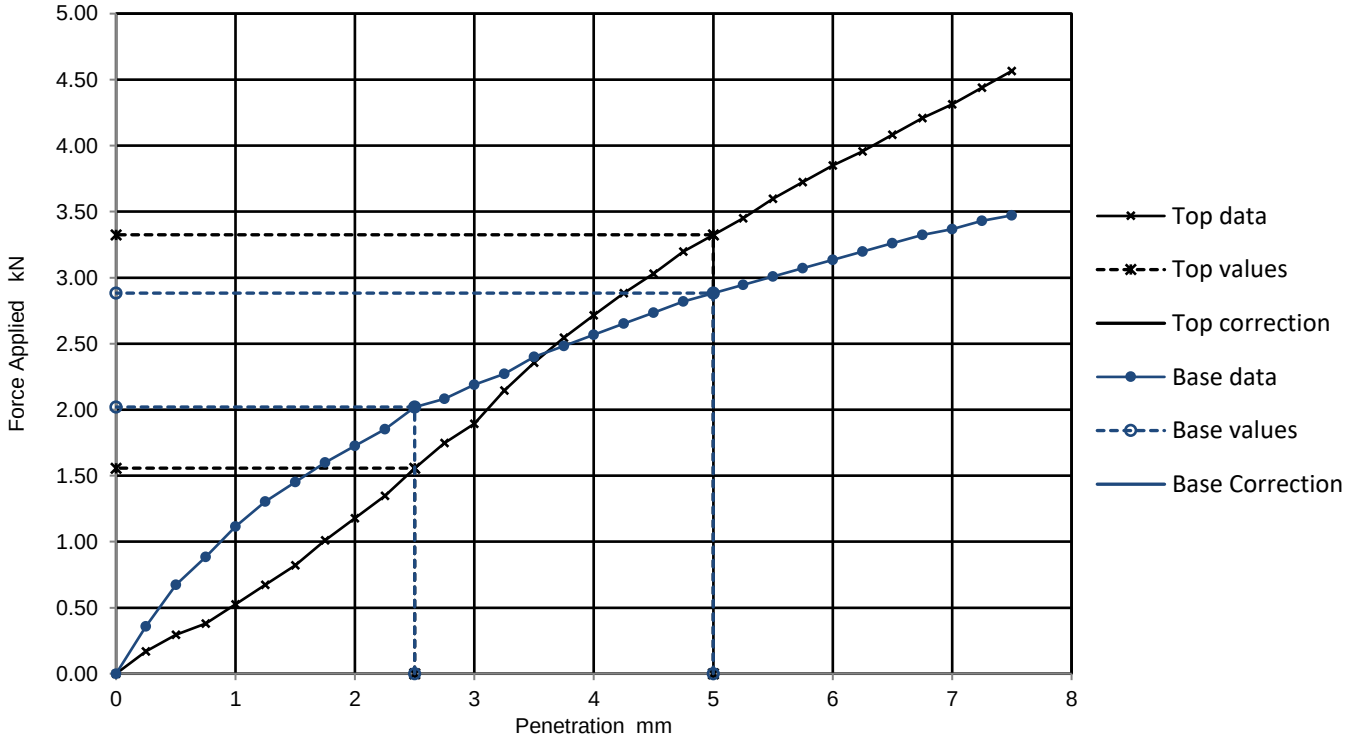
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT07
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607190
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.80	Mg/m3	Surcharge applied	2	kg
	Dry density	1.60	Mg/m3		1	kPa
	Moisture content	12.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		12.0	17.0	17.0	16.0	
BASE		15.0	14.0	15.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	74

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

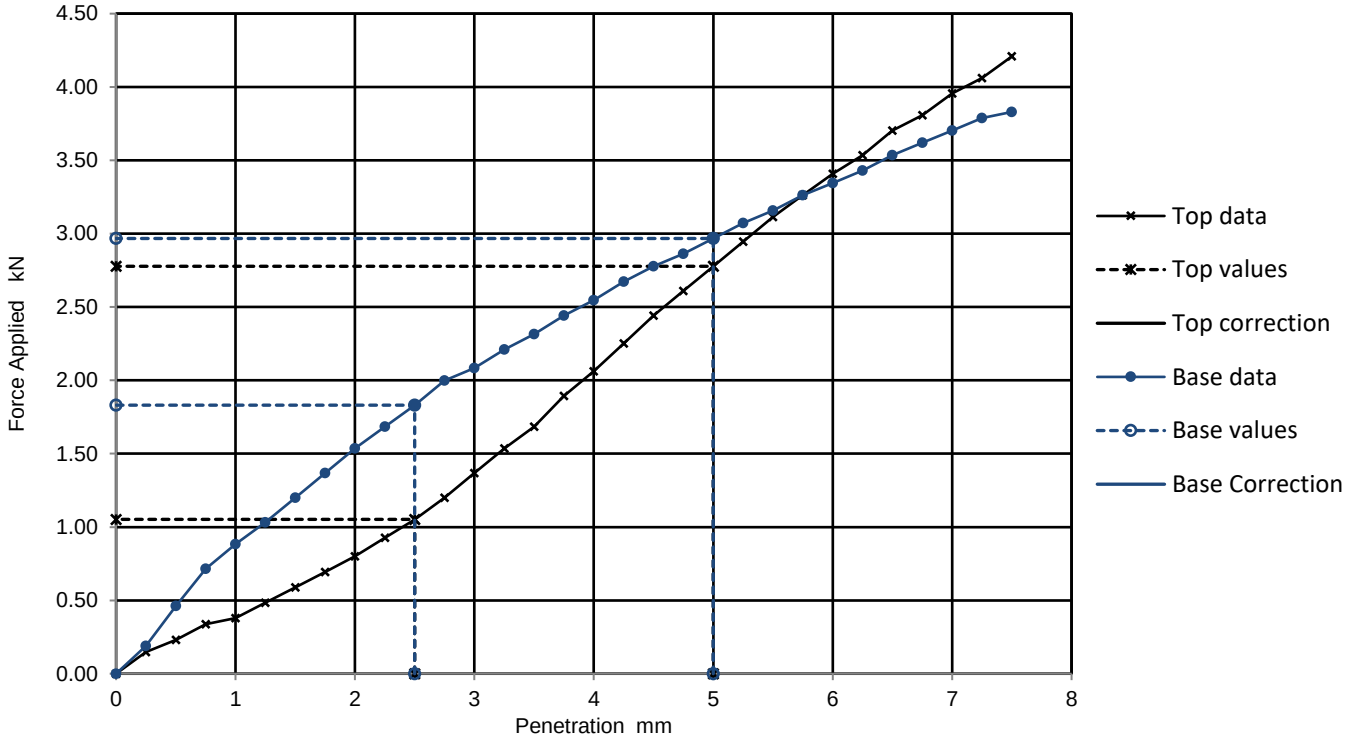
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT07
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607190
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.72	Mg/m3	Surcharge applied	2	kg
	Dry density	1.57	Mg/m3		1	kPa
	Moisture content	9.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		8.0	14.0	14.0	14.0	
BASE		14.0	15.0	15.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	75

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

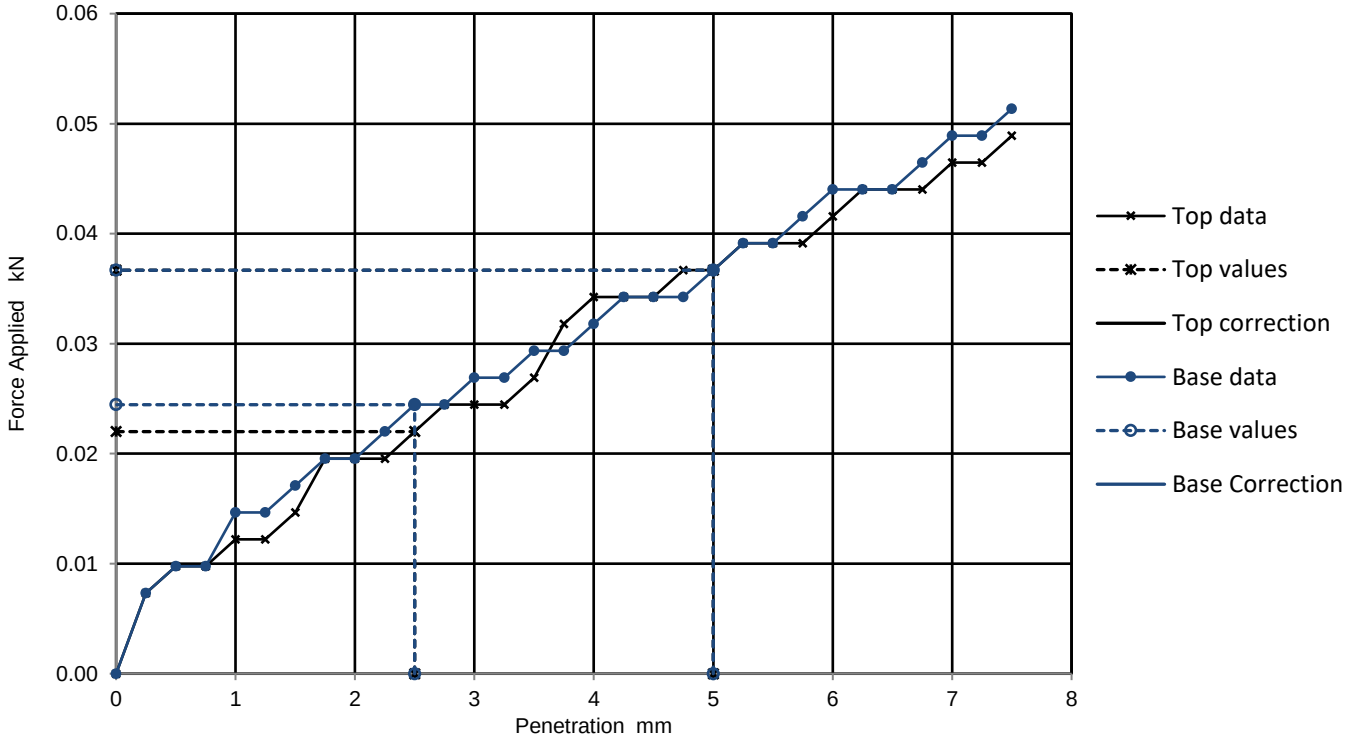
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description	Brownish-grey slightly gravelly sandy SILT.			Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023080820
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	1.95	Mg/m3		1	kPa
	Moisture content	14.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.2	0.2	0.2	0.2	
BASE		0.2	0.2	0.2		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	76

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

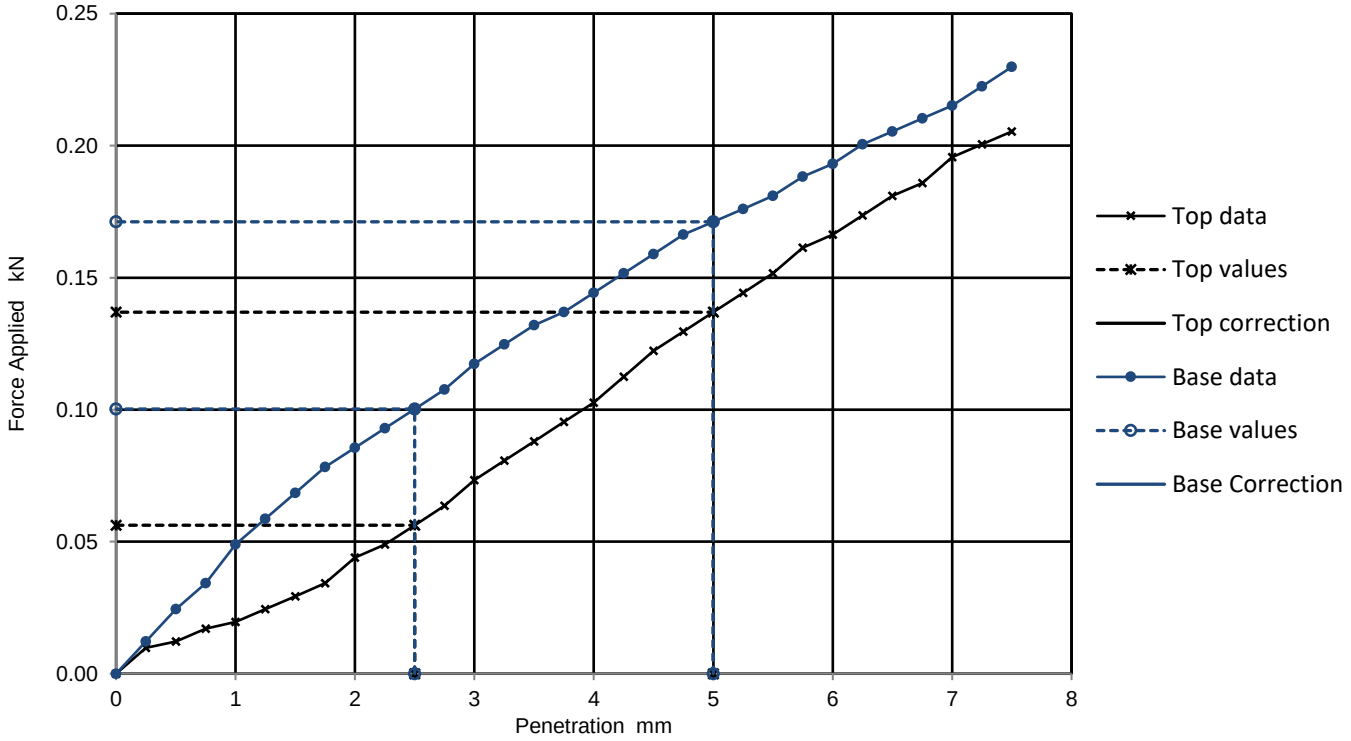
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023080820
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.28	Mg/m3	Surcharge applied	2	kg
	Dry density	2.03	Mg/m3		1	kPa
	Moisture content	12.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.4	0.7	0.7		
BASE		0.8	0.9	0.9		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	77

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

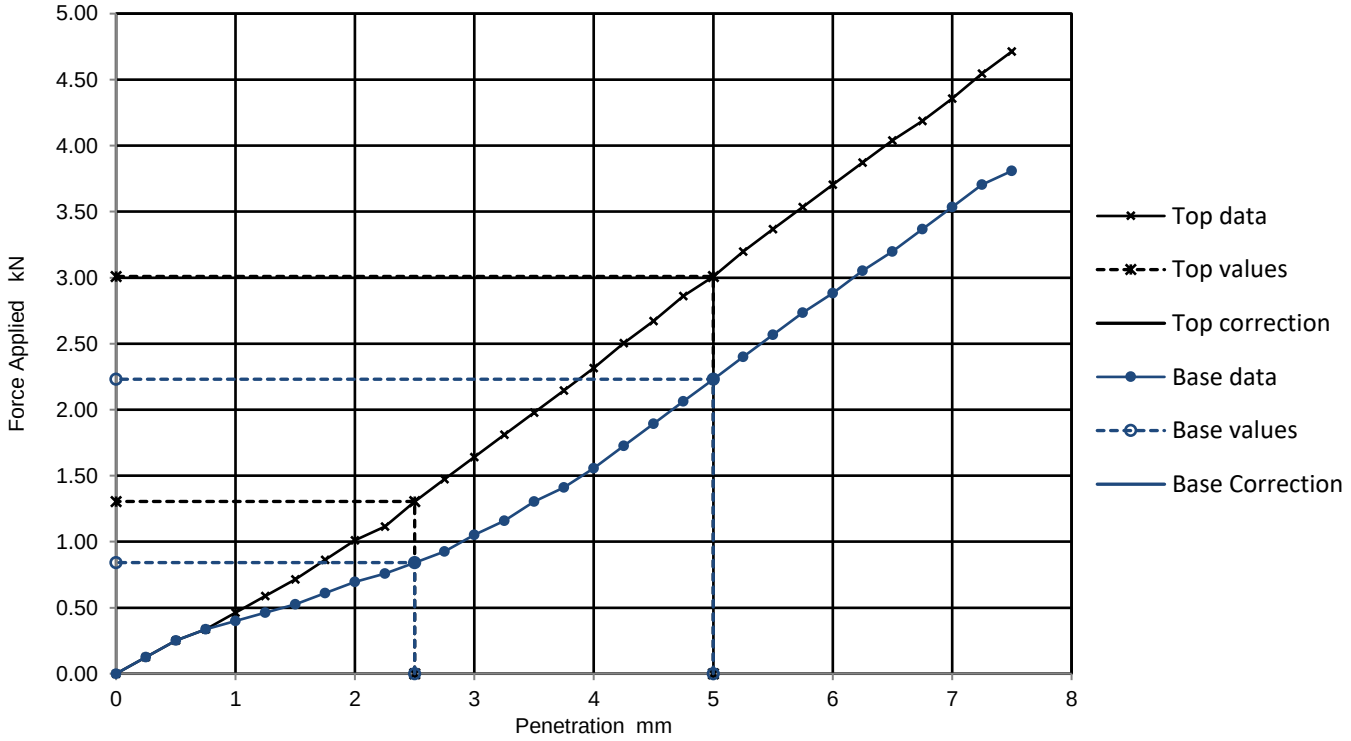
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023080820
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	9.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		9.9	15.0	15.0		
BASE		6.4	11.0	11.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	78

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

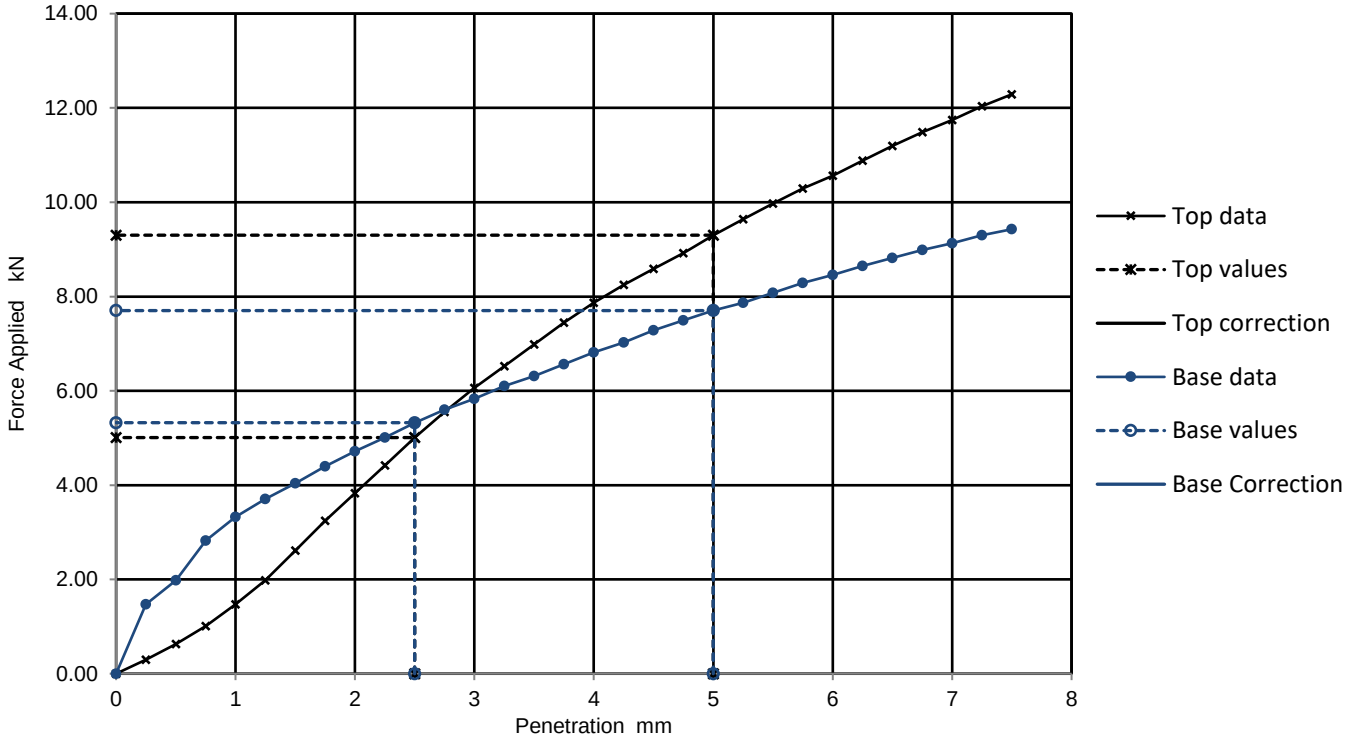
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023080820
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.20	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	7.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		38.0	47.0	47.0	43.0	
BASE		40.0	39.0	40.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	79

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

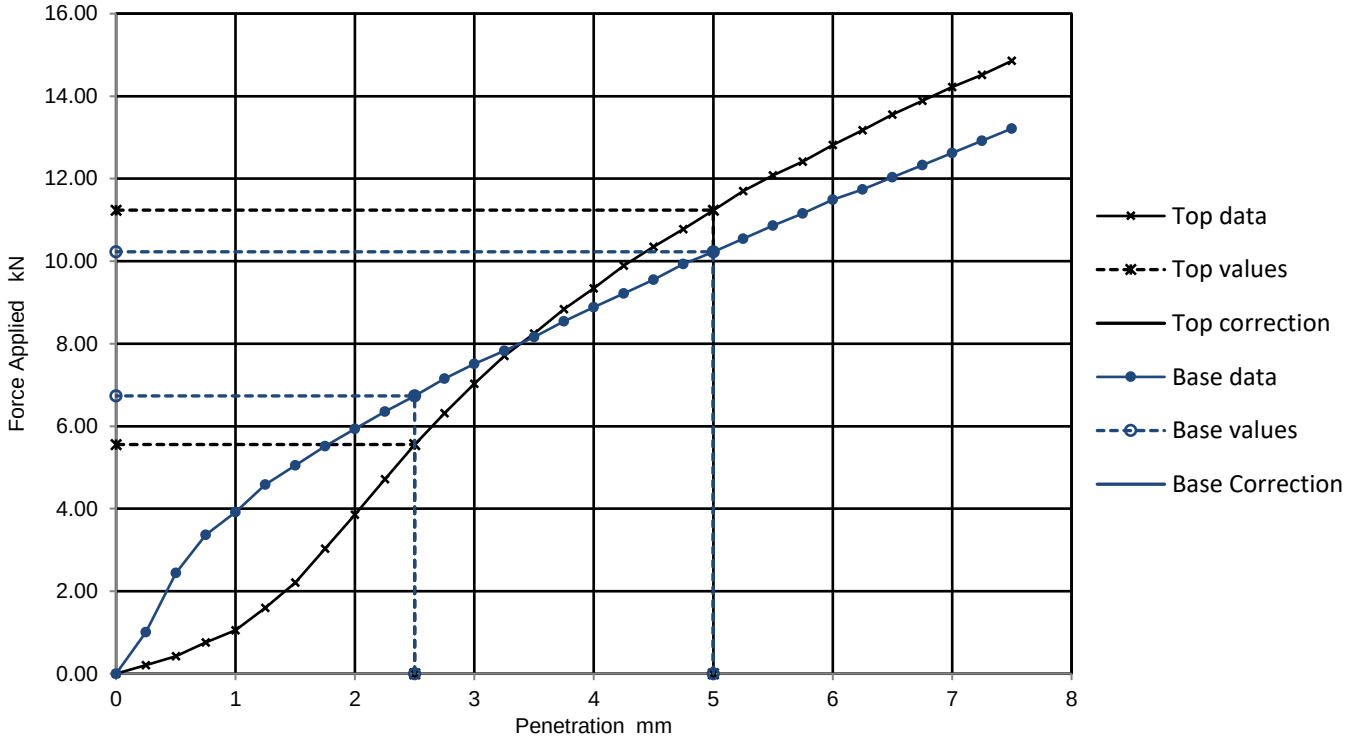
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023080820
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	2	kg
	Dry density	2.03	Mg/m3		1	kPa
	Moisture content	6.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		42.0	56.0	56.0	54.0	
BASE		51.0	51.0	51.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	80

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

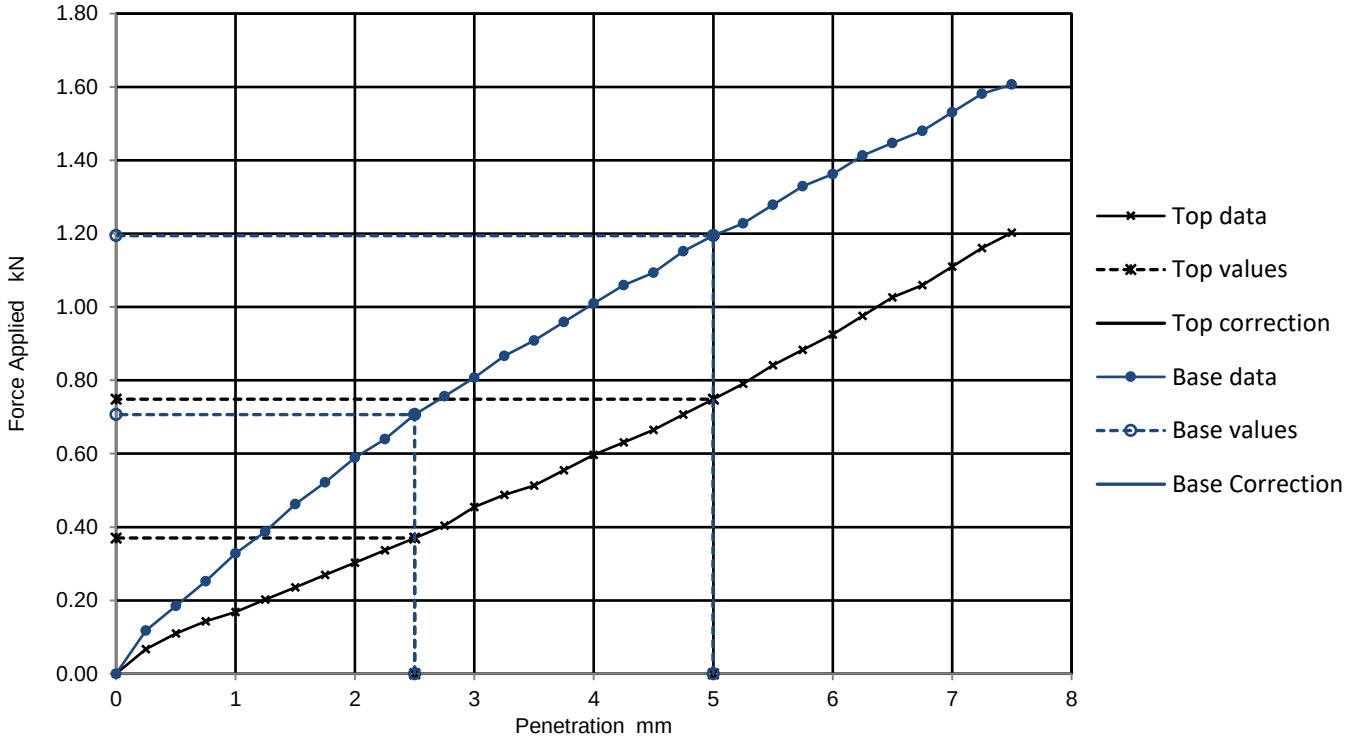
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP206A
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305170
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	2	kg
	Dry density	1.80	Mg/m3		1	kPa
	Moisture content	17.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.8	3.7	3.7		
BASE		5.4	6.0	6.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	81

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

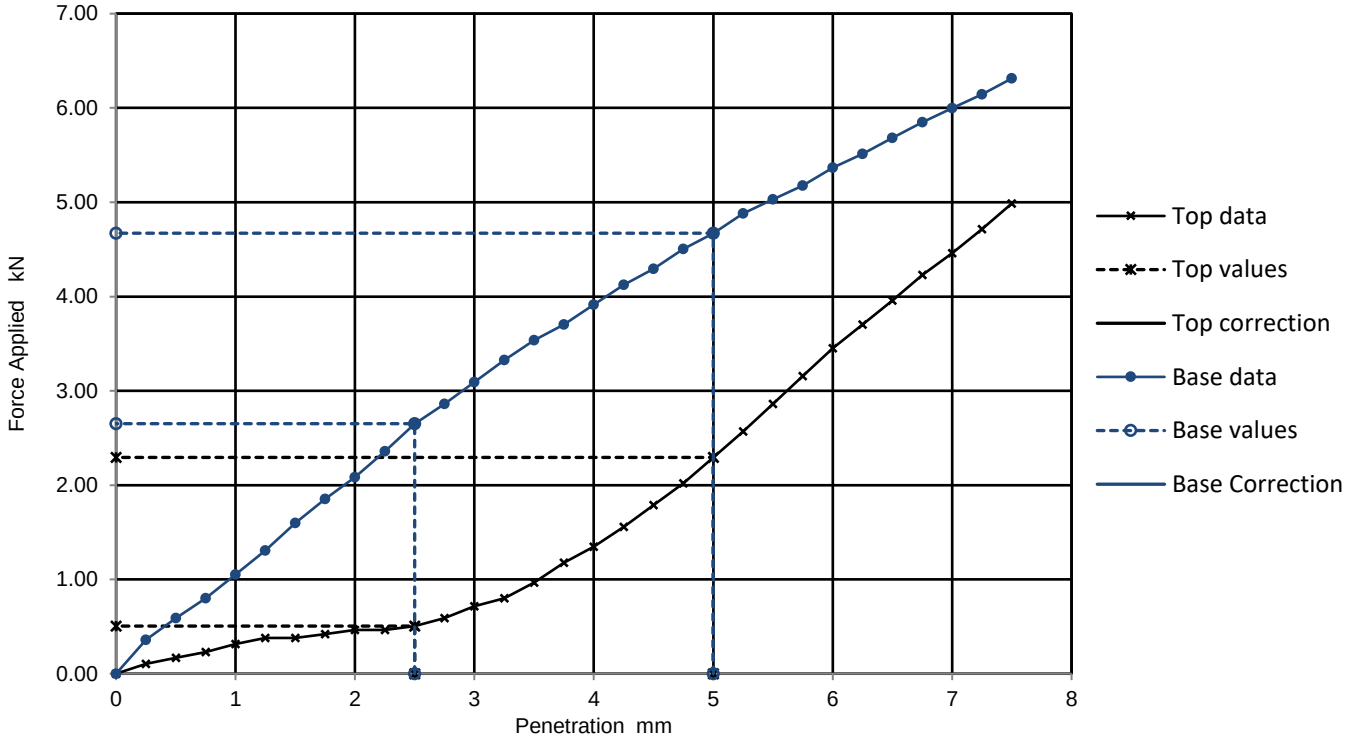
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP206A
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305170
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.11	Mg/m3	Surcharge applied	2	kg
	Dry density	1.85	Mg/m3		1	kPa
	Moisture content	14.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.8	11.0	11.0		
BASE		20.0	23.0	23.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	82

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

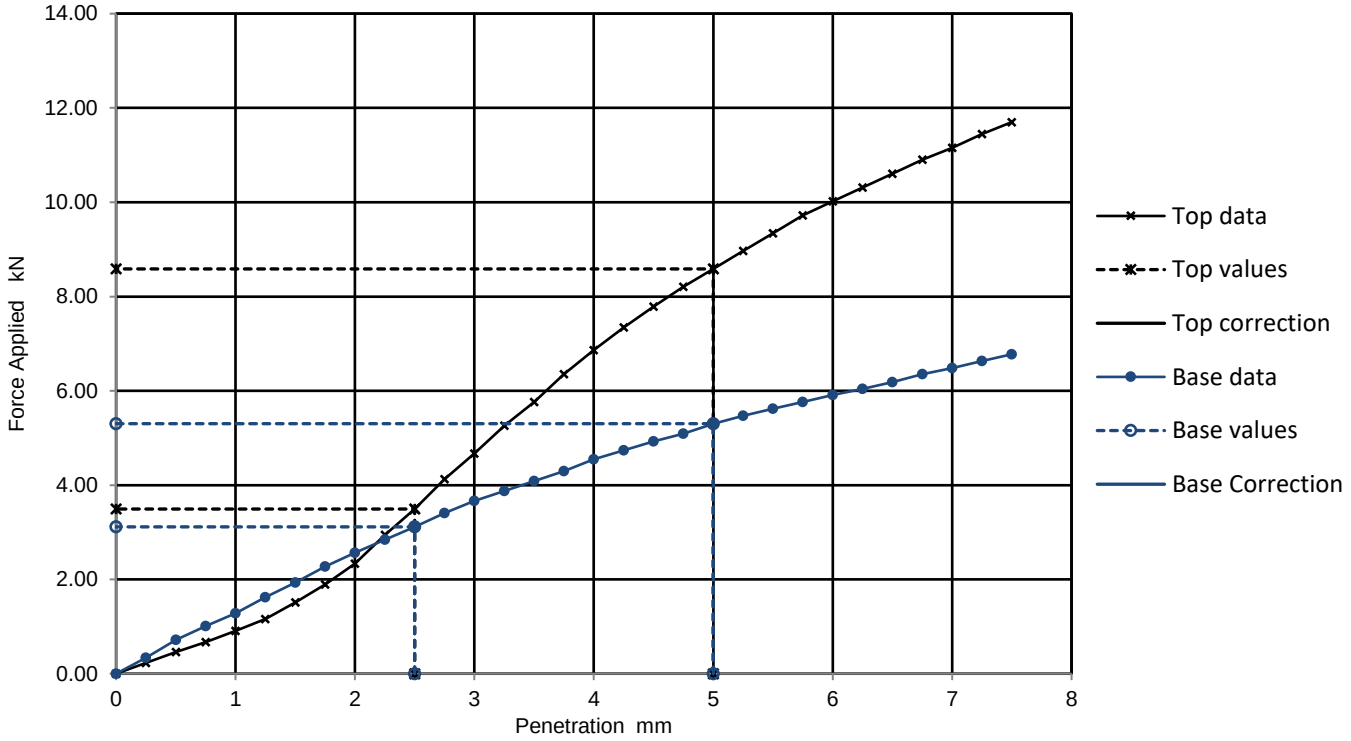
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP206A
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305170
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.79	Mg/m3		1	kPa
	Moisture content	12.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		26.0	43.0	43.0		
BASE		24.0	27.0	27.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	83

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

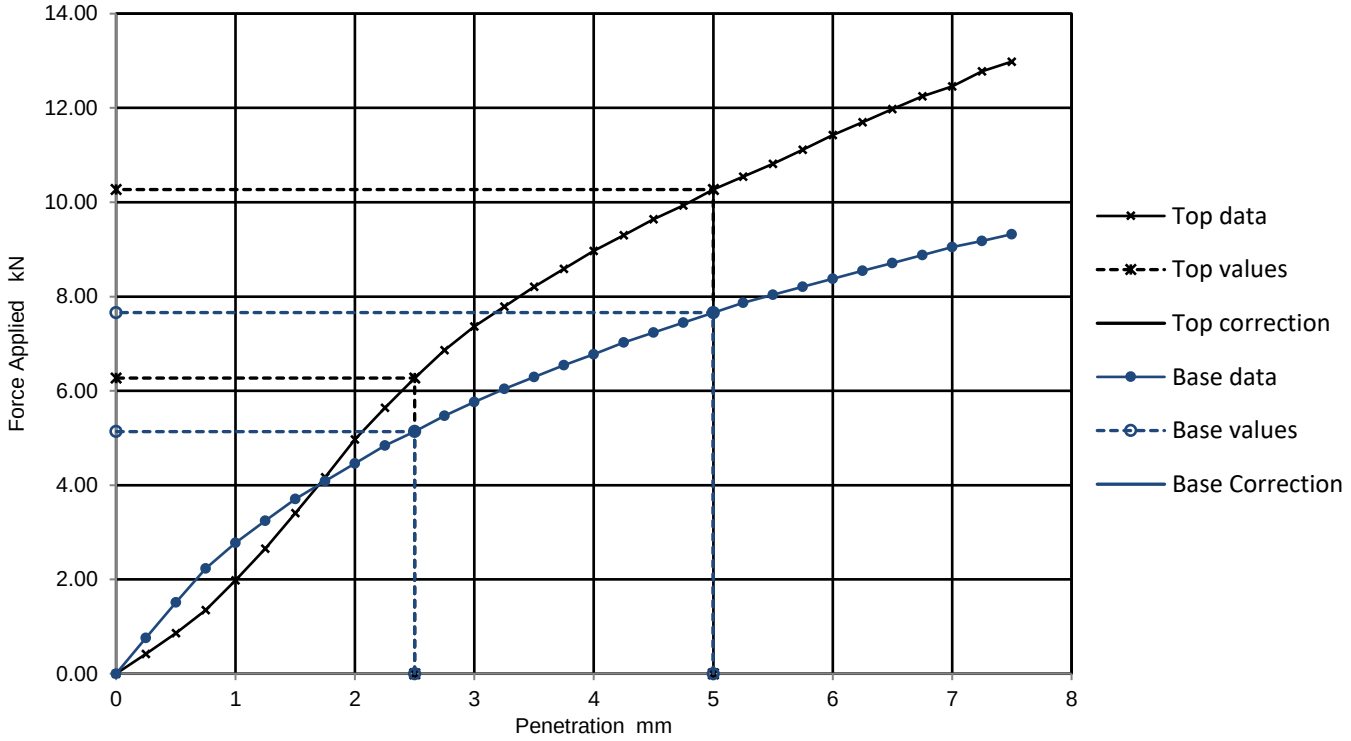
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP206A
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305170
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	2	kg
	Dry density	1.81	Mg/m3		1	kPa
	Moisture content	10.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		48.0	51.0	51.0		
BASE		39.0	38.0	39.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	84

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

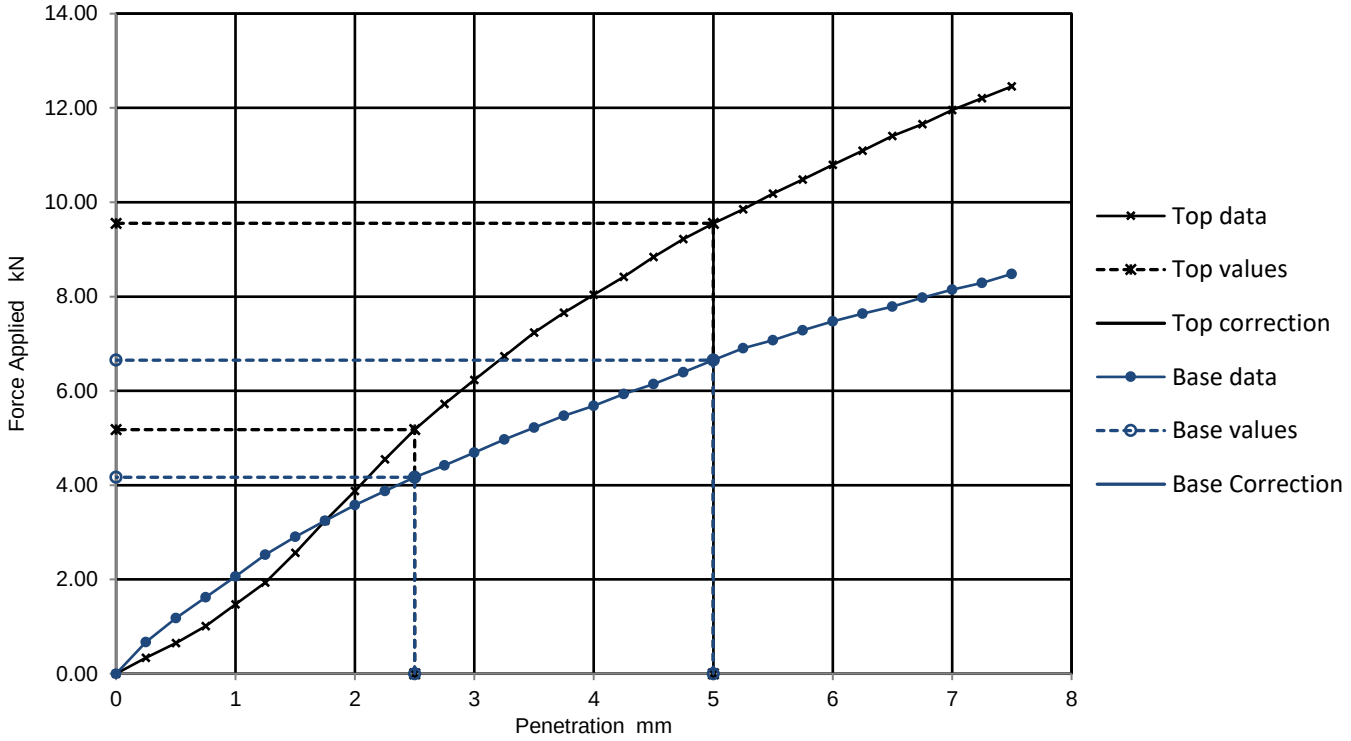
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP206A
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305170
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.96	Mg/m3	Surcharge applied	2	kg
	Dry density	1.79	Mg/m3		1	kPa
	Moisture content	9.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		39.0	48.0	48.0		
BASE		32.0	33.0	33.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	85

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

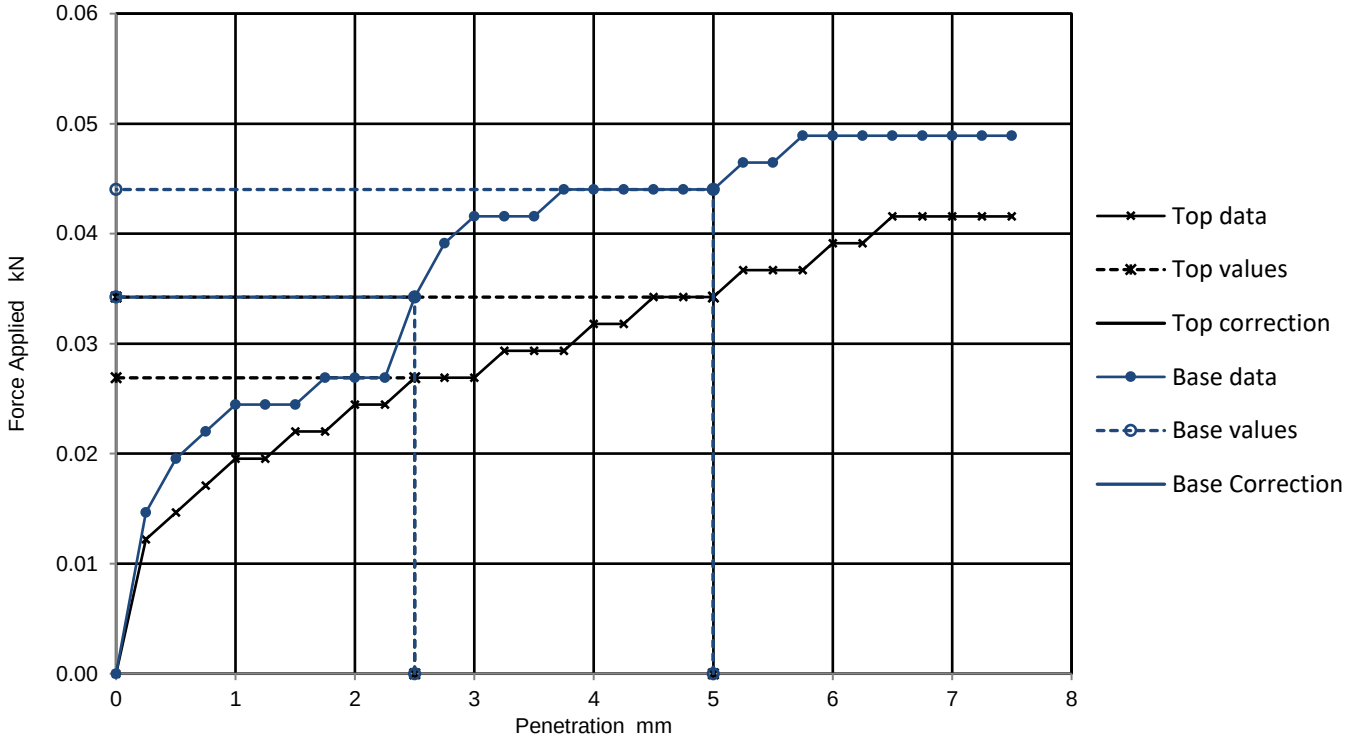
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description	Light brown slightly gravelly slightly sandy SILT.			Depth m	2.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202308165
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	2	kg
	Dry density	1.75	Mg/m3		1	kPa
	Moisture content	18.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.2	0.2	0.2		
BASE		0.3	0.2	0.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	86

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

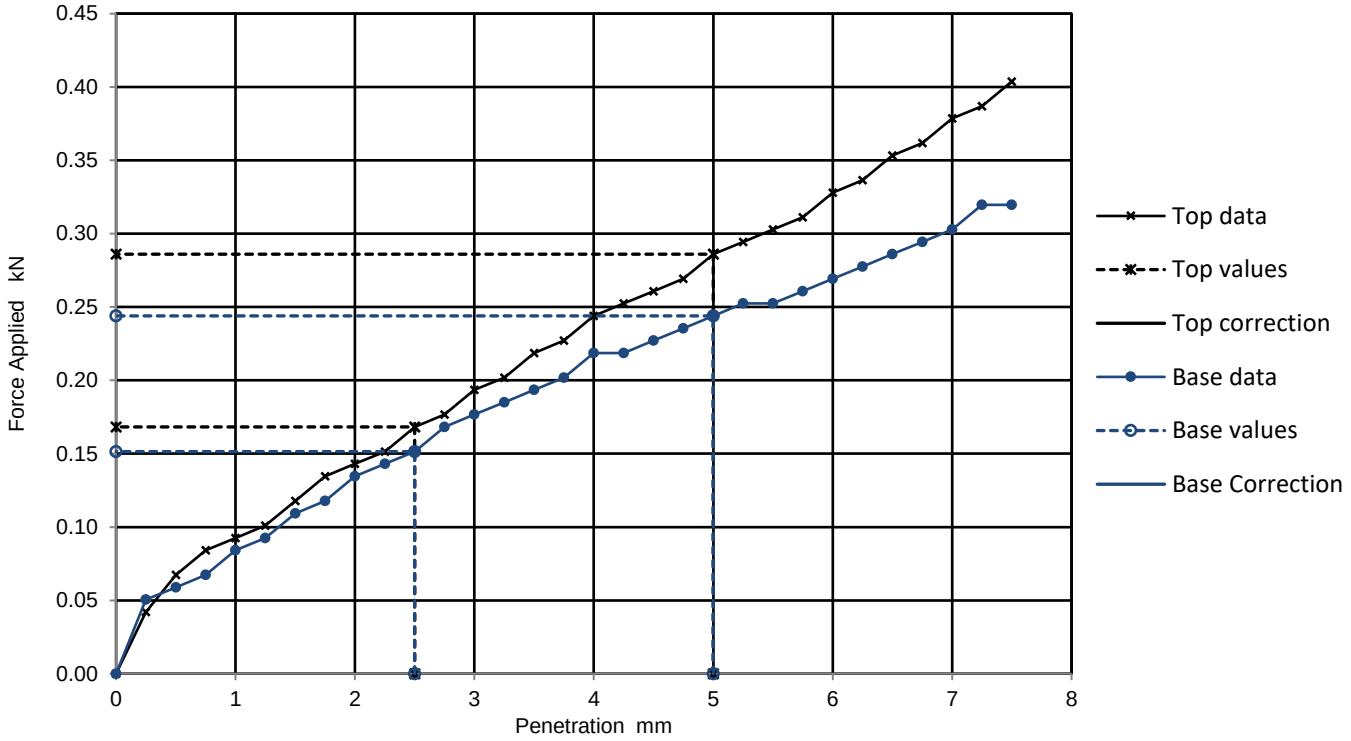
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202308165
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	2	kg
	Dry density	1.89	Mg/m3		1	kPa
	Moisture content	14.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.3	1.4	1.4	1.3	
BASE		1.1	1.2	1.2		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	87

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

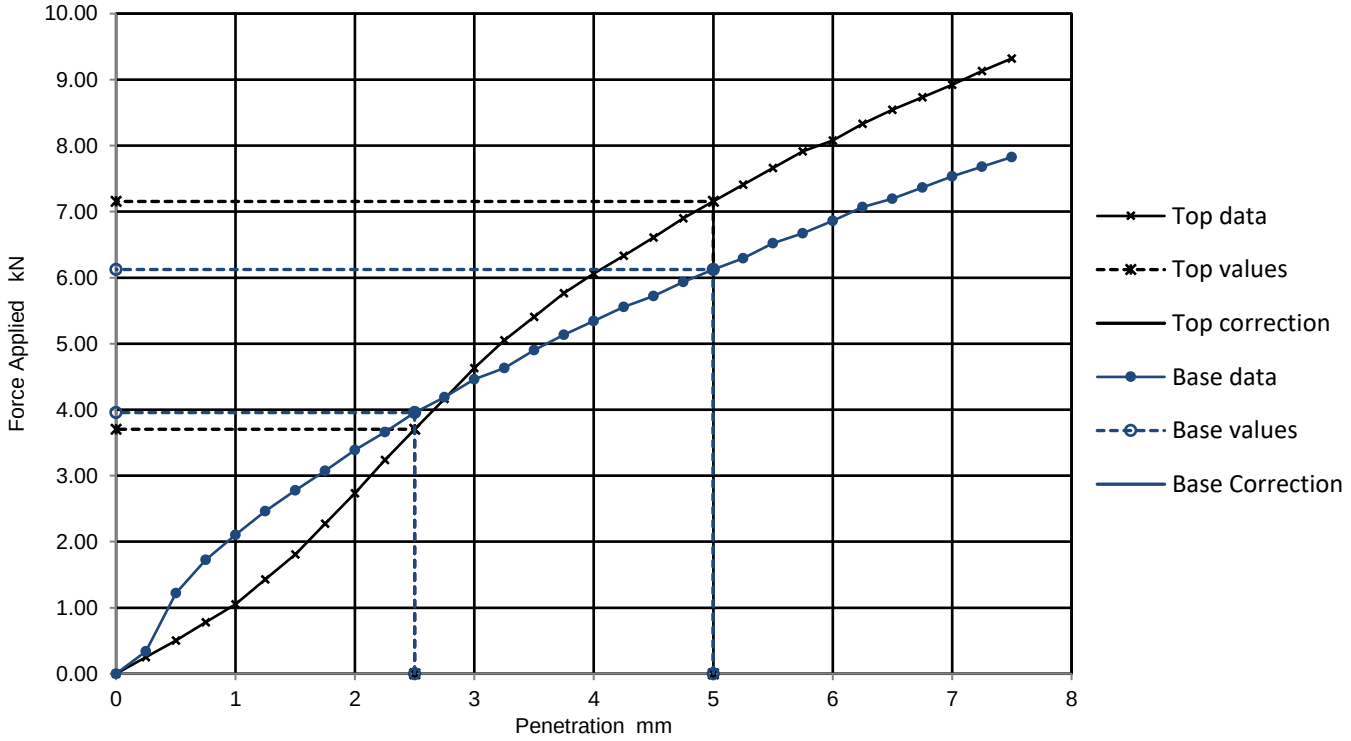
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202308165
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	2	kg
	Dry density	1.89	Mg/m3		1	kPa
	Moisture content	10.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		28.0	36.0	36.0	33.0	
BASE		30.0	31.0	31.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	88

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

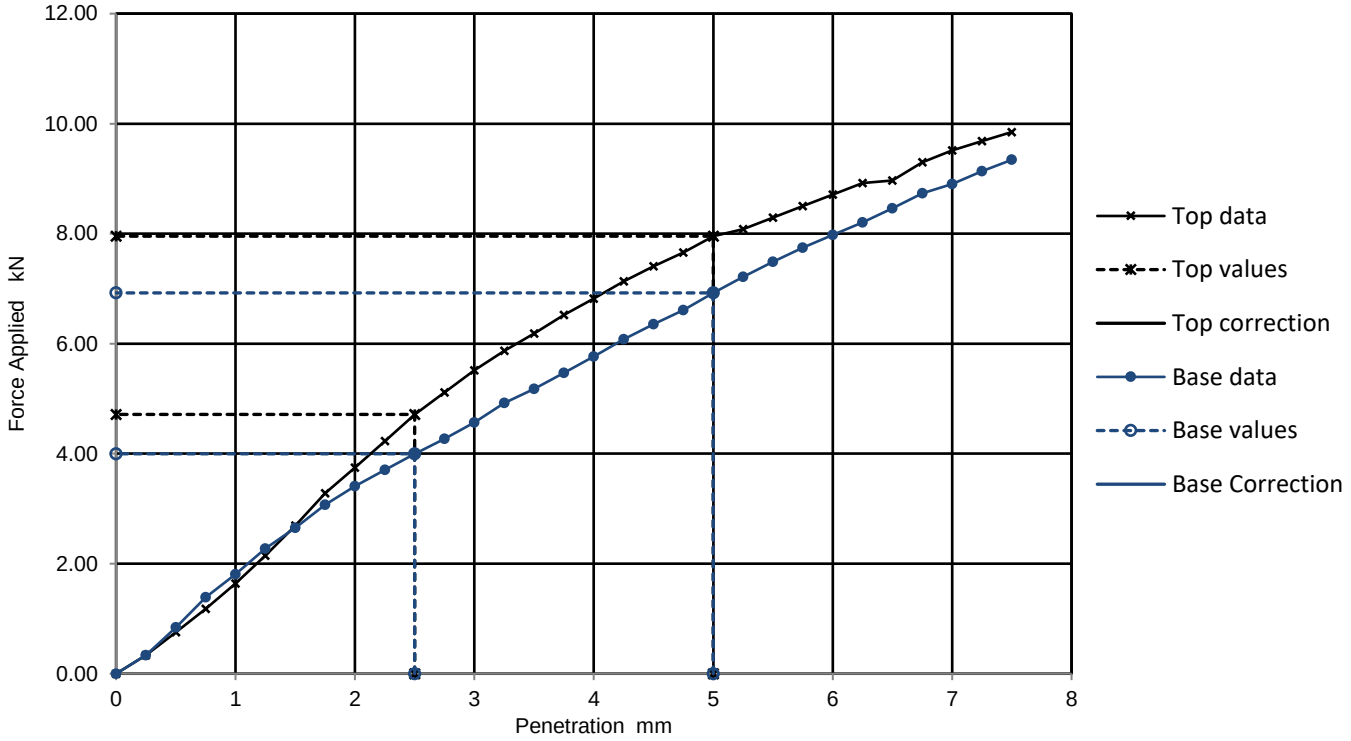
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202308165
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	2	kg
	Dry density	1.87	Mg/m3		1	kPa
	Moisture content	9.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		36.0	40.0	40.0	37.0	
BASE		30.0	35.0	35.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	89

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

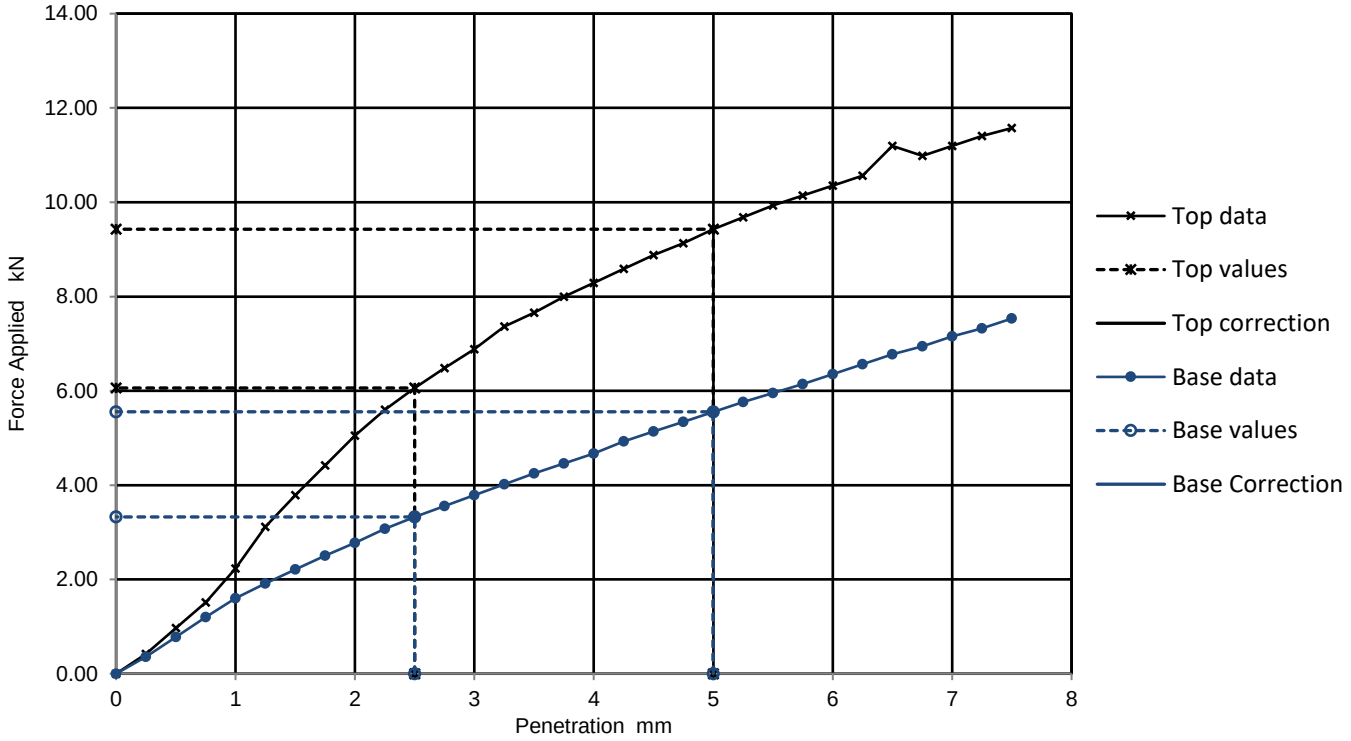
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202308165
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.85	Mg/m3		1	kPa
	Moisture content	8.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		46.0	47.0	47.0		
BASE		25.0	28.0	28.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	90

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

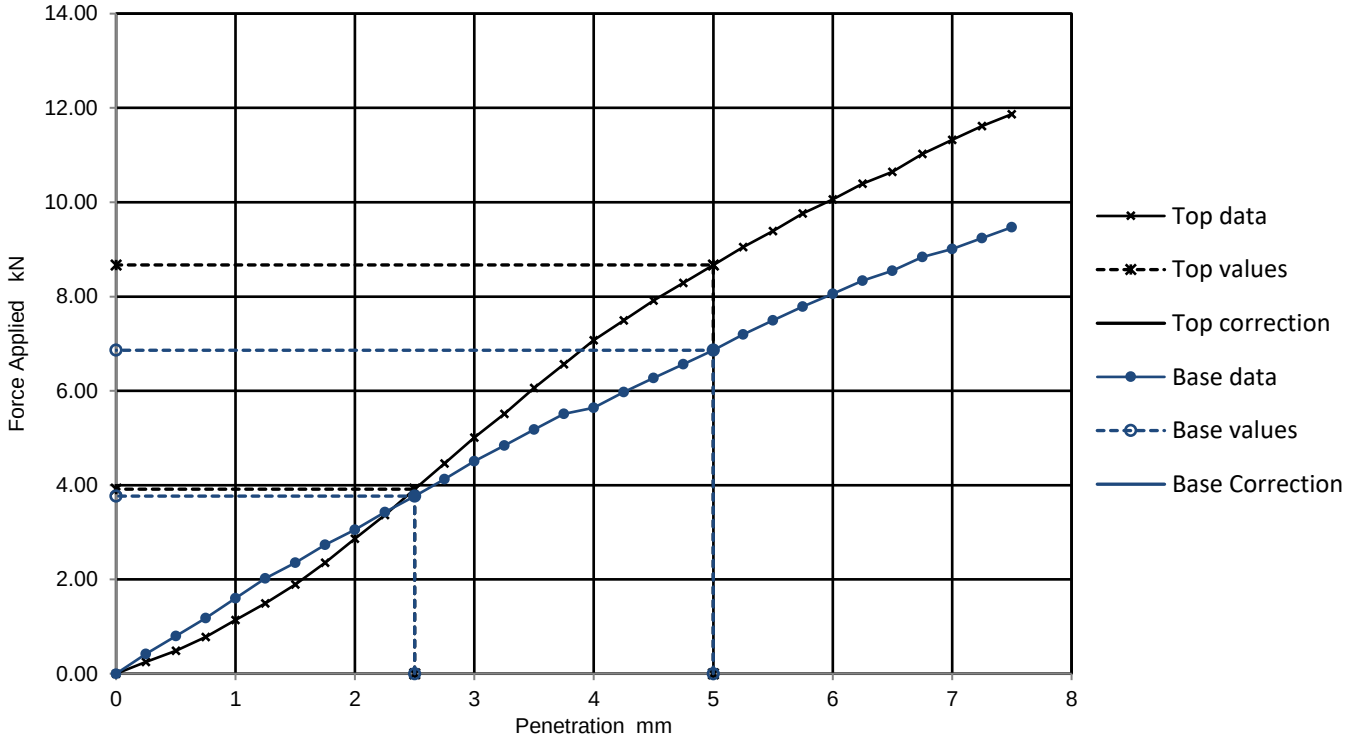
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP209
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051711
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	2	kg
	Dry density	1.82	Mg/m3		1	kPa
	Moisture content	14.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		30.0	43.0	43.0		
BASE		29.0	34.0	34.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	91

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

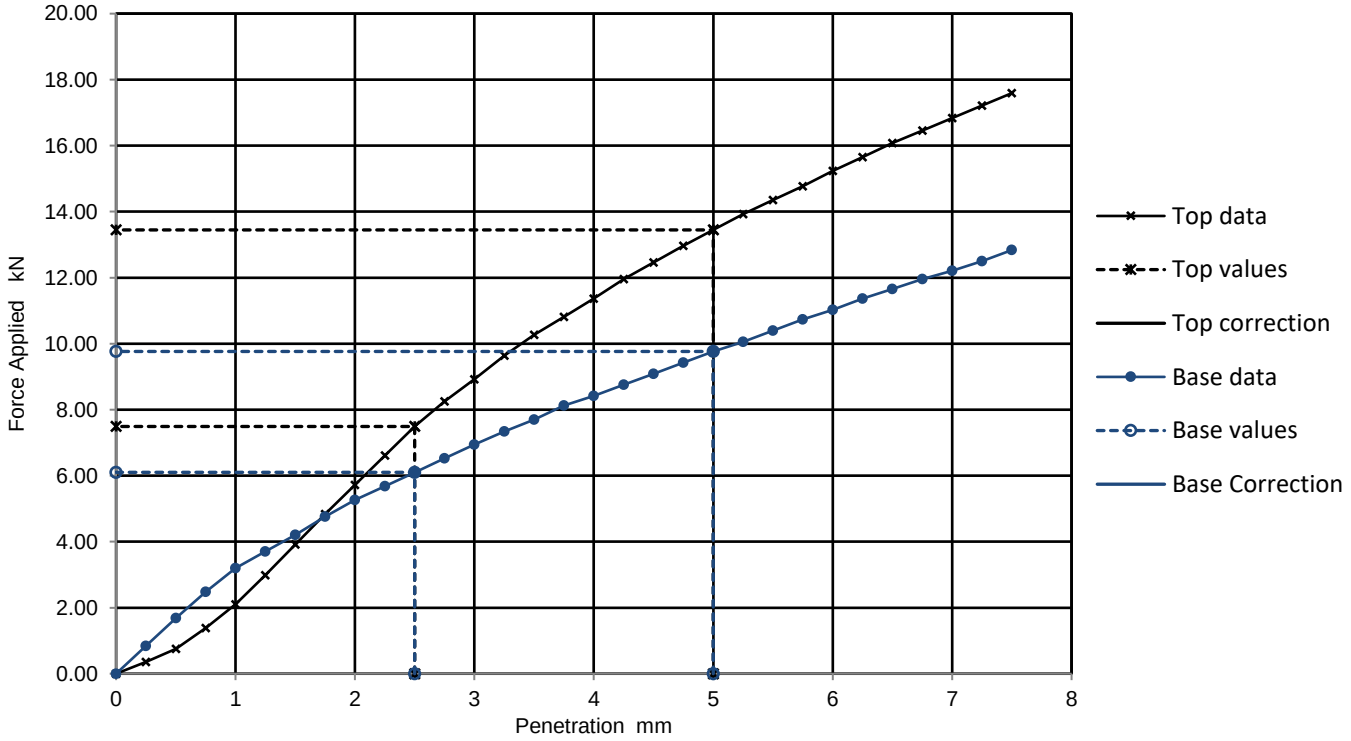
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP209
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051711
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.01	Mg/m3	Surcharge applied	2	kg
	Dry density	1.77	Mg/m3		1	kPa
	Moisture content	13.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		57.0	67.0	67.0		
BASE		46.0	49.0	49.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	92

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

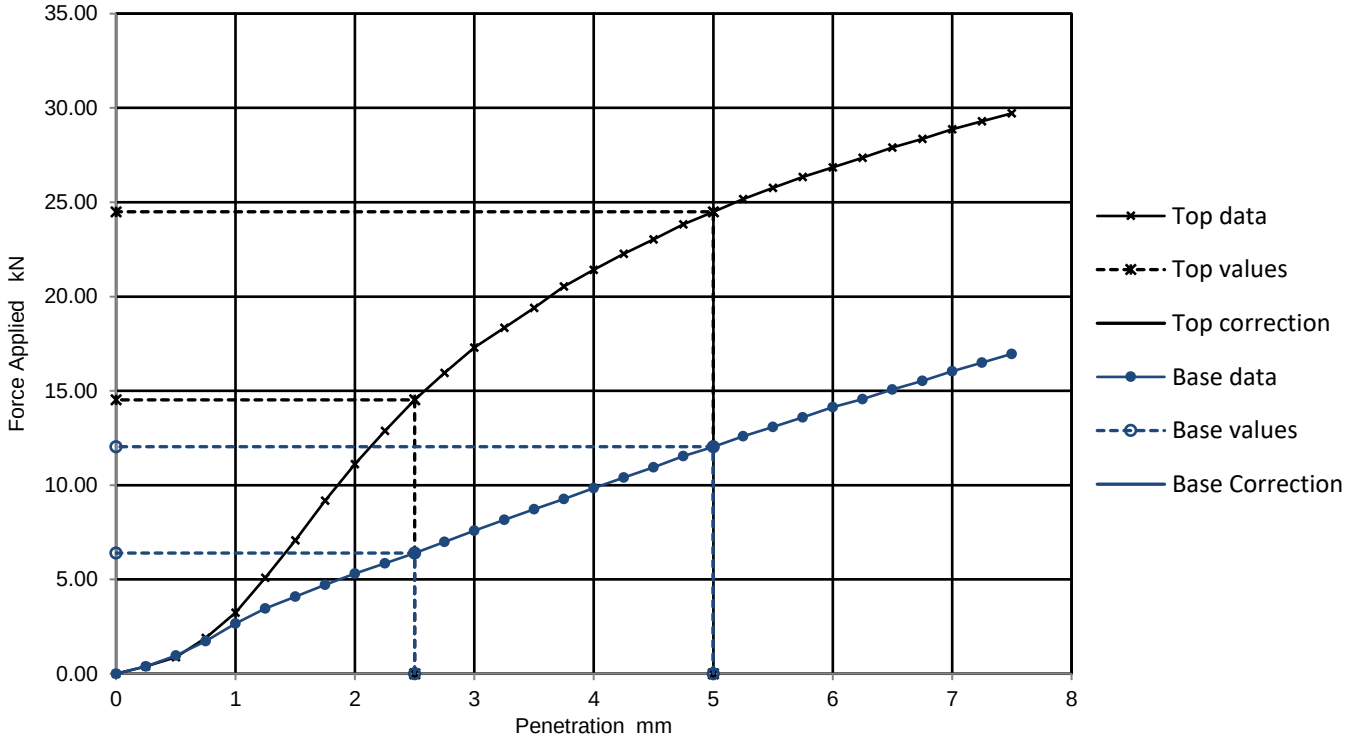
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP209
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051711
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.01	Mg/m3	Surcharge applied	2	kg
	Dry density	1.79	Mg/m3		1	kPa
	Moisture content	12.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		110.0	120.0	120.0		
BASE		48.0	60.0	60.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	93

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

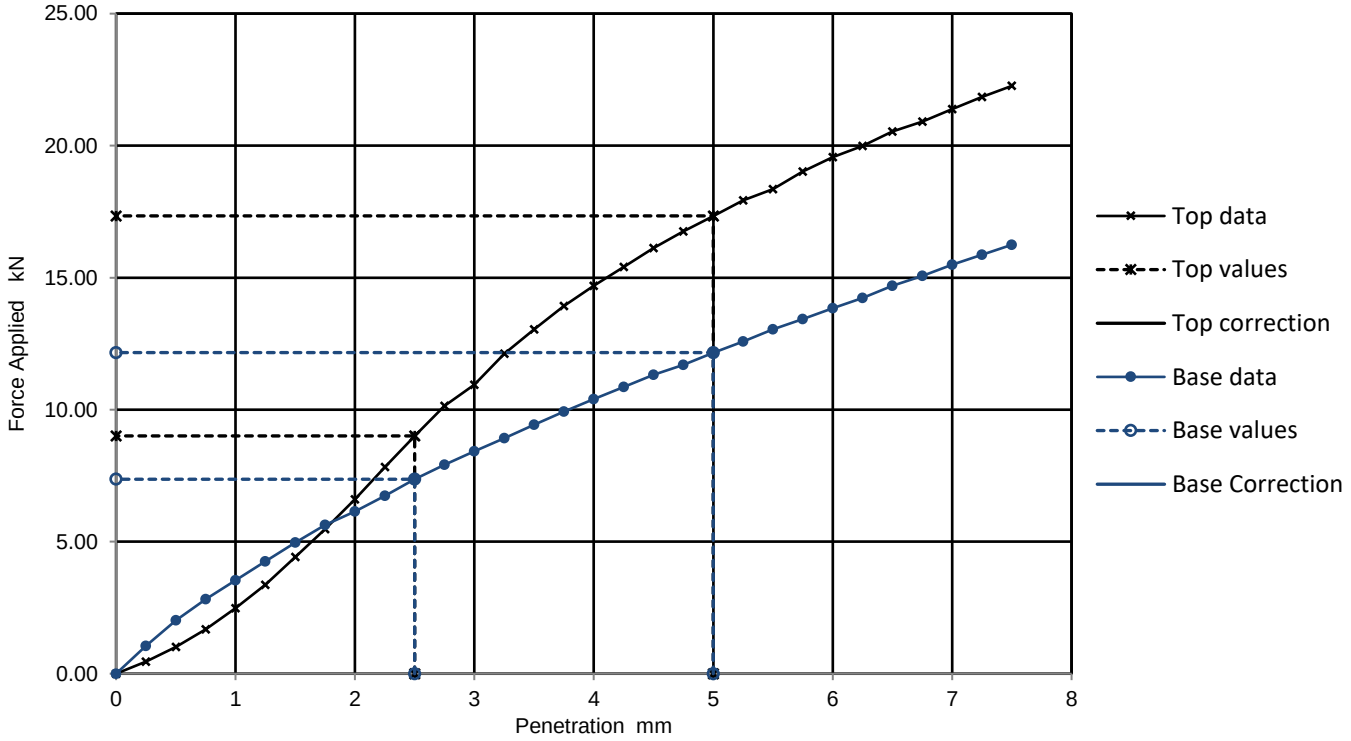
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP209
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051711
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.05	Mg/m3	Surcharge applied	2	kg
	Dry density	1.81	Mg/m3		1	kPa
	Moisture content	13.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		68.0	87.0	87.0		
BASE		56.0	61.0	61.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	94

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

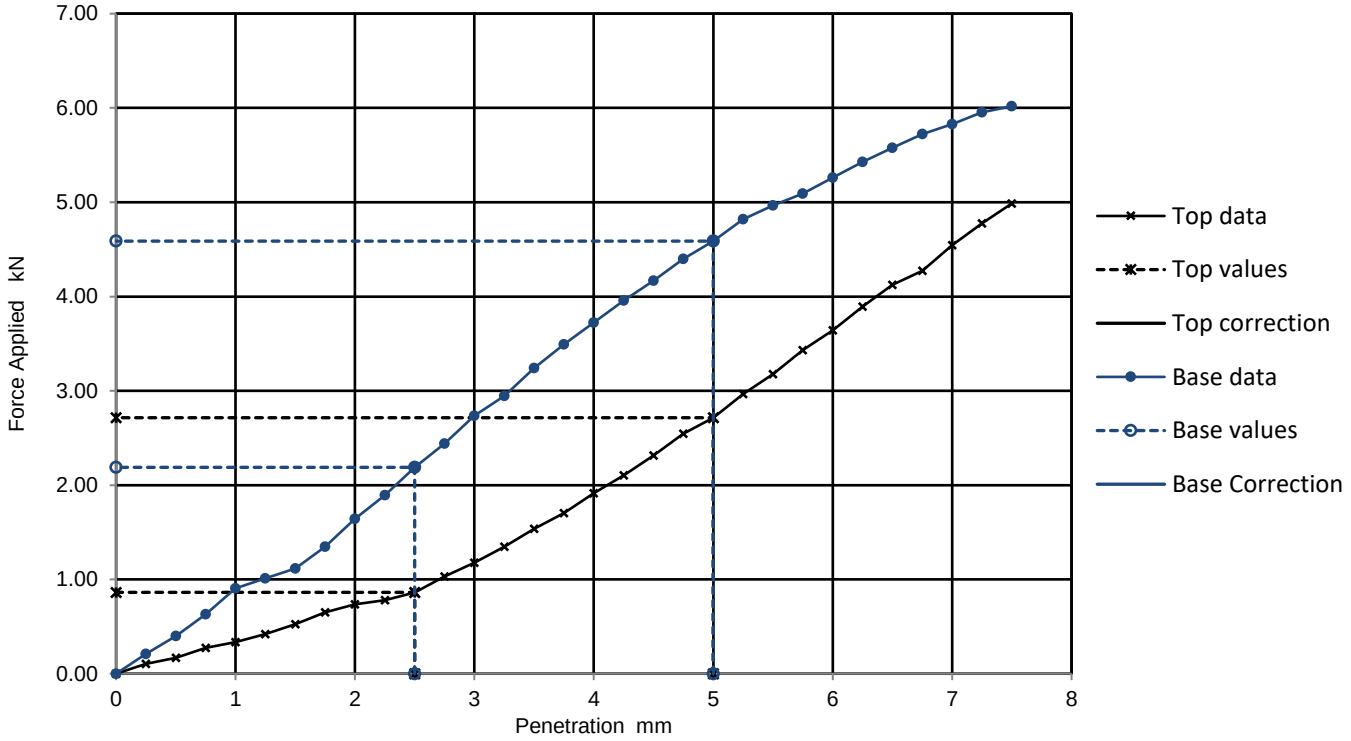
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP209
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051711
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	2	kg
	Dry density	1.84	Mg/m3		1	kPa
	Moisture content	15.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		6.5	14.0	14.0		
BASE		17.0	23.0	23.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	95

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

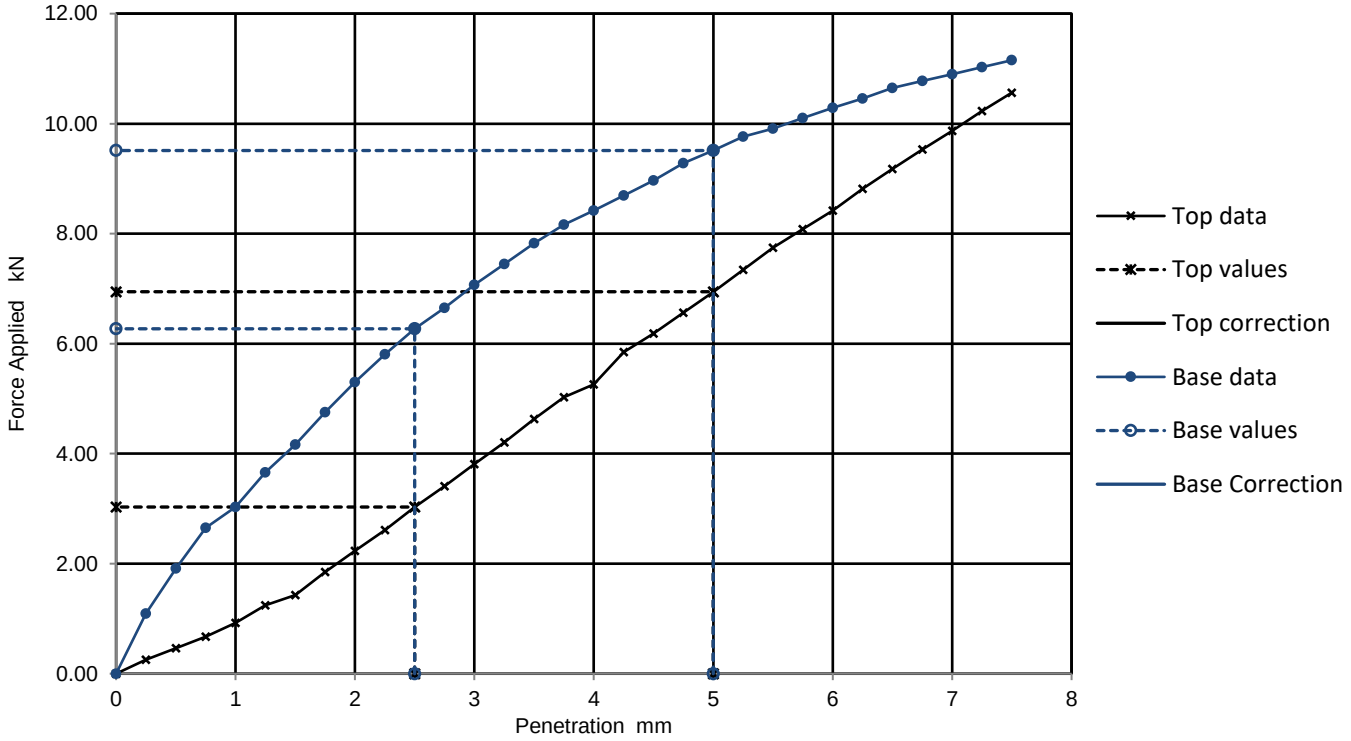
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP210
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description	Light brown slightly sandy slightly gravelly SILT.			Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051715
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.04	Mg/m3	Surcharge applied	2	kg
	Dry density	1.67	Mg/m3		1	kPa
	Moisture content	21.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		23.0	35.0	35.0		
BASE		48.0	48.0	48.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	96

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

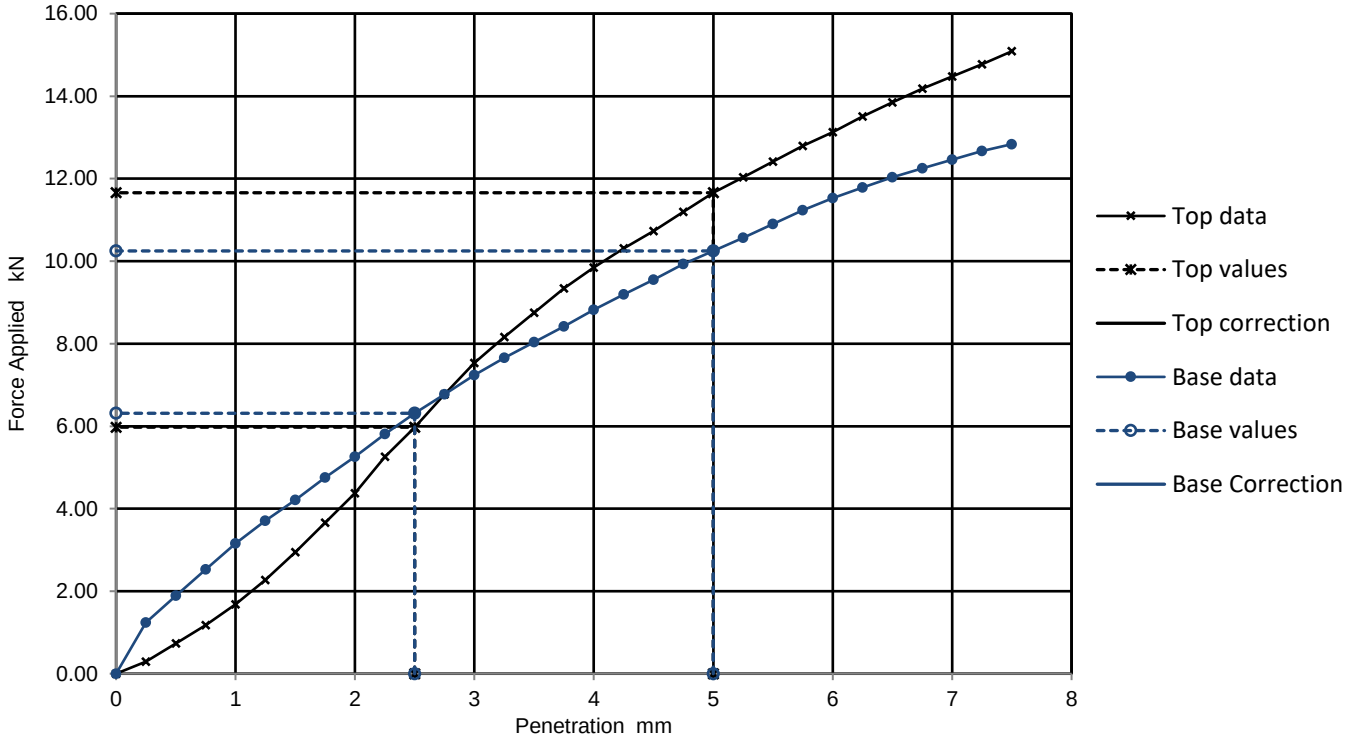
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP210
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051715
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition				Soaking details	Not soaked	
Details				Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed			%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.98	Mg/m3	Surcharge applied	2	kg
	Dry density	1.67	Mg/m3		1	kPa
	Moisture content	18.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		45.0	58.0	58.0	55.0	
BASE		48.0	51.0	51.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	97

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

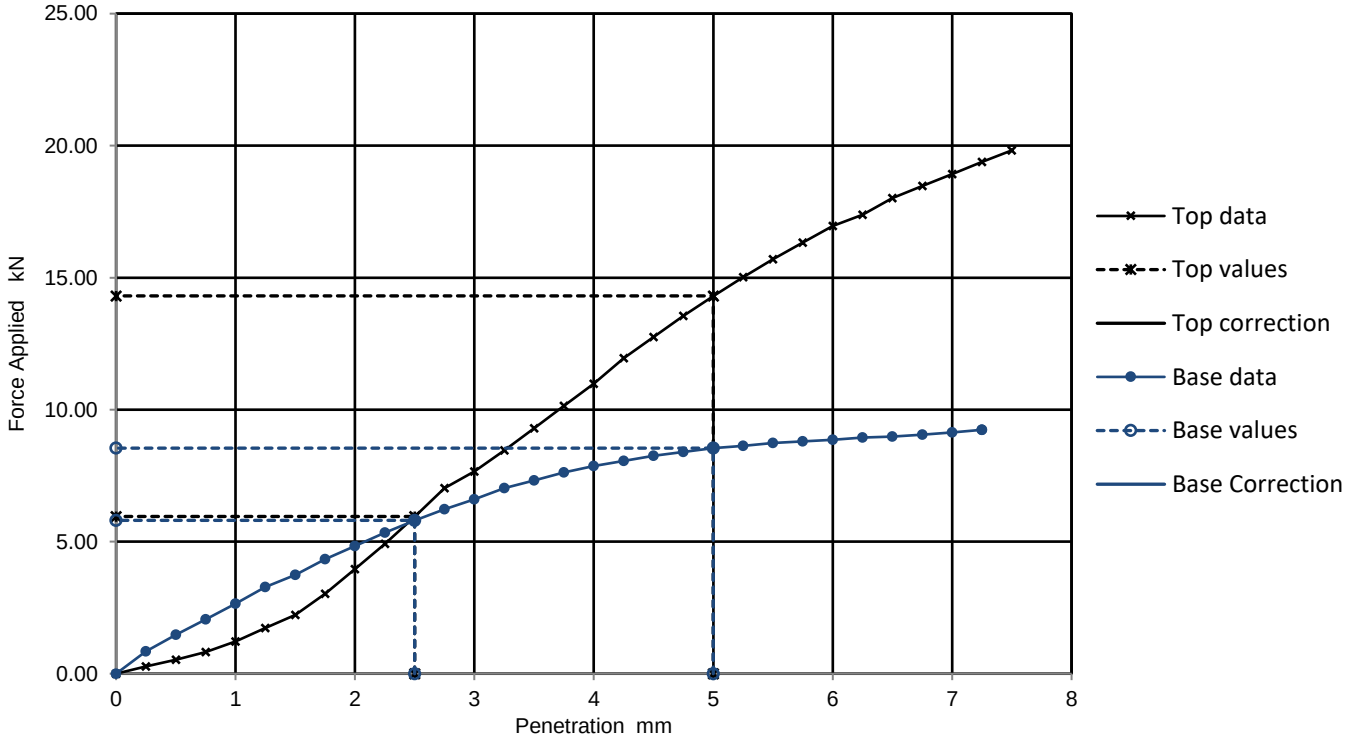
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP210
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051715
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.94	Mg/m3	Surcharge applied	2	kg
	Dry density	1.67	Mg/m3		1	kPa
	Moisture content	15.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		45.0	72.0	72.0		
BASE		44.0	43.0	44.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	98

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

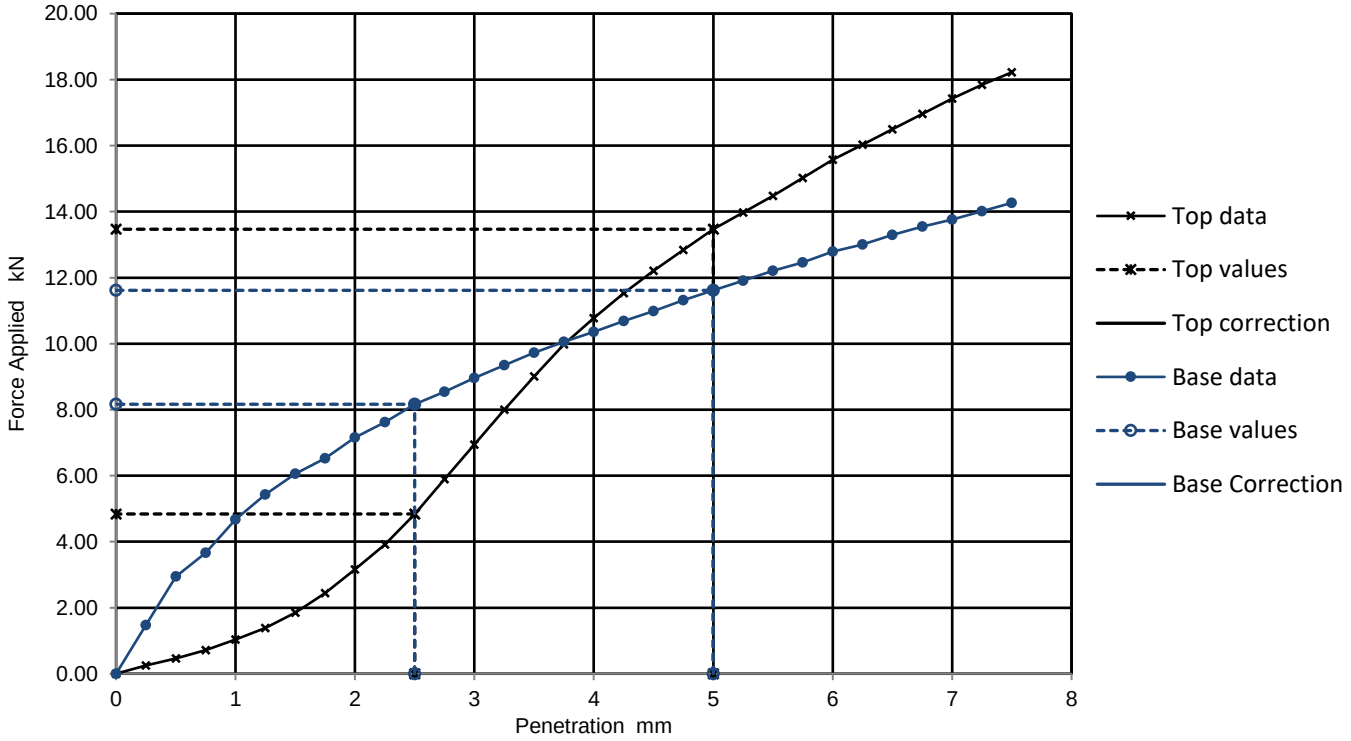
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP210
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051715
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.90	Mg/m3	Surcharge applied	2	kg
	Dry density	1.65	Mg/m3		1	kPa
	Moisture content	14.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		37.0	67.0	67.0	65.0	
BASE		62.0	58.0	62.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	99

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

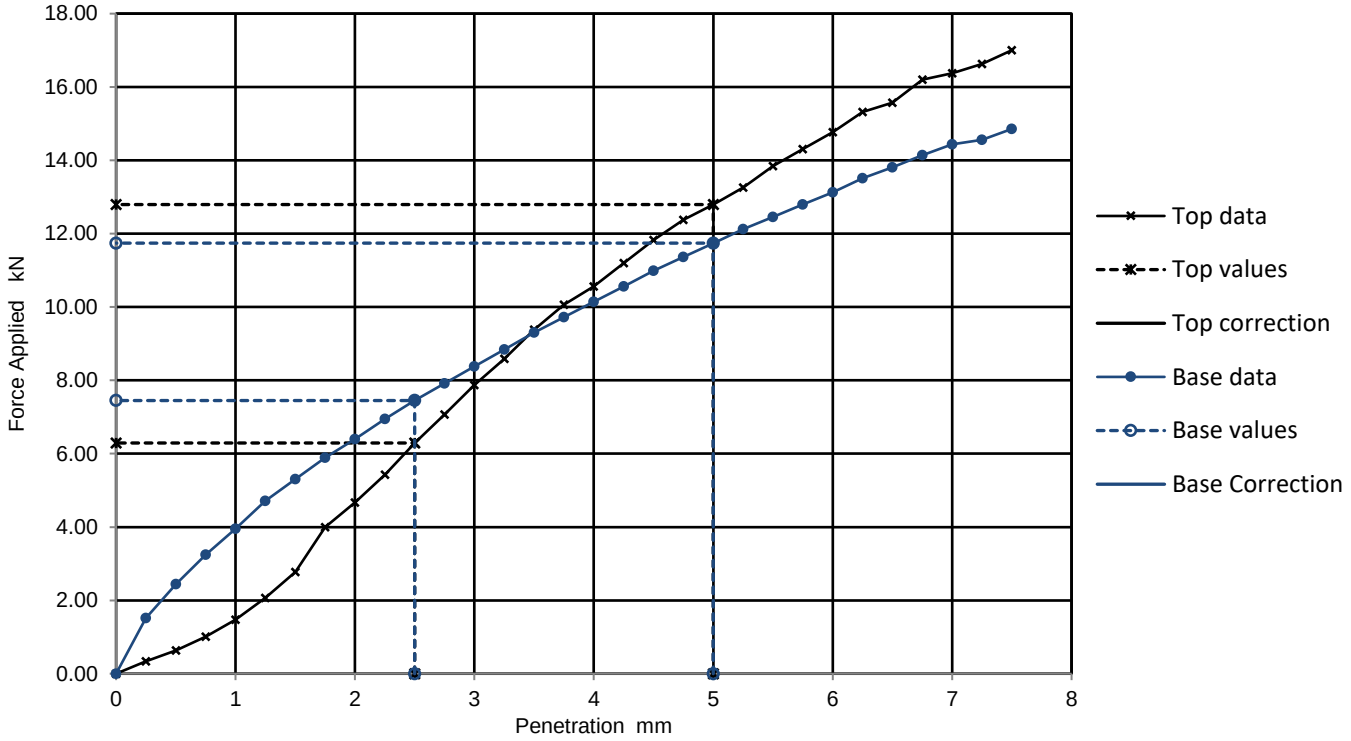
IRISH DRILLING LIMITED	**California Bearing Ratio (CBR)**			Job Ref	2023OY104
				Borehole/Pit No.	TP210
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051715
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.86	Mg/m3	Surcharge applied	2	kg
	Dry density	1.66	Mg/m3		1	kPa
	Moisture content	11.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		48.0	64.0	64.0	61.0	
BASE		56.0	59.0	59.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	100

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

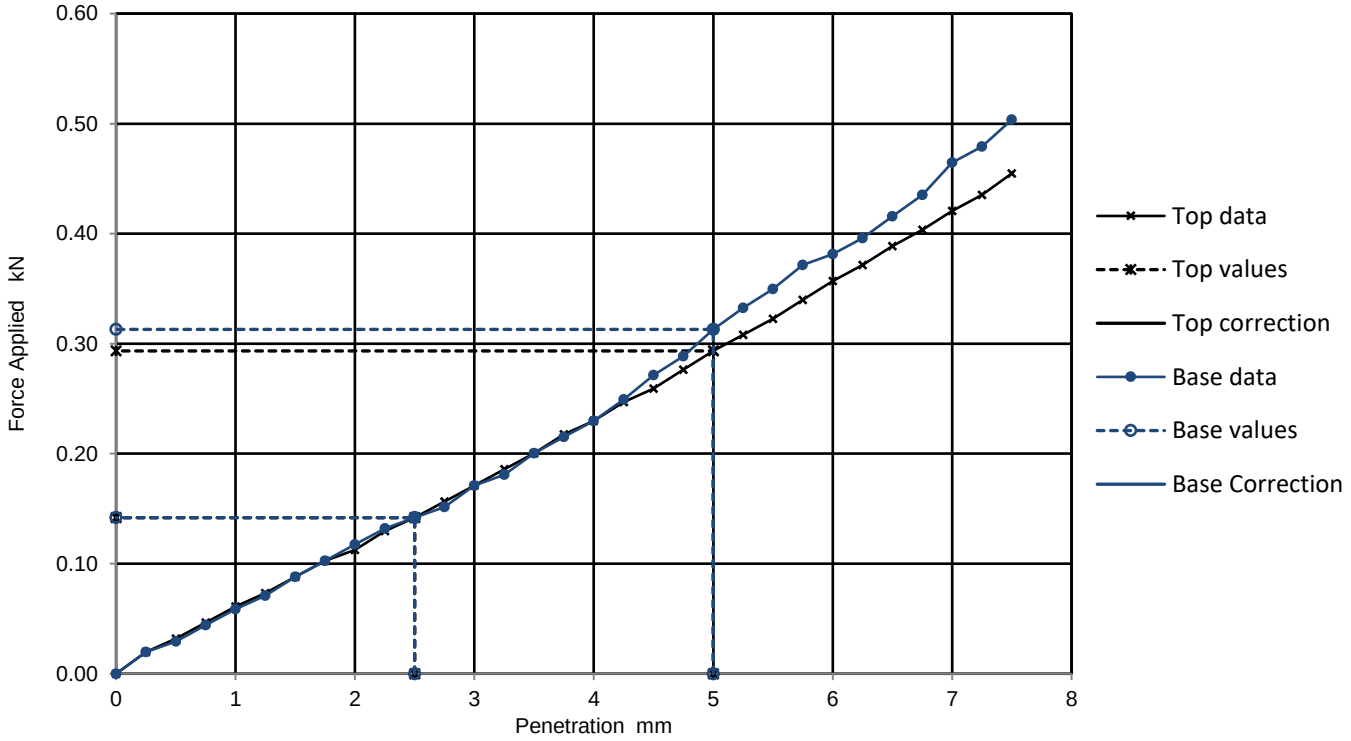
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP211
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051723
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition				Soaking details	Not soaked	
Details				Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed			%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	1.99	Mg/m3		1	kPa
	Moisture content	12.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.1	1.5	1.5	1.5	
BASE		1.1	1.6	1.6		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	101

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

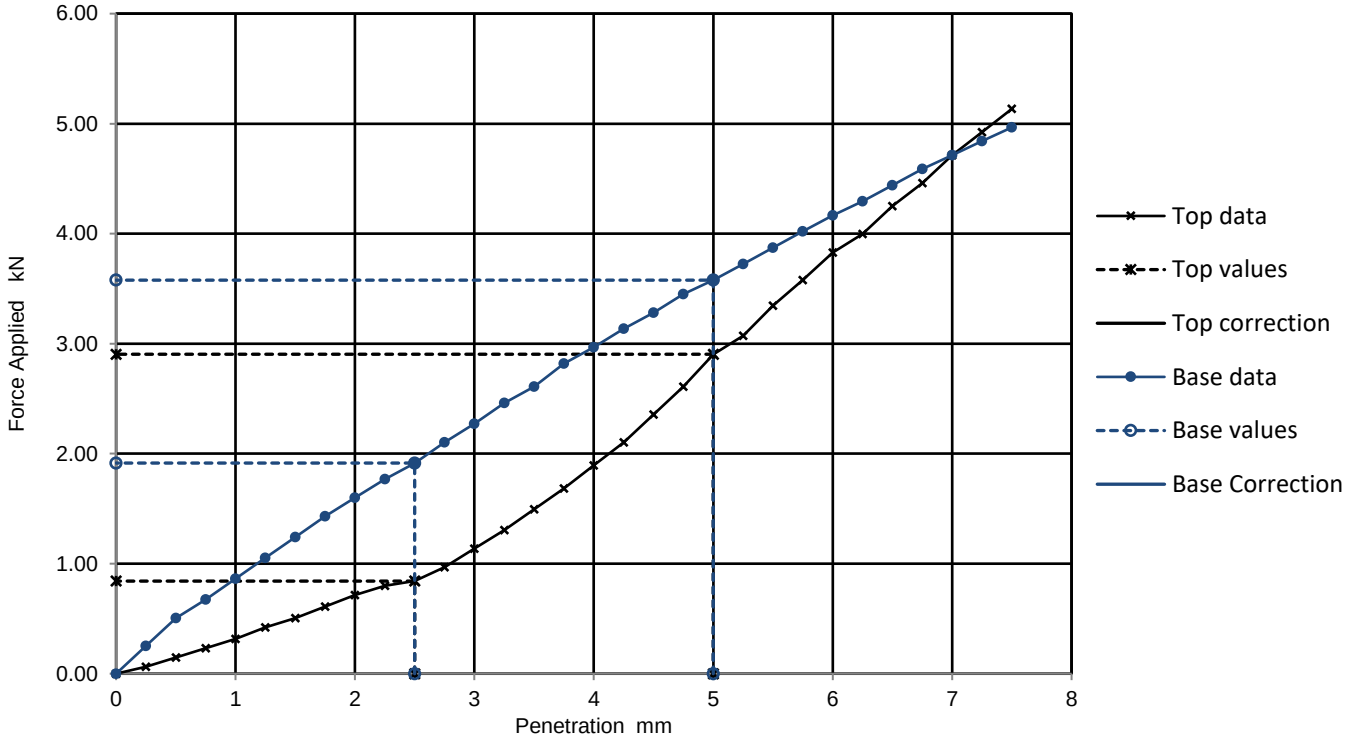
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP211
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051723
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.19	Mg/m3	Surcharge applied	2	kg
	Dry density	1.99	Mg/m3		1	kPa
	Moisture content	9.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		6.4	15.0	15.0		
BASE		15.0	18.0	18.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	102

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

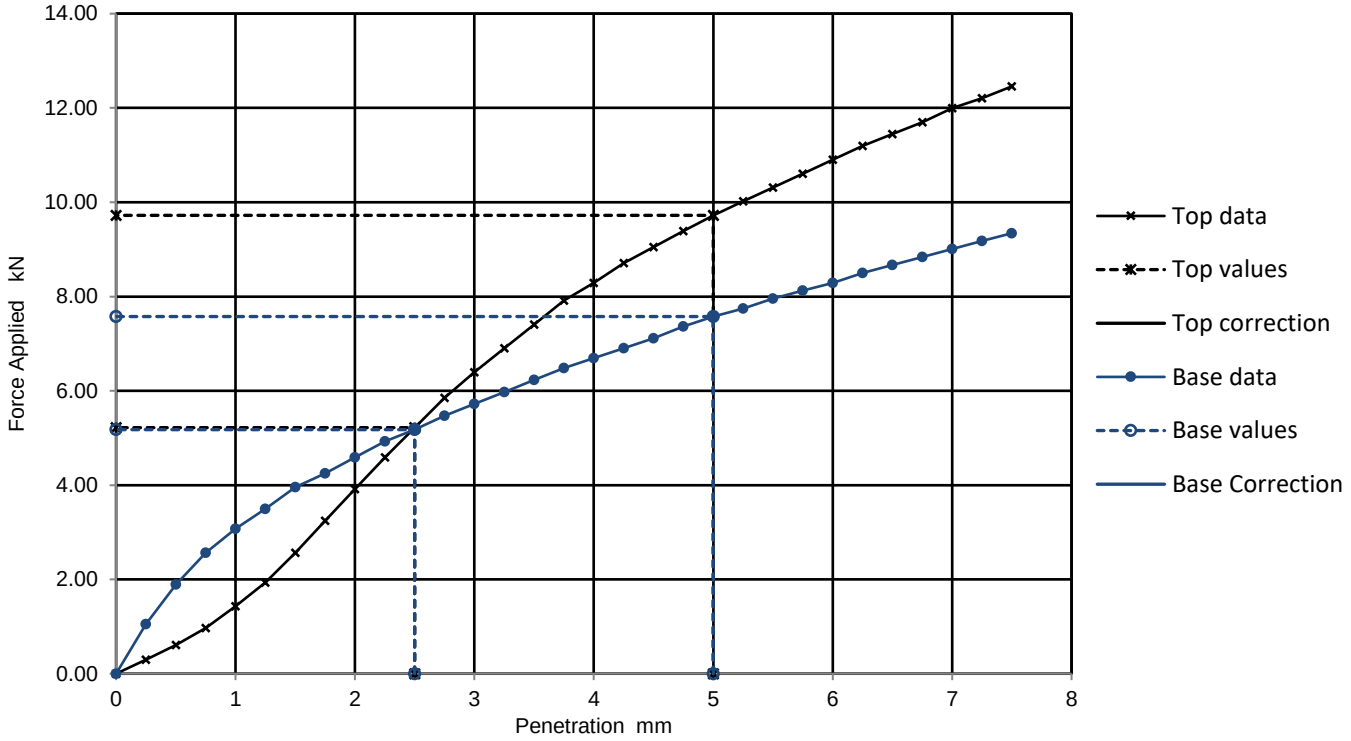
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP211
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051723
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	8.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		40.0	49.0	49.0		
BASE		39.0	38.0	39.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	103

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

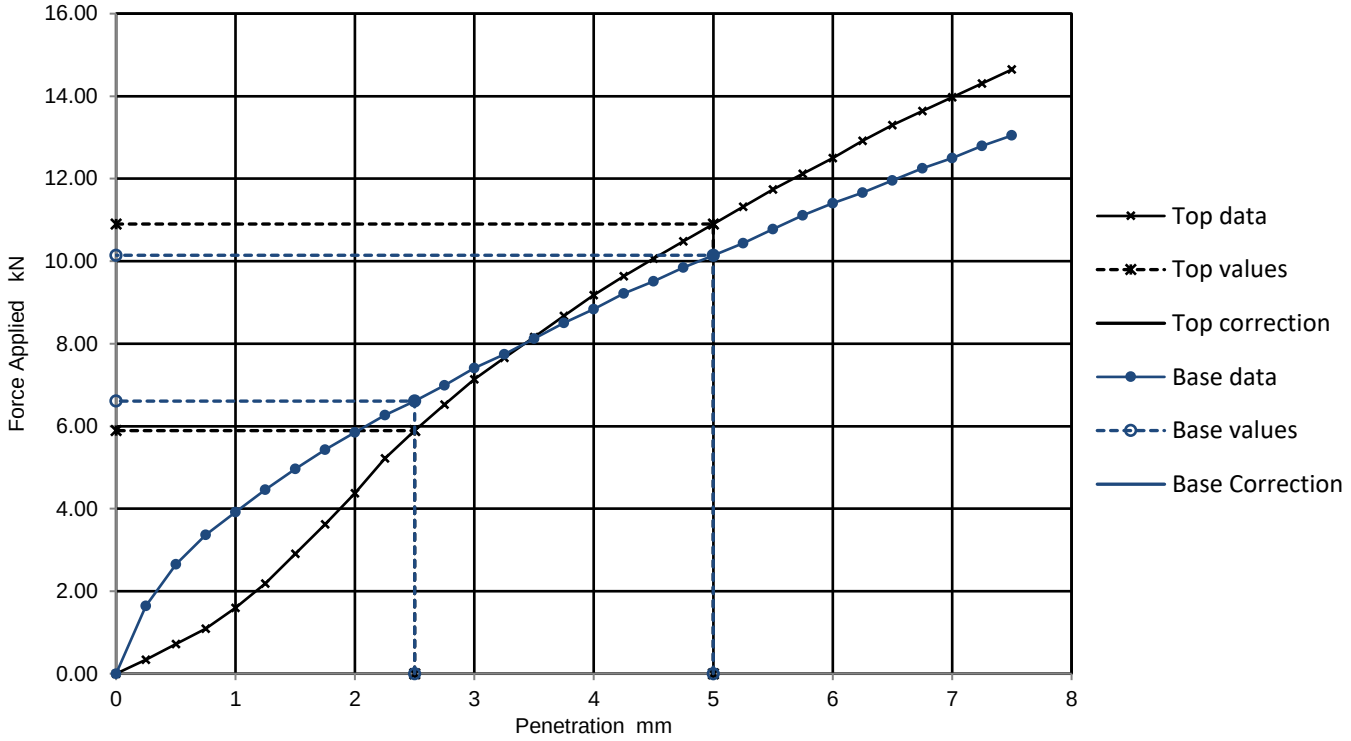
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP211
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051723
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	8.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		45.0	55.0	55.0	53.0	
BASE		50.0	51.0	51.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	104

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

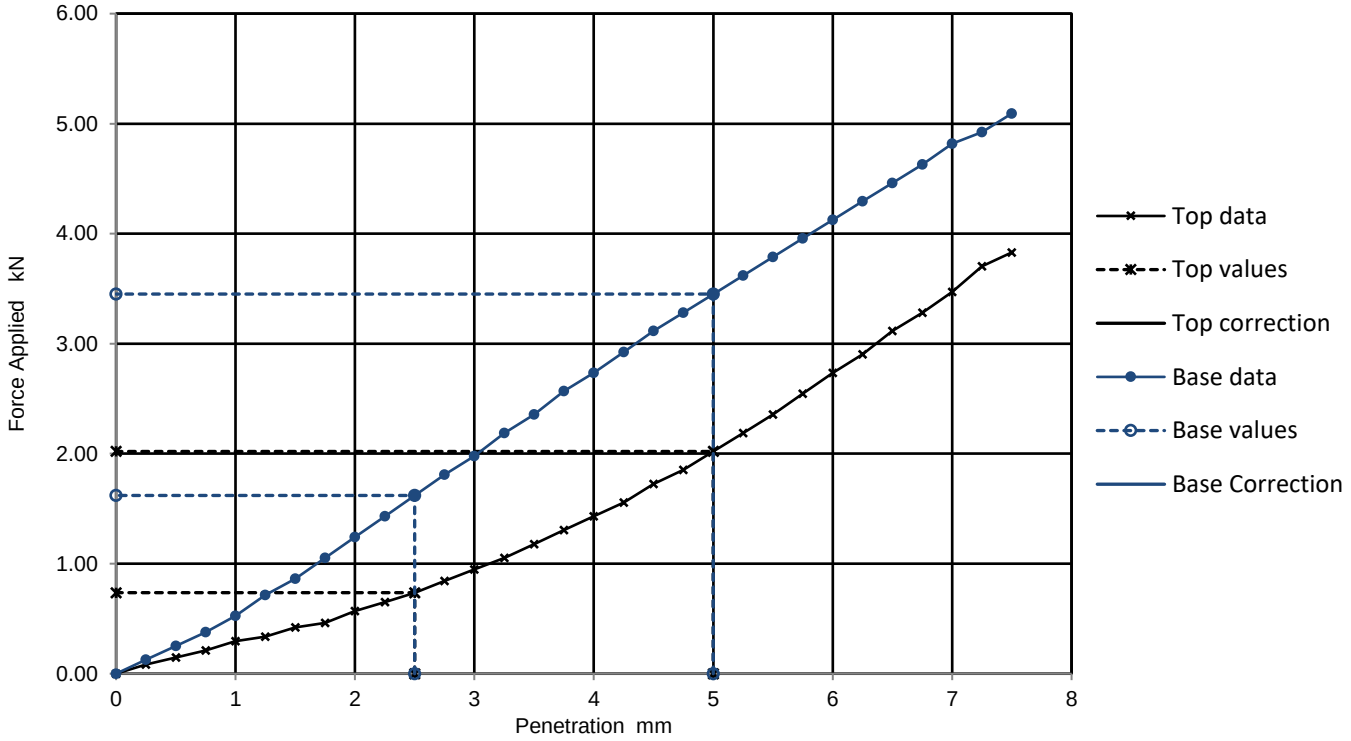
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP211
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051723
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	9.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		5.6	10.0	10.0		
BASE		12.0	17.0	17.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	105

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

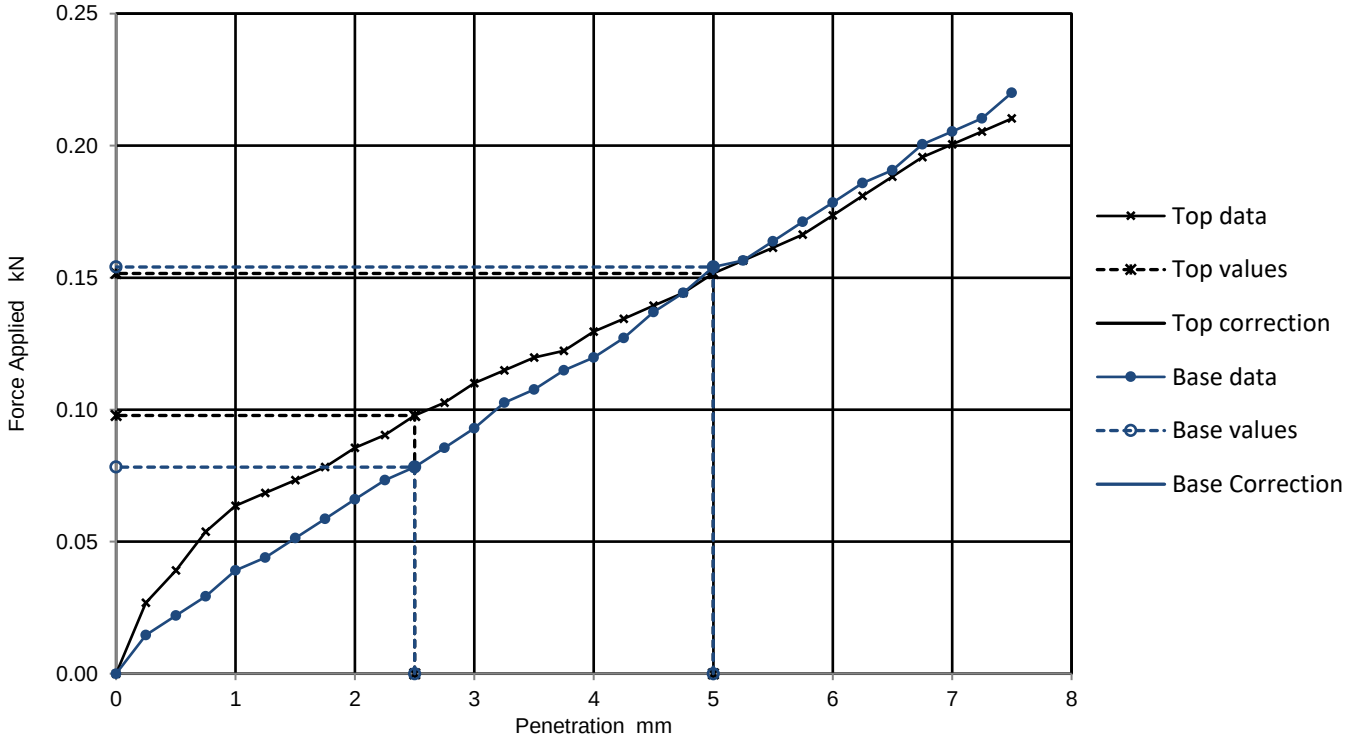
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP212
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description	Brown slightly gravelly sandy SILT. Sand is fine.			Depth m	1.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051732
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.19	Mg/m3	Surcharge applied	2	kg
	Dry density	1.93	Mg/m3		1	kPa
	Moisture content	13.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.7	0.8	0.8	0.8	
BASE		0.6	0.8	0.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	106

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

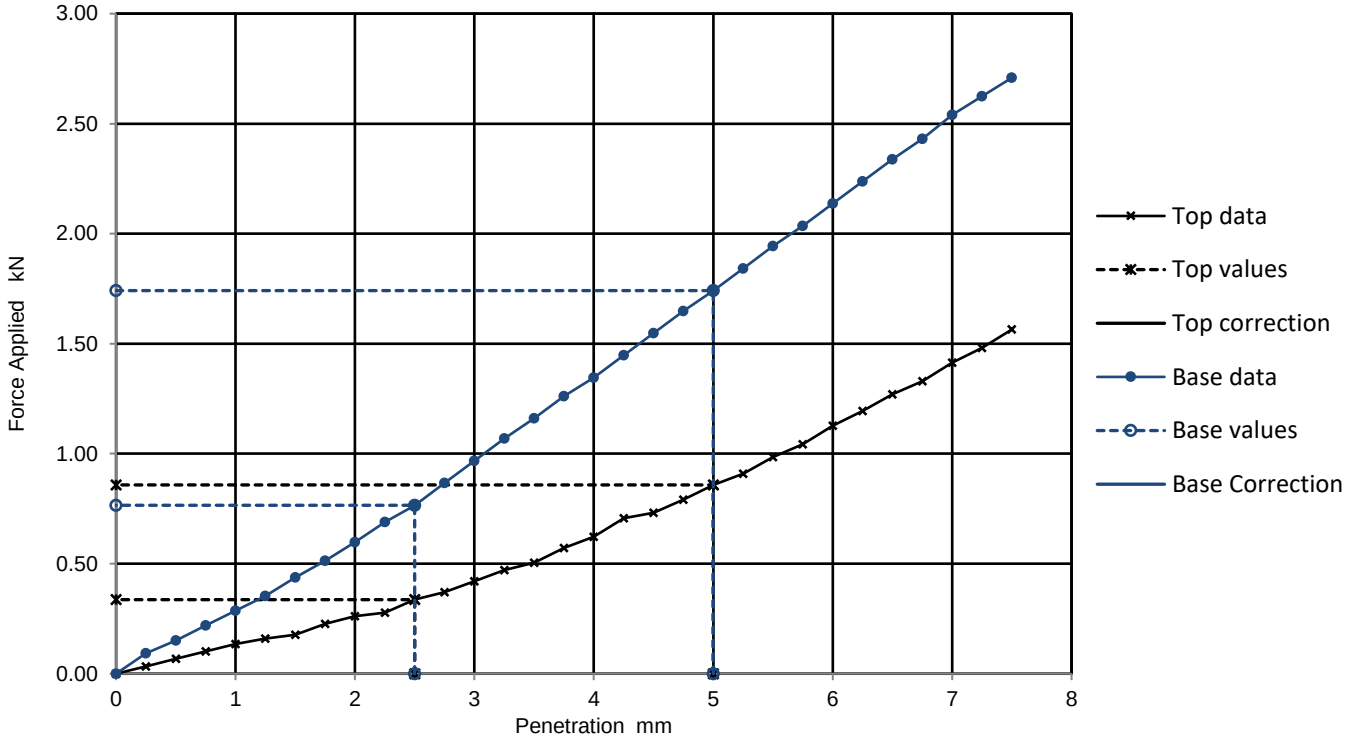
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP212
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051732
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.21	Mg/m3	Surcharge applied	2	kg
	Dry density	1.99	Mg/m3		1	kPa
	Moisture content	11.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.5	4.3	4.3		
BASE		5.8	8.7	8.7		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	107

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

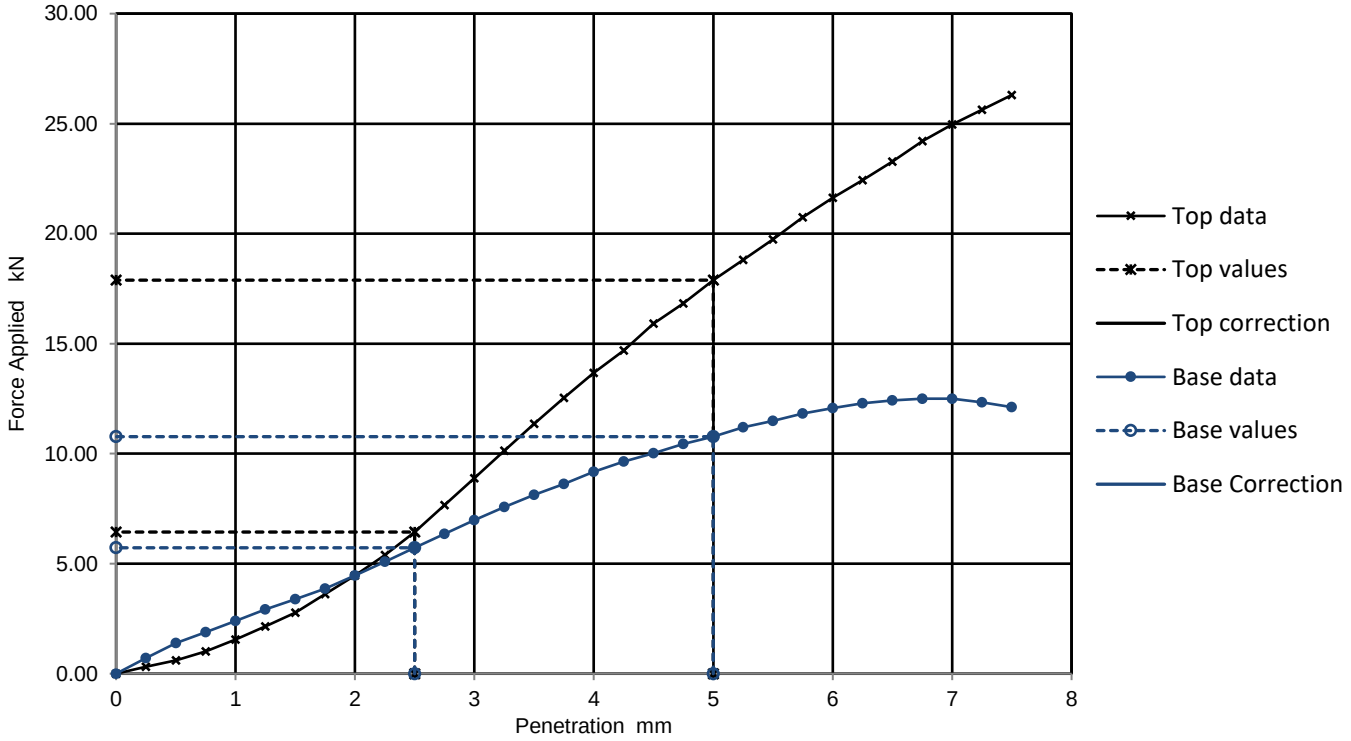
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP212
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051732
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.21	Mg/m3	Surcharge applied	2	kg
	Dry density	2.01	Mg/m3		1	kPa
	Moisture content	10.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		49.0	89.0	89.0		
BASE		43.0	54.0	54.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	108

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

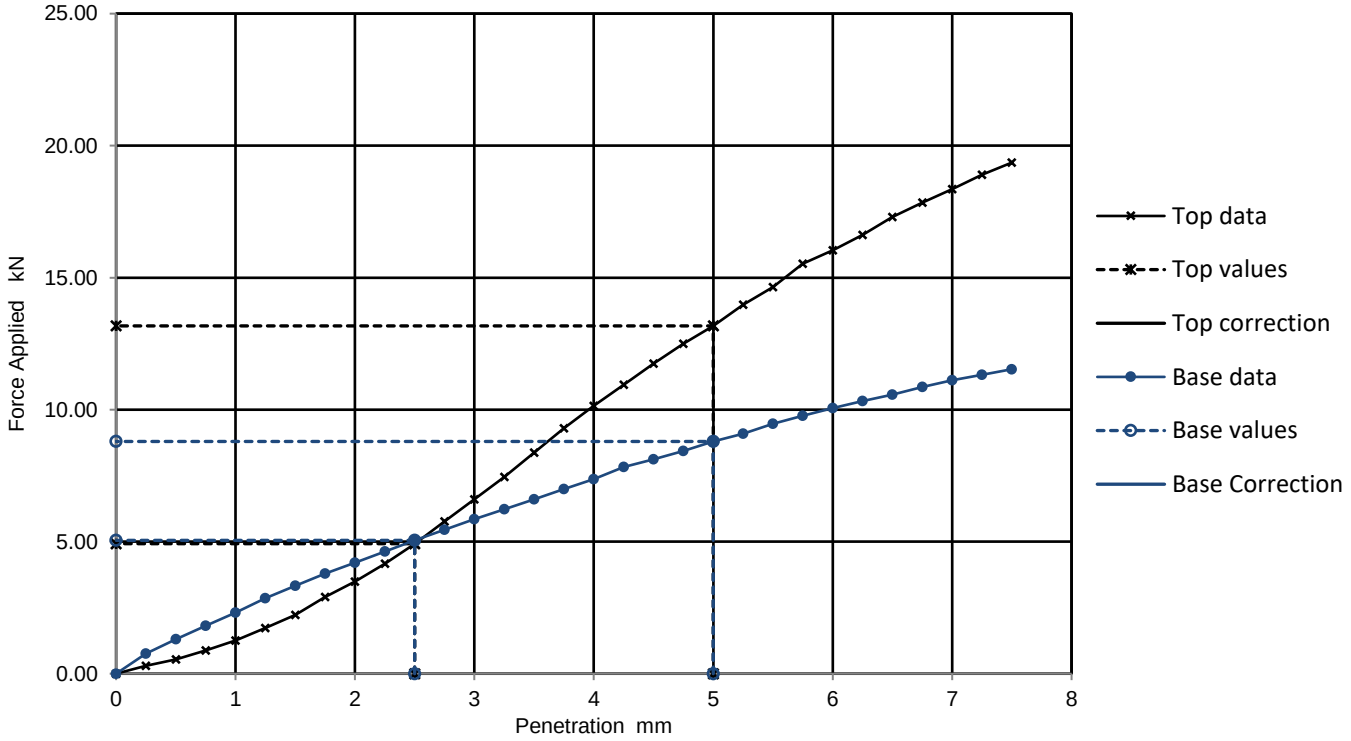
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP212
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051732
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.18	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	9.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		37.0	66.0	66.0		
BASE		38.0	44.0	44.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	109

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

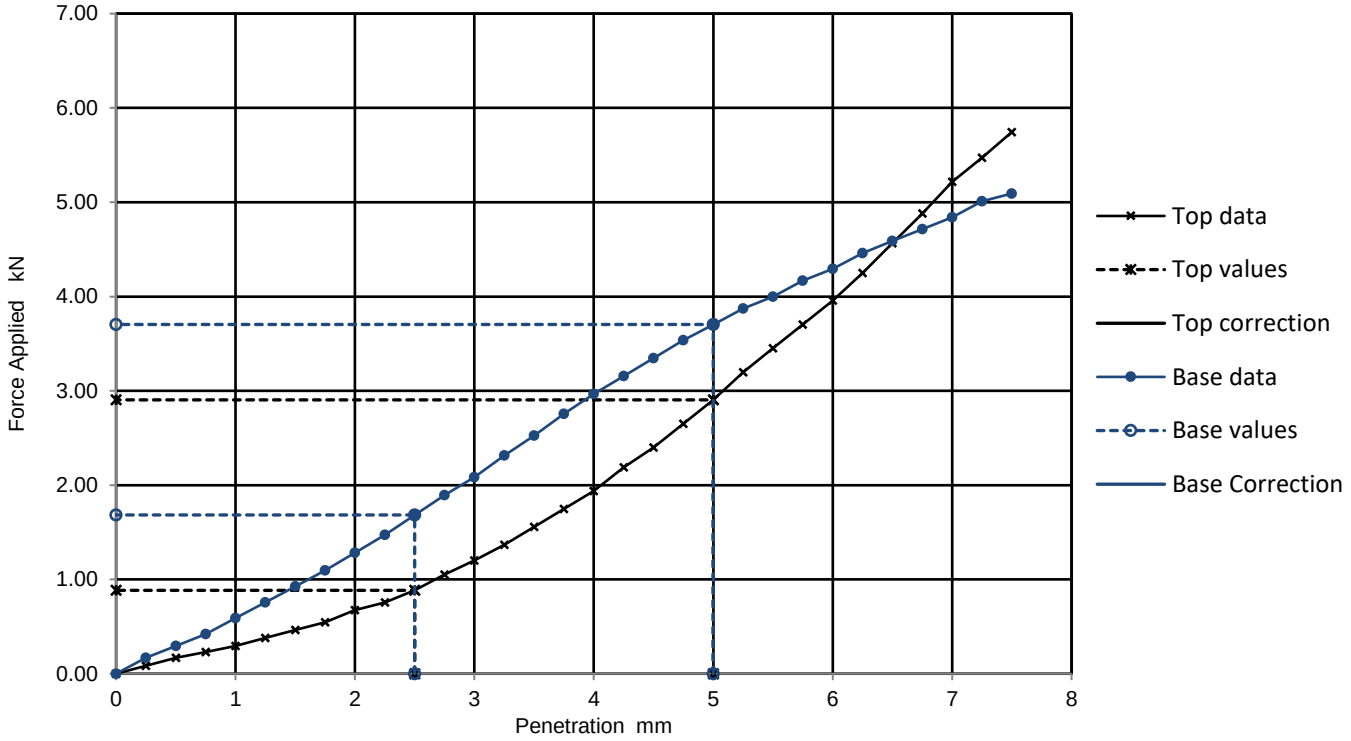
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP212
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051732
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.20	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	11.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		6.7	15.0	15.0		
BASE		13.0	19.0	19.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	110

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

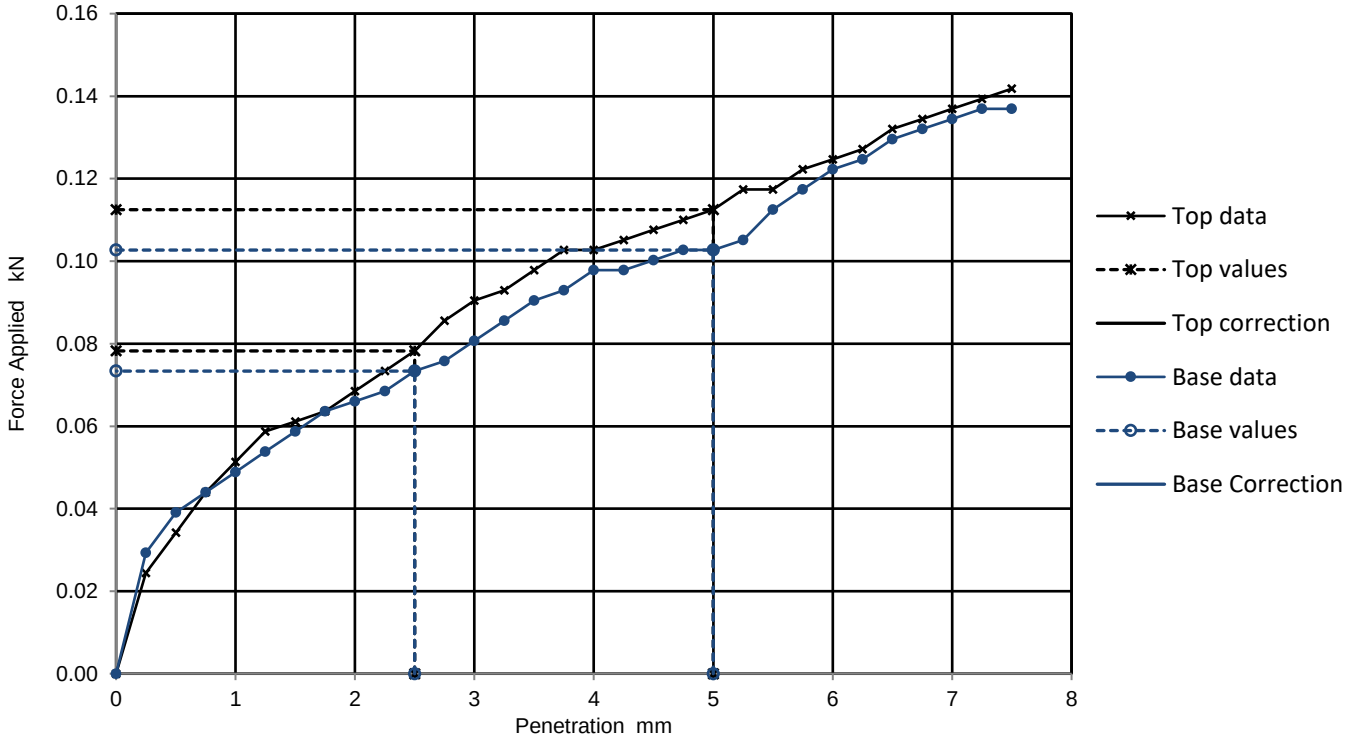
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP216
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description	Brown slightly gravelly sandy SILT.			Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051738
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.99	Mg/m3	Surcharge applied	kg
	Dry density	1.64	Mg/m3		kPa
	Moisture content	21.7	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.6	0.6	0.6	0.6	
BASE		0.6	0.5	0.6		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	111

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

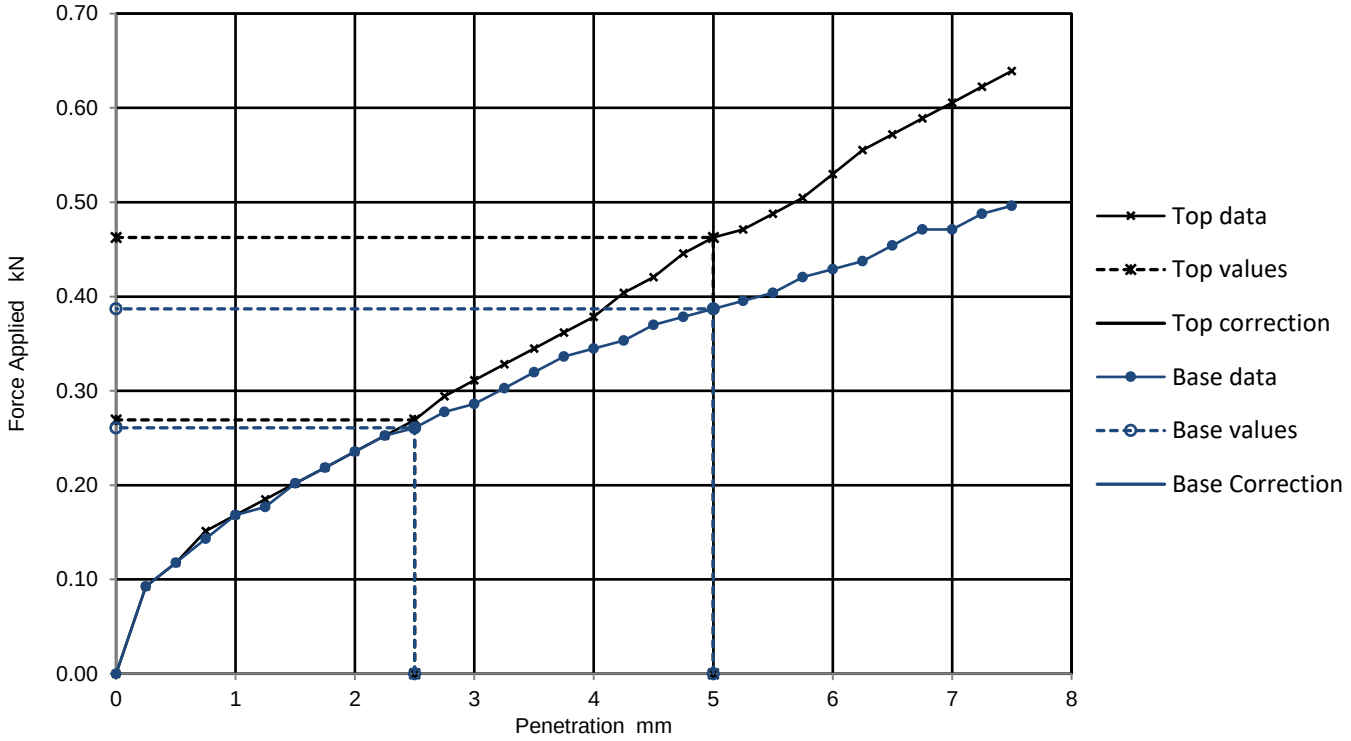
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP216
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051738
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	2	kg
	Dry density	1.70	Mg/m3		1	kPa
	Moisture content	21.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.0	2.3	2.3	2.1	
BASE		2.0	1.9	2.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	112

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

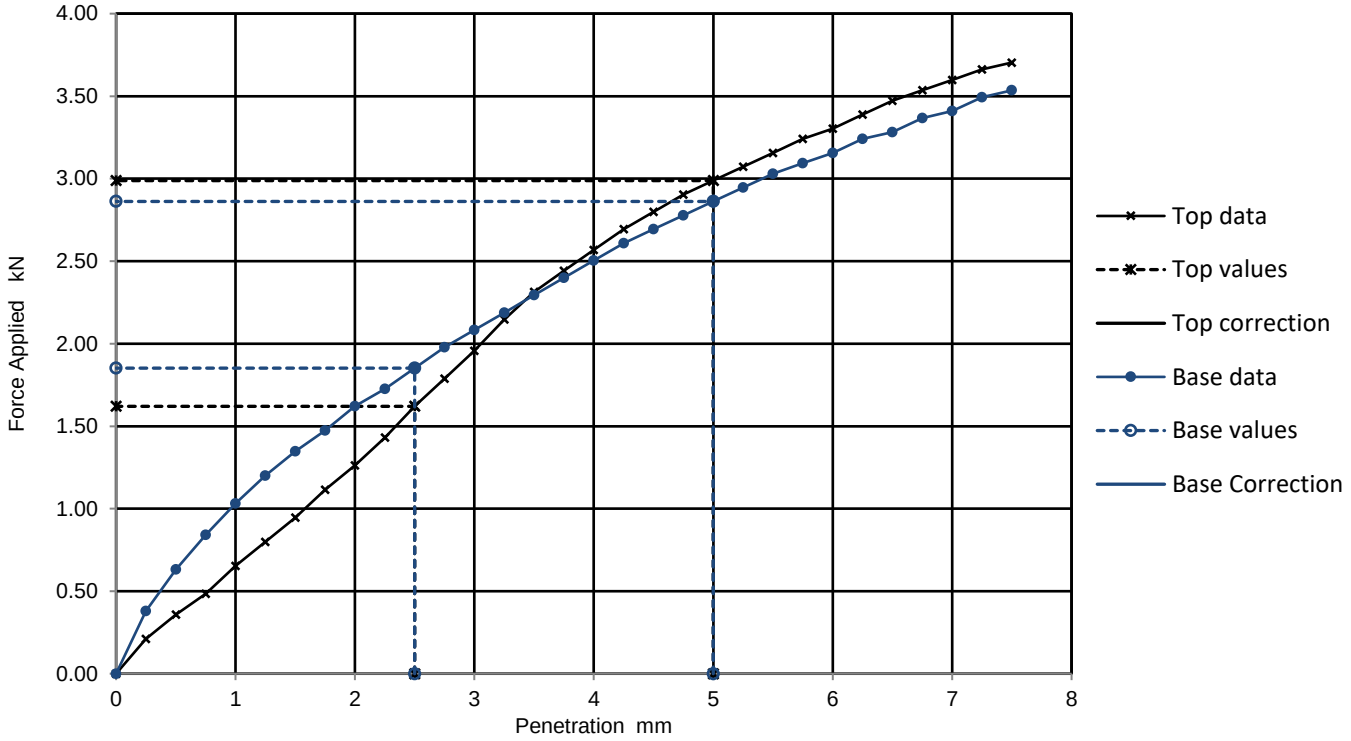
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP216
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051738
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	2	kg
	Dry density	1.74	Mg/m3		1	kPa
	Moisture content	14.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		12.0	15.0	15.0	15.0	
BASE		14.0	14.0	14.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	113

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

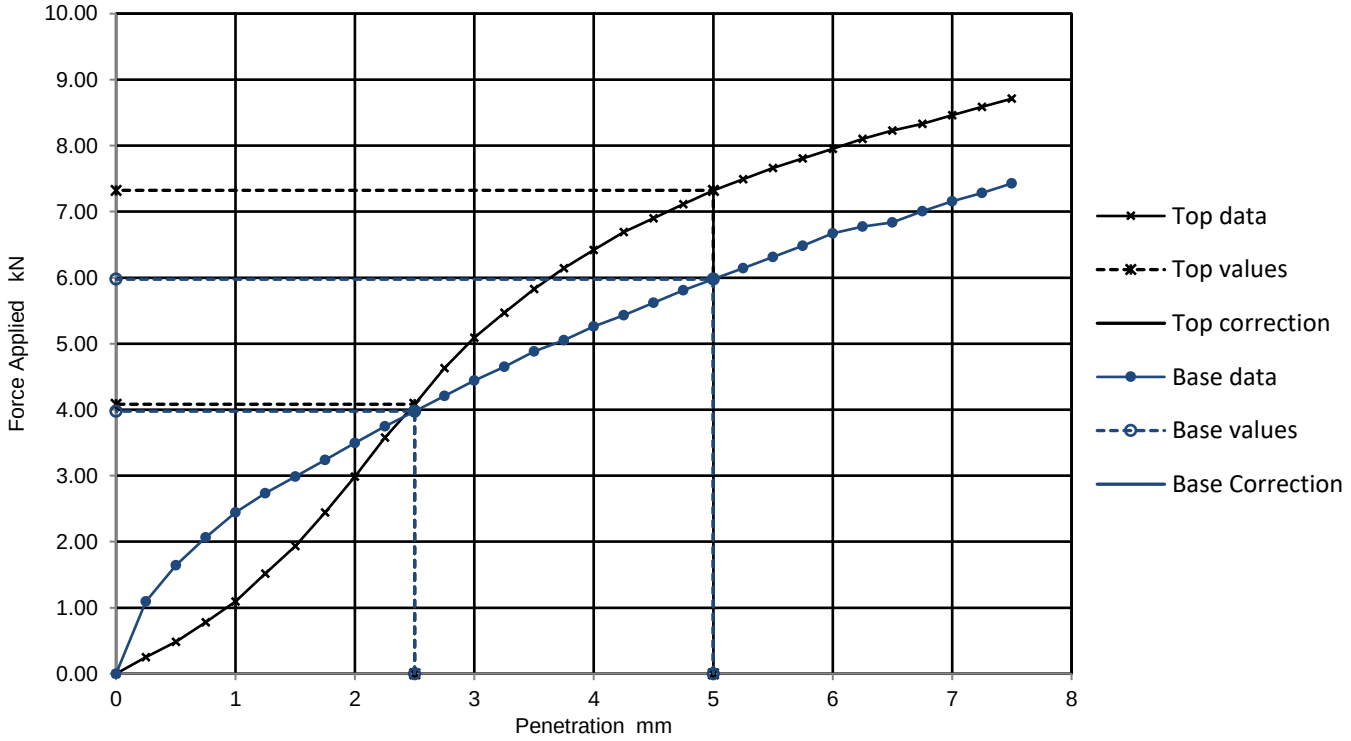
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP216
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051738
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.80	Mg/m3	Surcharge applied	2	kg
	Dry density	1.65	Mg/m3		1	kPa
	Moisture content	9.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		31.0	37.0	37.0	33.0	
BASE		30.0	30.0	30.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	114

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

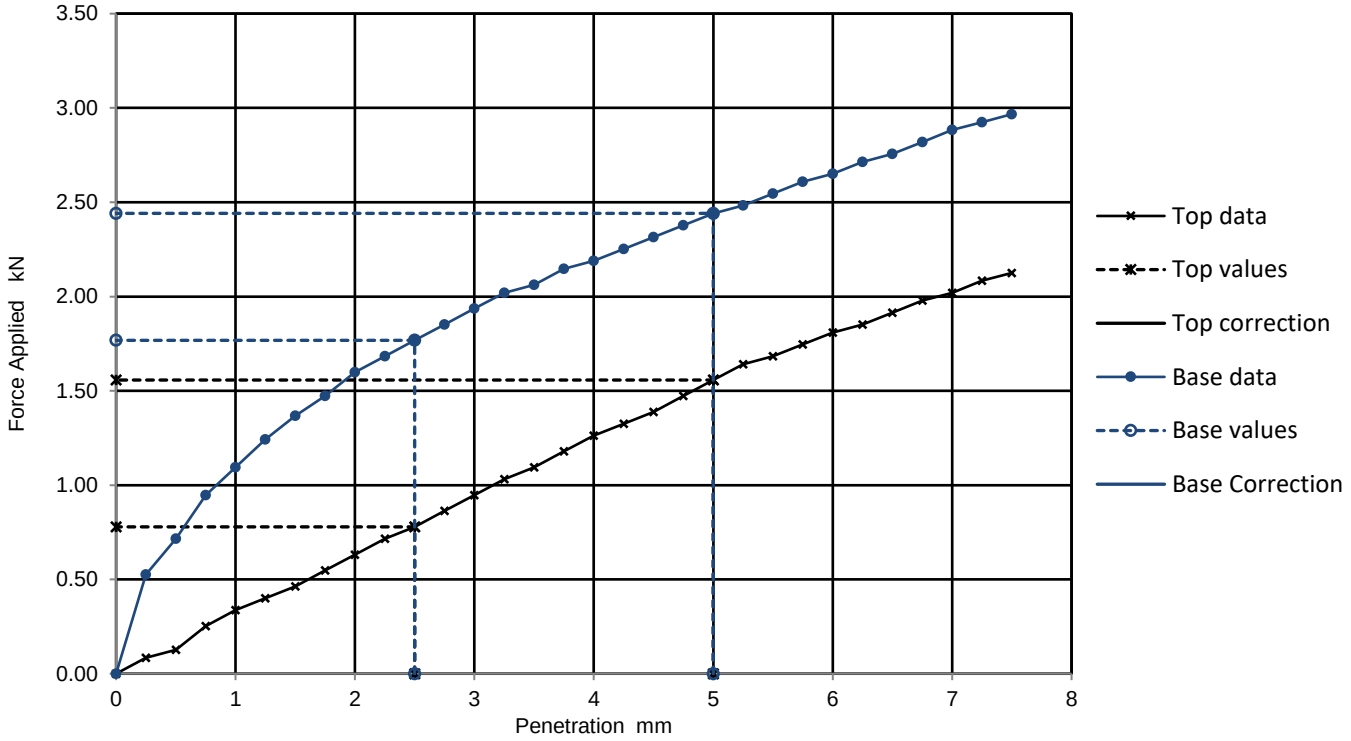
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP216
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051738
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.10	Mg/m3	Surcharge applied	2	kg
	Dry density	1.78	Mg/m3		1	kPa
	Moisture content	17.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		5.9	7.8	7.8		
BASE		13.0	12.0	13.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	115

Lab Sheet Reference : 01/11/2023

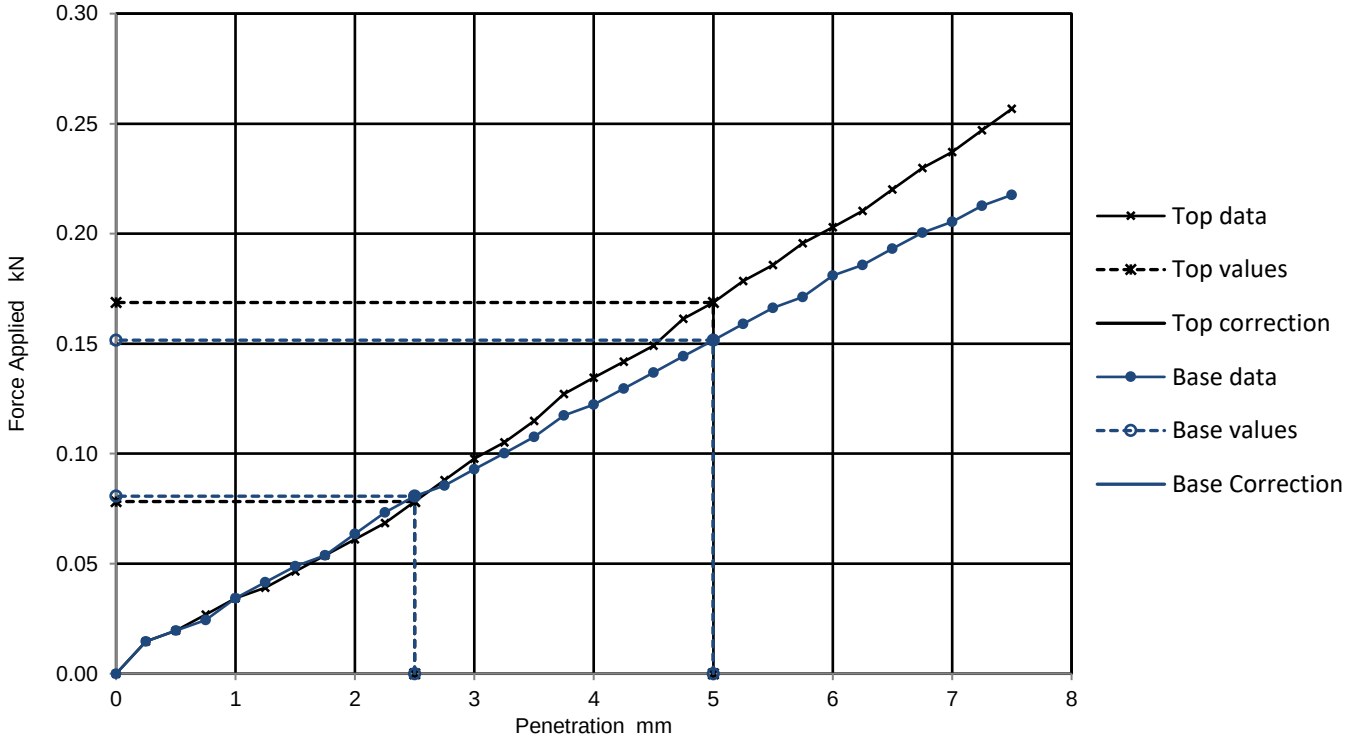
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP217
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Greyish-brown slightly gravelly sandy SILT.			Depth m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051747
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		15	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.29	Mg/m3	Surcharge applied	2	kg
	Dry density	2.06	Mg/m3		1	kPa
	Moisture content	10.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.6	0.8	0.8	0.8	
BASE		0.6	0.8	0.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	116

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

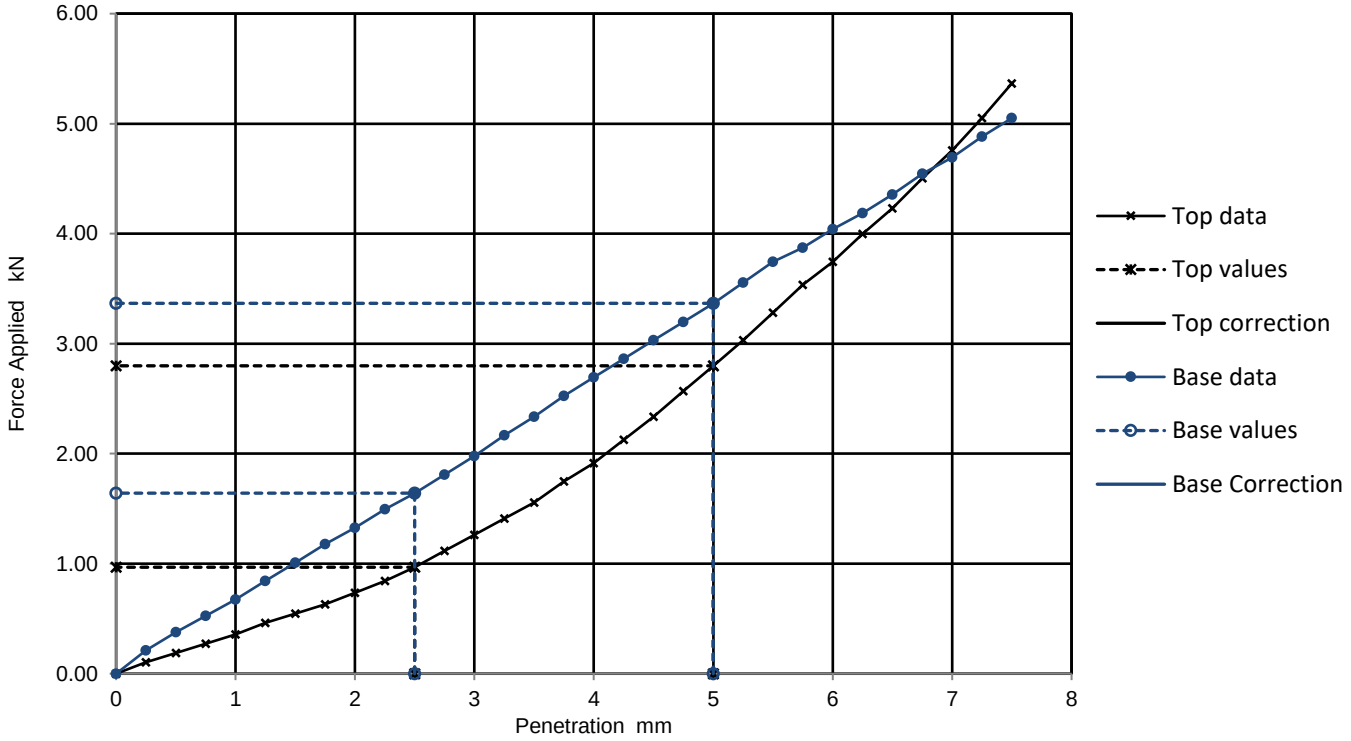
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP217
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051747
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.27	Mg/m3	Surcharge applied	2	kg
	Dry density	2.08	Mg/m3		1	kPa
	Moisture content	9.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		7.3	14.0	14.0	15.0	
BASE		12.0	17.0	17.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	117

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

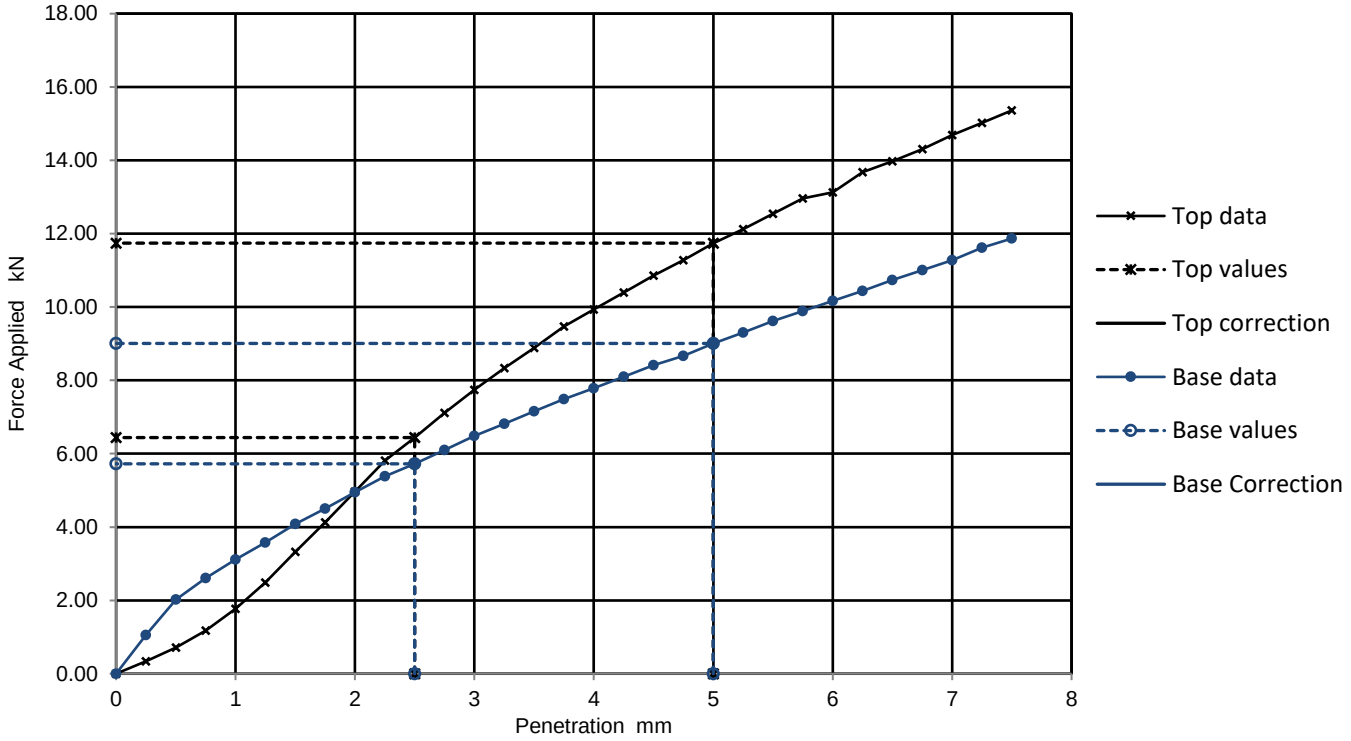
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP217
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051747
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	kg
	Dry density	2.01	Mg/m3		kPa
	Moisture content	7.2	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		49.0	59.0	59.0		
BASE		43.0	45.0	45.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	118

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

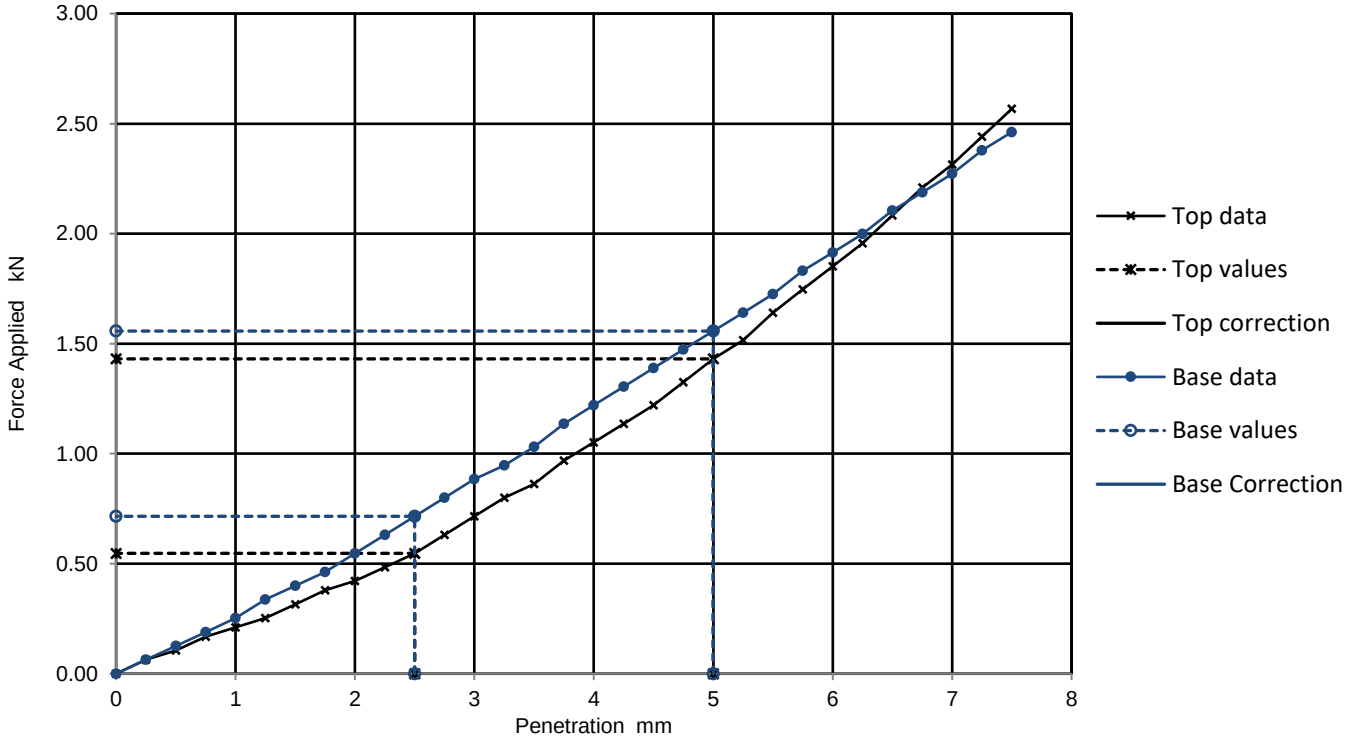
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP217
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051747
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.29	Mg/m3	Surcharge applied	2	kg
	Dry density	2.10	Mg/m3		1	kPa
	Moisture content	8.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.1	7.2	7.2	7.5	
BASE		5.4	7.8	7.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	119

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

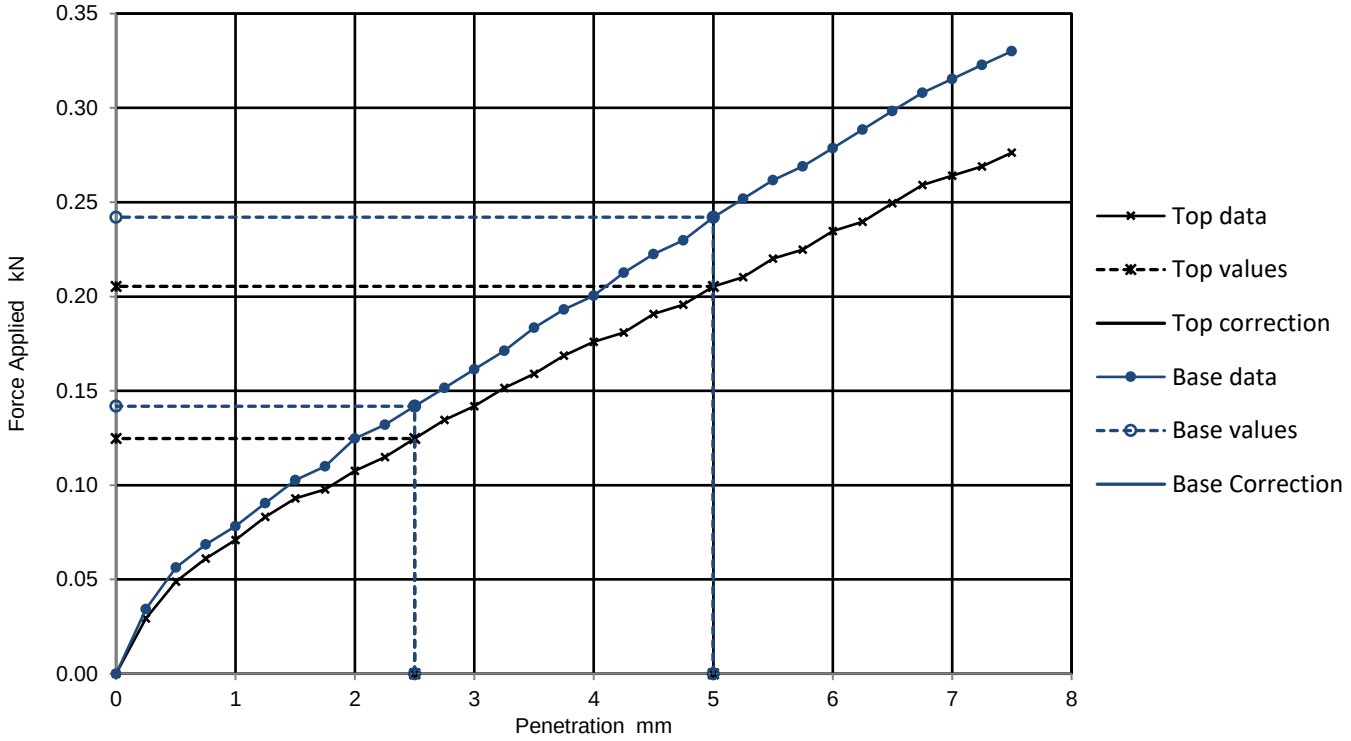
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP217
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051747
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.28	Mg/m3	Surcharge applied	kg
	Dry density	2.05	Mg/m3		kPa
	Moisture content	11.3	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.9	1.0	1.0	1.1	
BASE		1.1	1.2	1.2		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	120

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

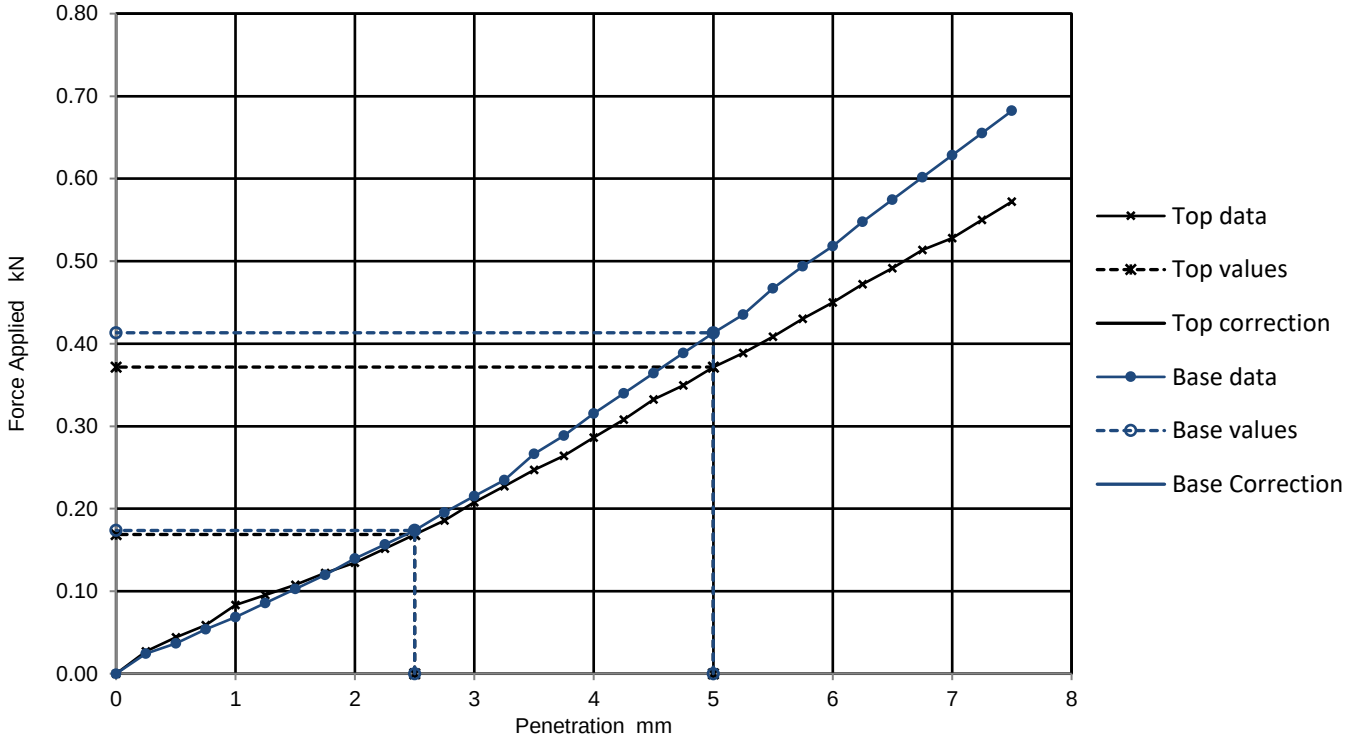
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP218
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description	Brown slightly sandy slightly gravelly SILT.			Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051753
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.22	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	11.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.3	1.9	1.9	2.0	
BASE		1.3	2.1	2.1		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	121

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

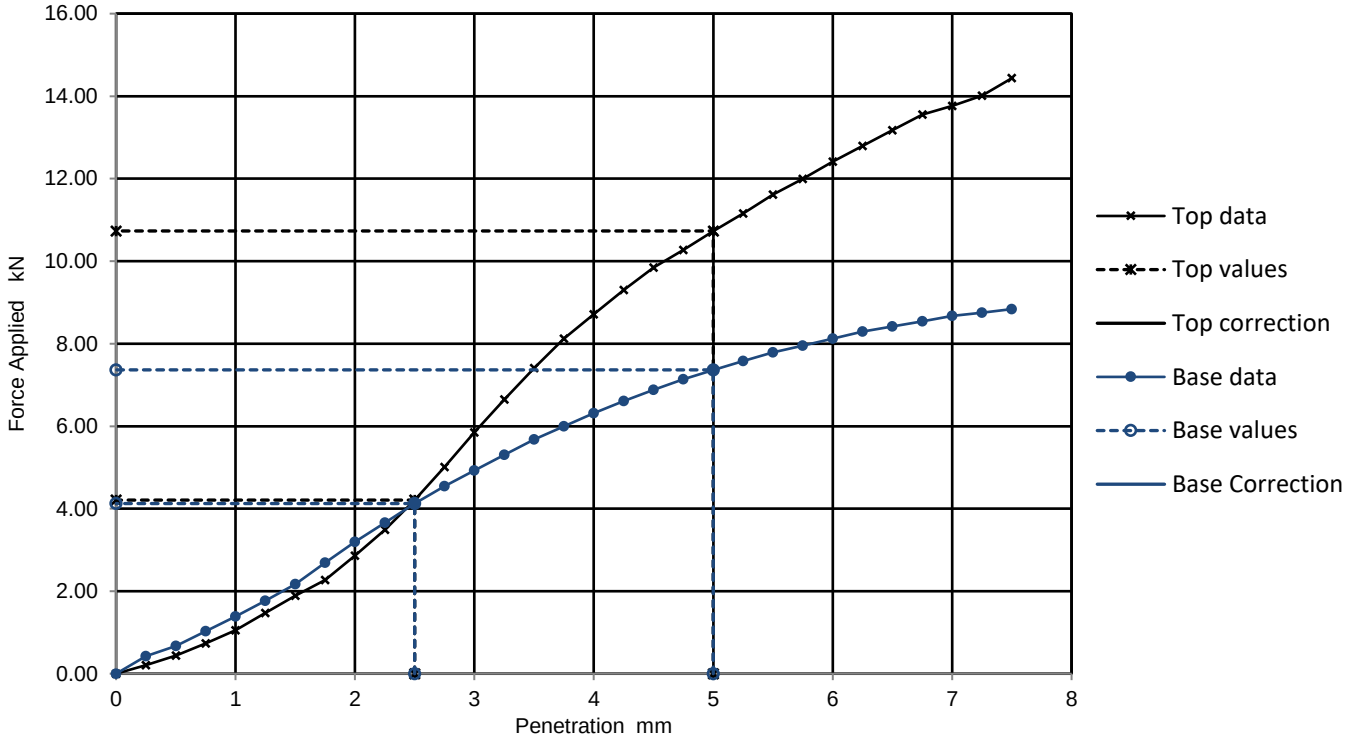
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP218
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051753
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	2	kg
	Dry density	1.94	Mg/m3		1	kPa
	Moisture content	9.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		32.0	54.0	54.0		
BASE		31.0	37.0	37.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	122

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

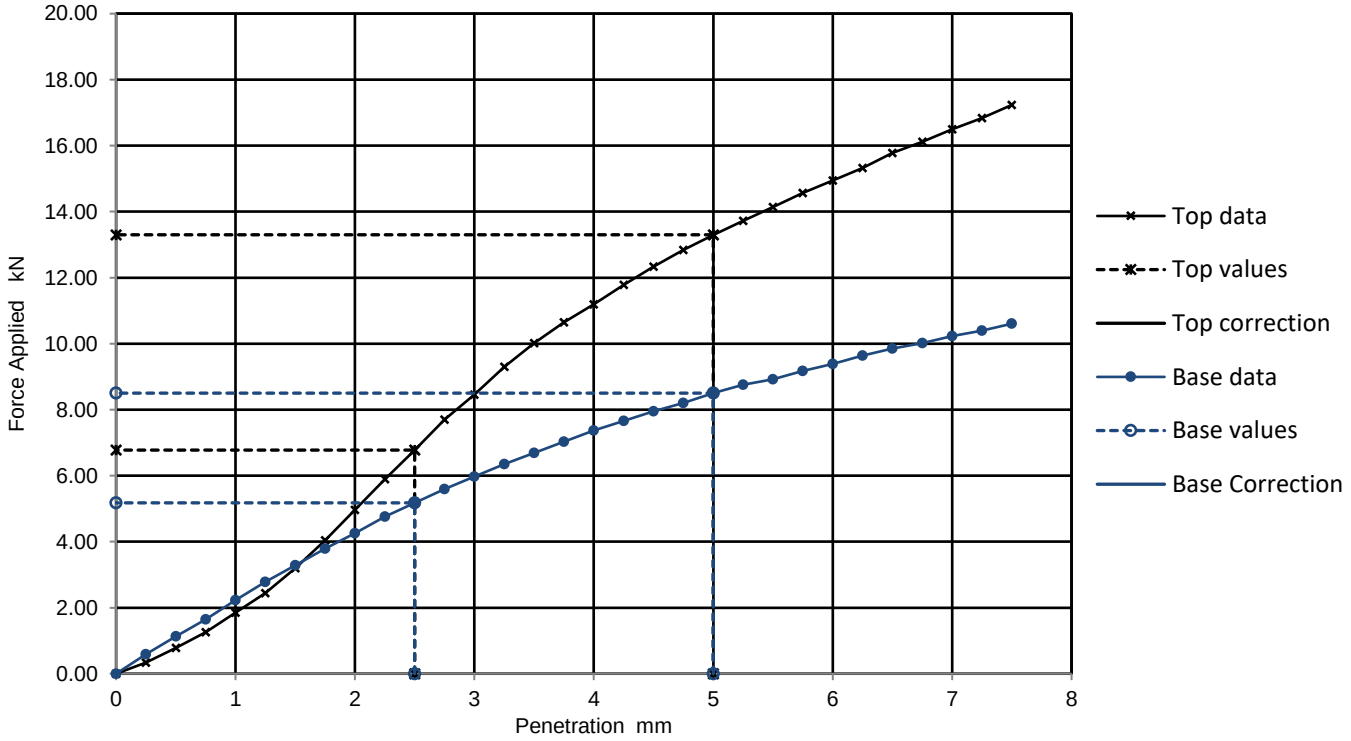
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP218
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051753
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.07	Mg/m3	Surcharge applied	2	kg
	Dry density	1.92	Mg/m3		1	kPa
	Moisture content	8.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		51.0	66.0	66.0		
BASE		39.0	43.0	43.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	123

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

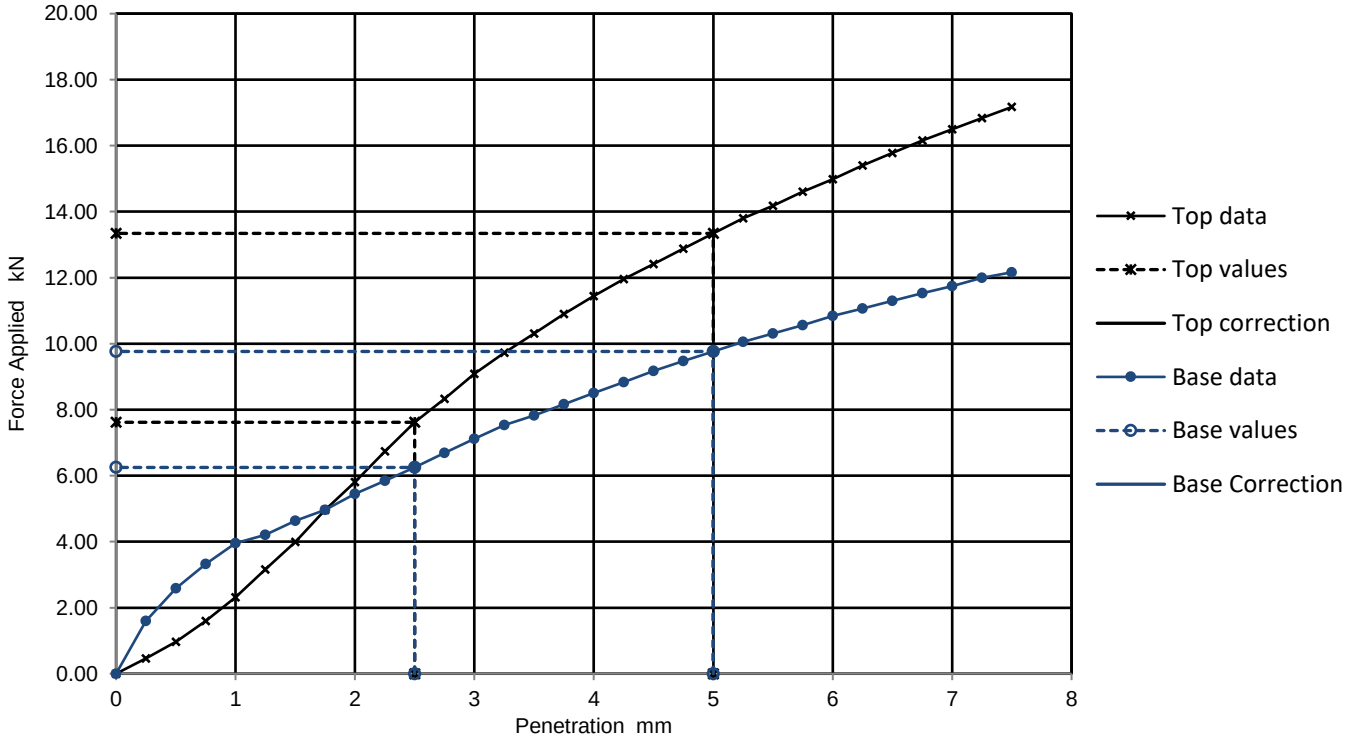
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP218
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051753
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.03	Mg/m3	Surcharge applied	2	kg
	Dry density	1.93	Mg/m3		1	kPa
	Moisture content	5.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		58.0	67.0	67.0		
BASE		47.0	49.0	49.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	124

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

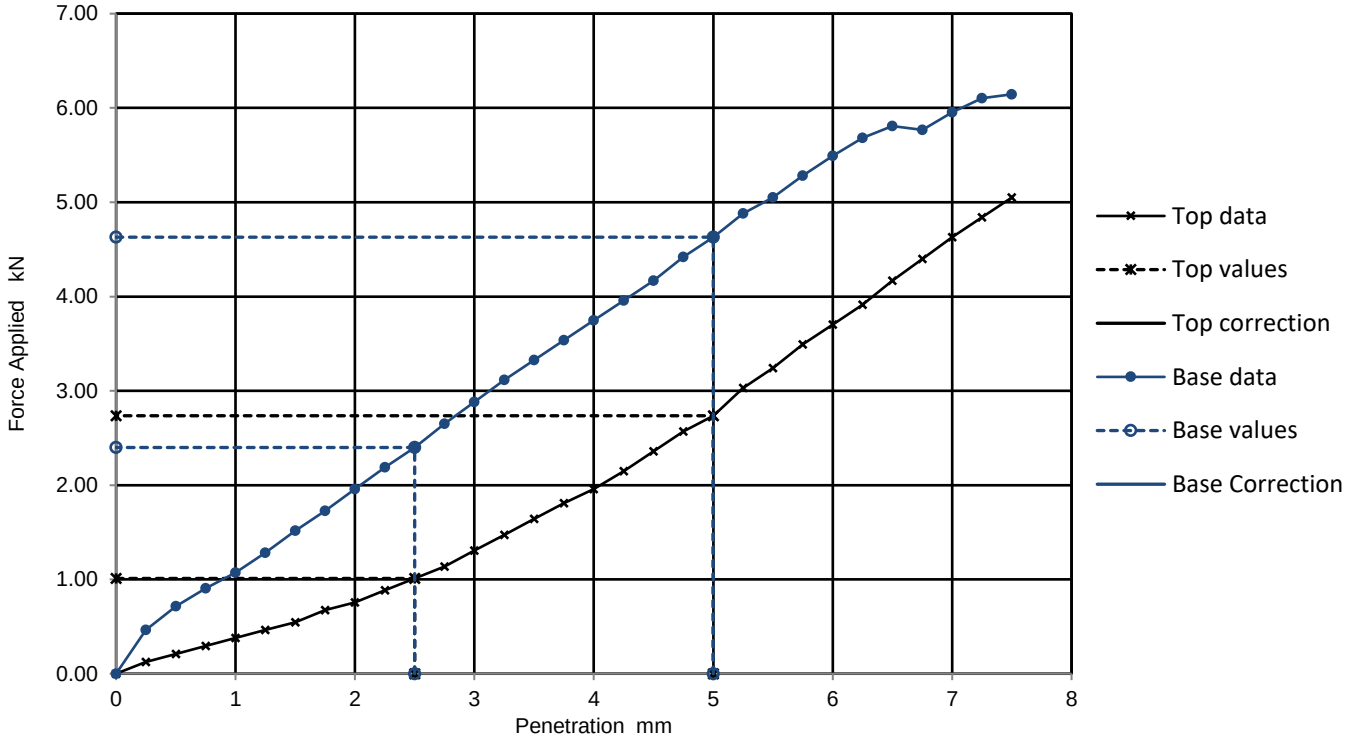
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP218
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051753
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.20	Mg/m3	Surcharge applied	kg
	Dry density	1.98	Mg/m3		kPa
	Moisture content	11.1	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		7.7	14.0	14.0		
BASE		18.0	23.0	23.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	125

Lab Sheet Reference : 01/11/2023

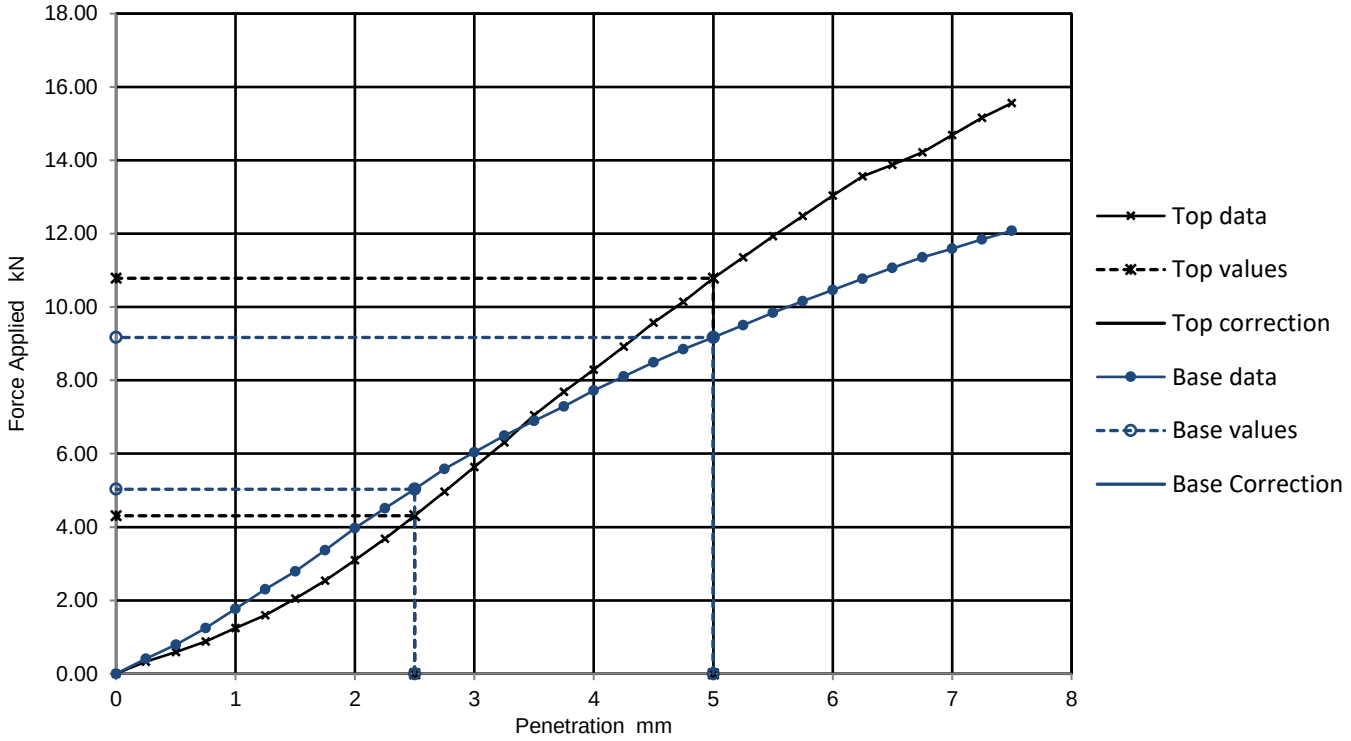
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP220
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Greyish-brown very silty SAND and GRAVEL.			Depth m	2.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051771
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		5	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	2	kg
	Dry density	1.91	Mg/m3		1	kPa
	Moisture content	12.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		33.0	54.0	54.0	50.0	
BASE		38.0	46.0	46.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	126

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

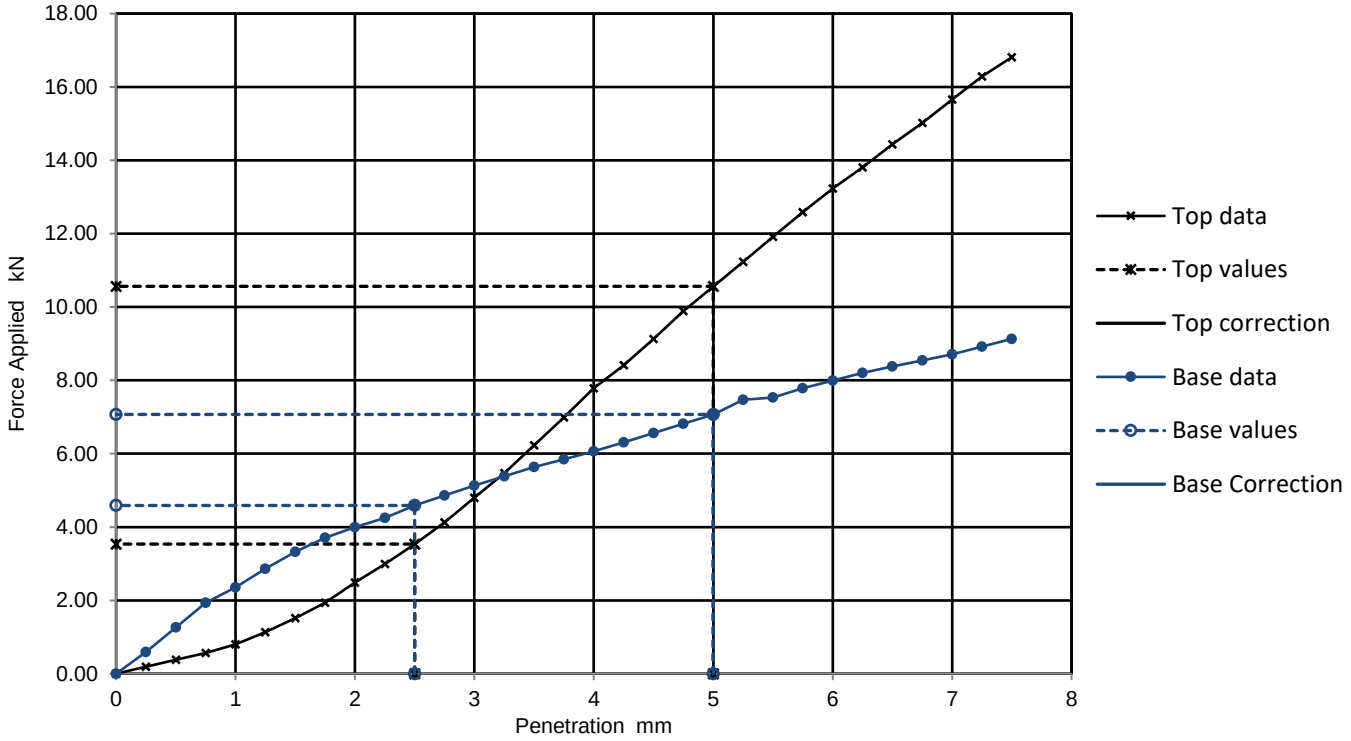
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP220
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	2.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051771
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	2	kg
	Dry density	1.86	Mg/m3		1	kPa
	Moisture content	10.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		27.0	53.0	53.0		
BASE		35.0	35.0	35.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	127

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

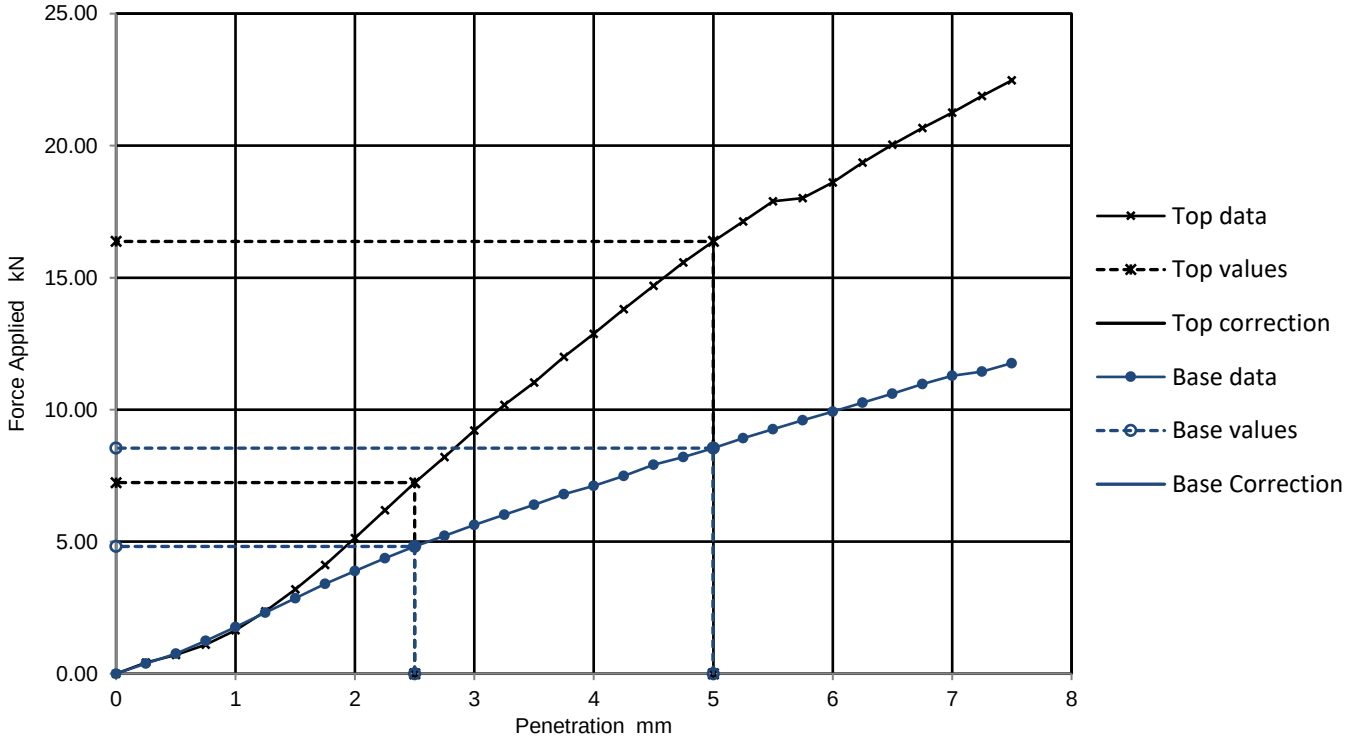
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP220
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	2.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051771
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.84	Mg/m3		1	kPa
	Moisture content	9.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		55.0	82.0	82.0		
BASE		37.0	43.0	43.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	128

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

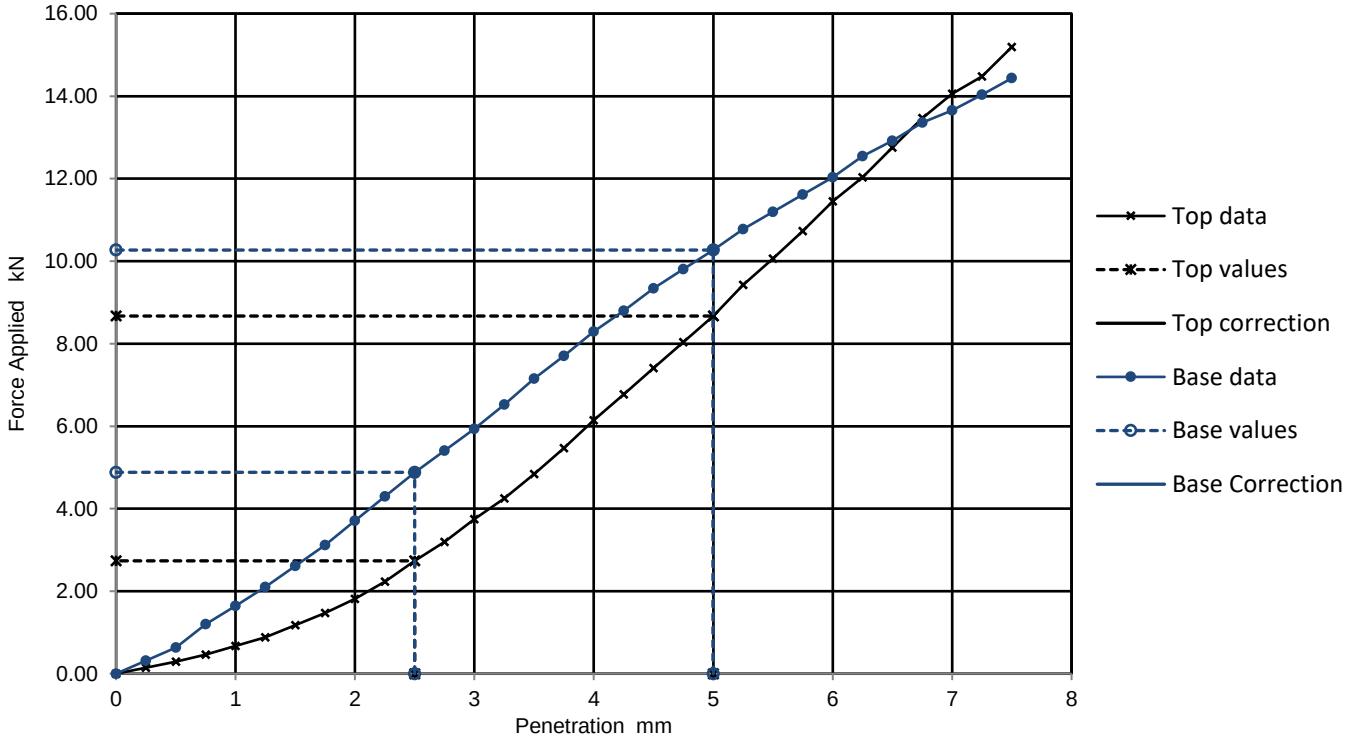
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP220
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	2.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051771
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.18	Mg/m3	Surcharge applied	2	kg
	Dry density	1.92	Mg/m3		1	kPa
	Moisture content	13.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		21.0	43.0	43.0	47.0	
BASE		37.0	51.0	51.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	129

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

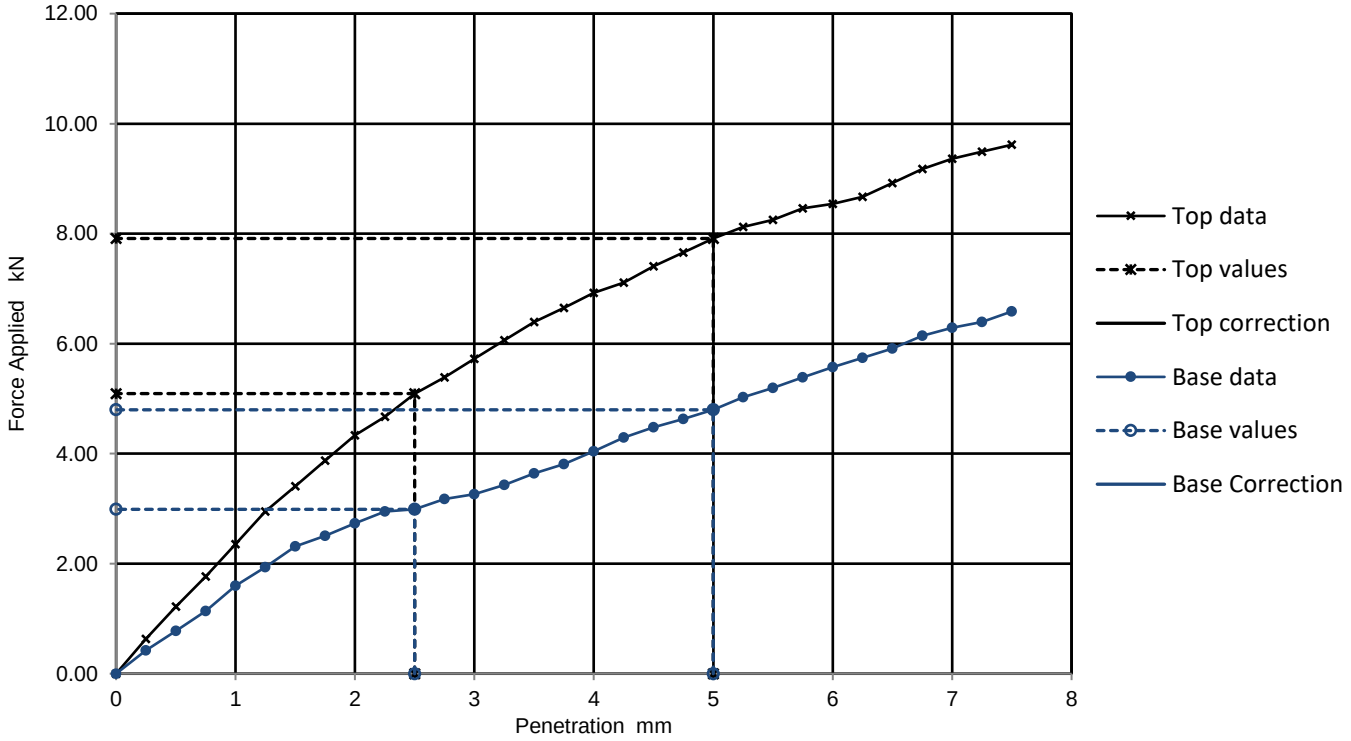
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP222
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description	Greyish-black very silty very sandy fine GRAVEL.			Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202306224
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.92	Mg/m3	Surcharge applied	2	kg
	Dry density	1.71	Mg/m3		1	kPa
	Moisture content	12.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		39.0	40.0	40.0		
BASE		23.0	24.0	24.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	130

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

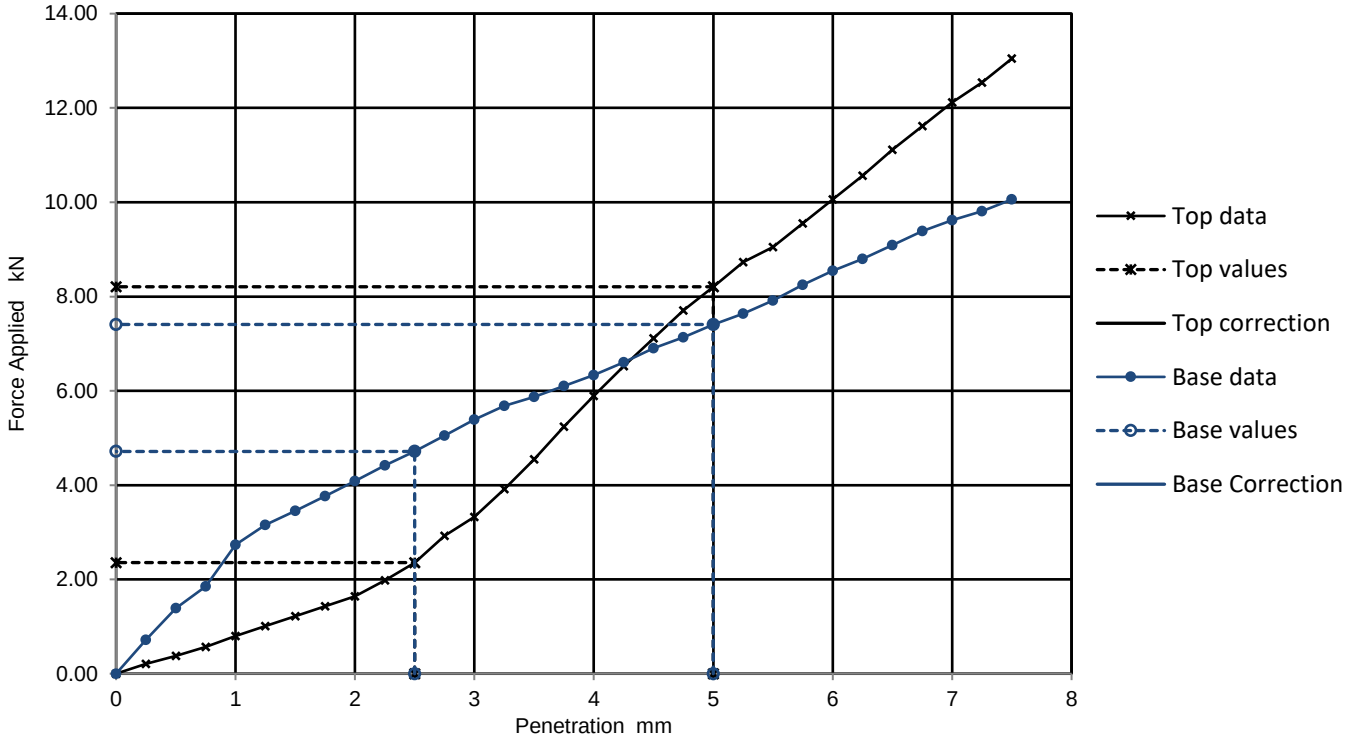
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP222
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202306224
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.87	Mg/m3	Surcharge applied	2	kg
	Dry density	1.67	Mg/m3		1	kPa
	Moisture content	11.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		18.0	41.0	41.0	39.0	
BASE		36.0	37.0	37.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	131

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

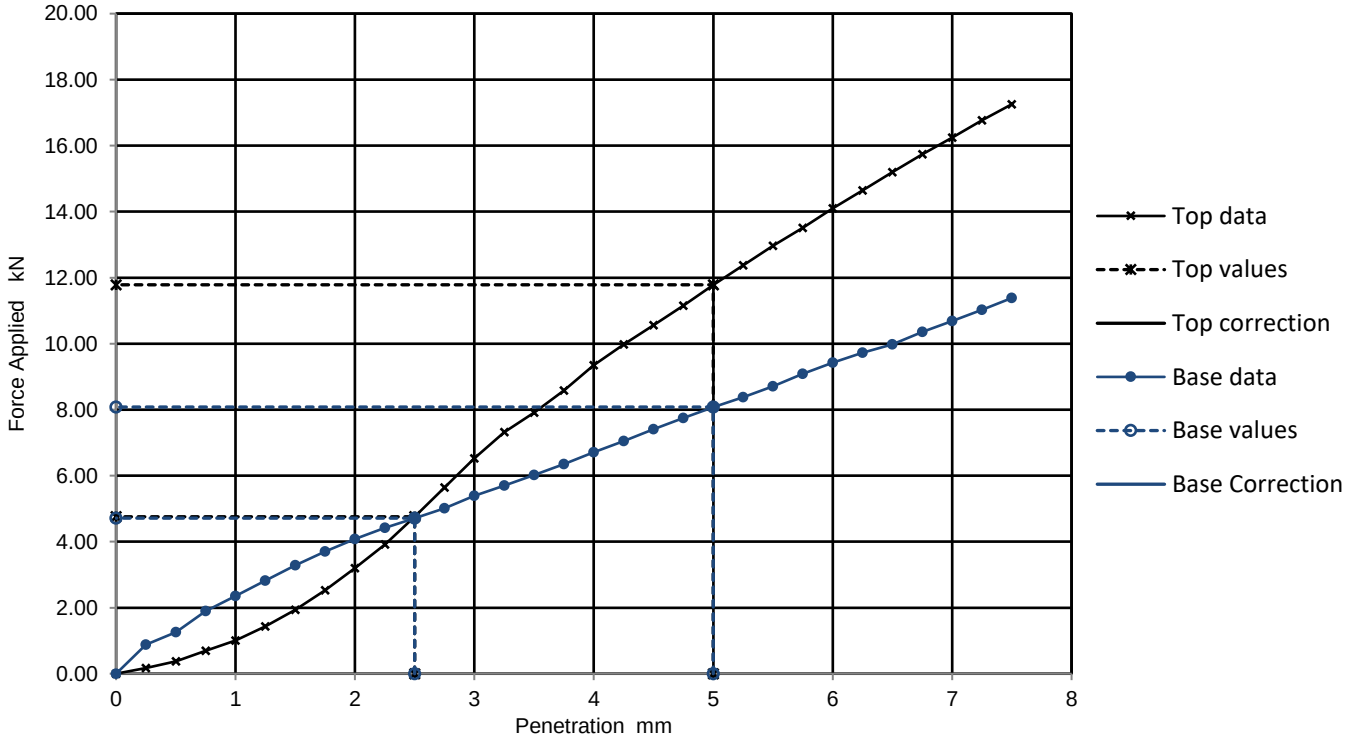
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP222
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202306224
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.89	Mg/m3	Surcharge applied	2	kg
	Dry density	1.71	Mg/m3		1	kPa
	Moisture content	10.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		36.0	59.0	59.0		
BASE		36.0	40.0	40.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	132

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

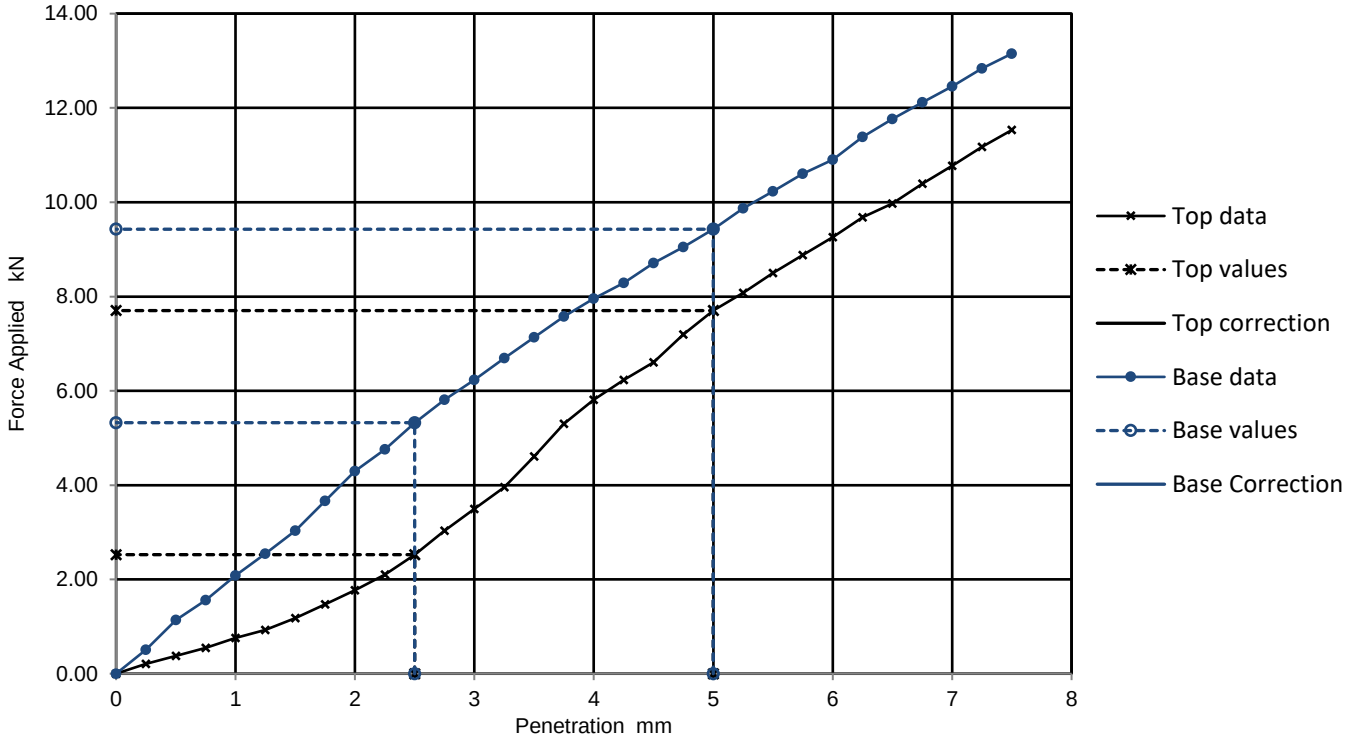
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP222
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202306224
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.99	Mg/m3	Surcharge applied	2	kg
	Dry density	1.78	Mg/m3		1	kPa
	Moisture content	12.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		19.0	39.0	39.0		
BASE		40.0	47.0	47.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	133

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

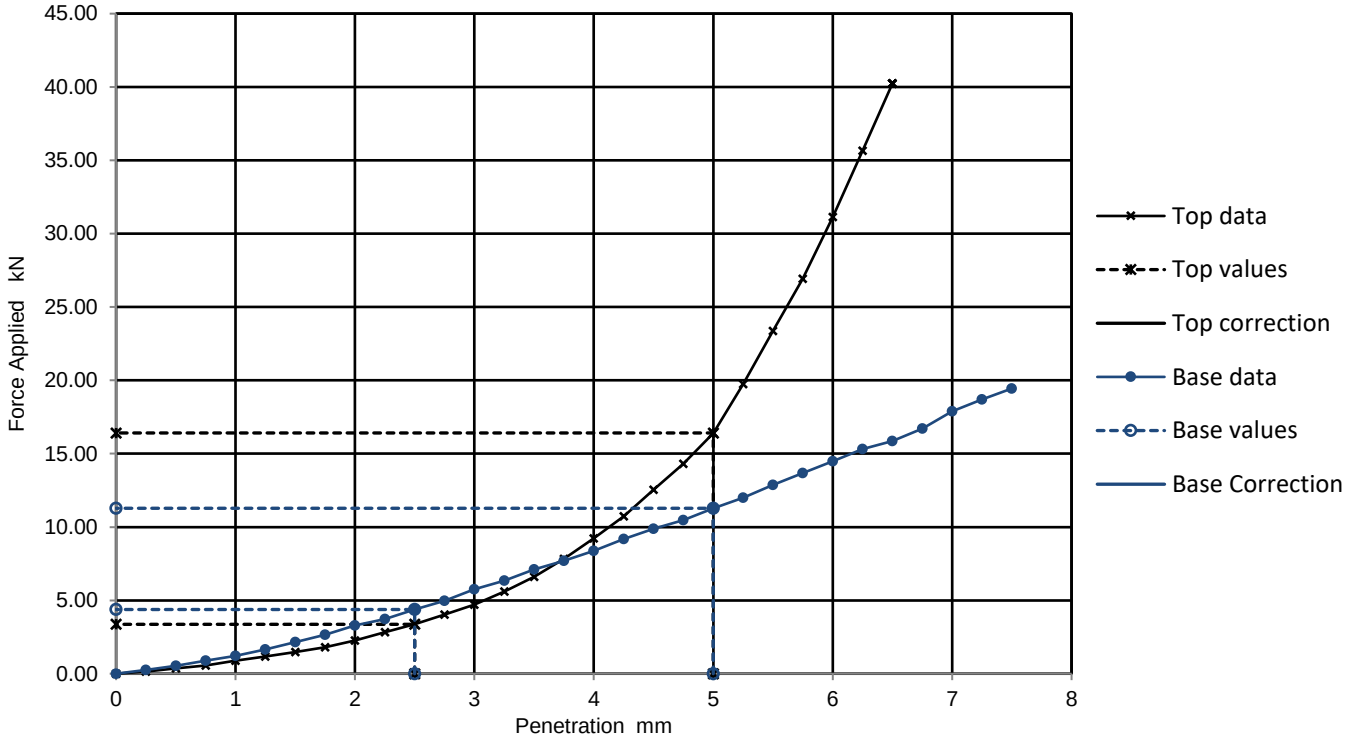
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP222
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202306224
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.18	Mg/m3	Surcharge applied	2	kg
	Dry density	1.92	Mg/m3		1	kPa
	Moisture content	13.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		26.0	82.0	82.0		
BASE		33.0	56.0	56.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	134

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

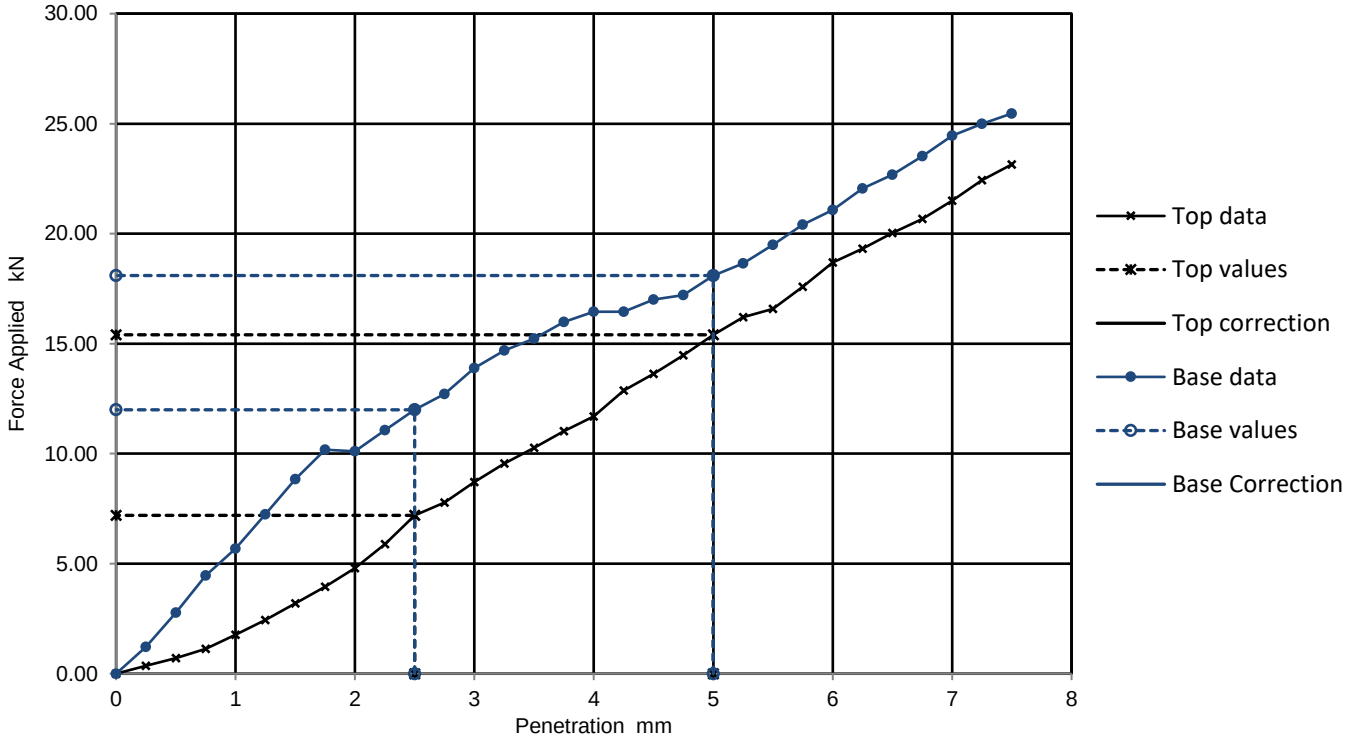
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP224
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description	Dark brown sandy very silty fine and medium GRAVEL.			Depth m	2.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202306228
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		19	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	2	kg
	Dry density	1.79	Mg/m3		1	kPa
	Moisture content	12.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		55.0	77.0	77.0	84.0	
BASE		91.0	90.0	91.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	135

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

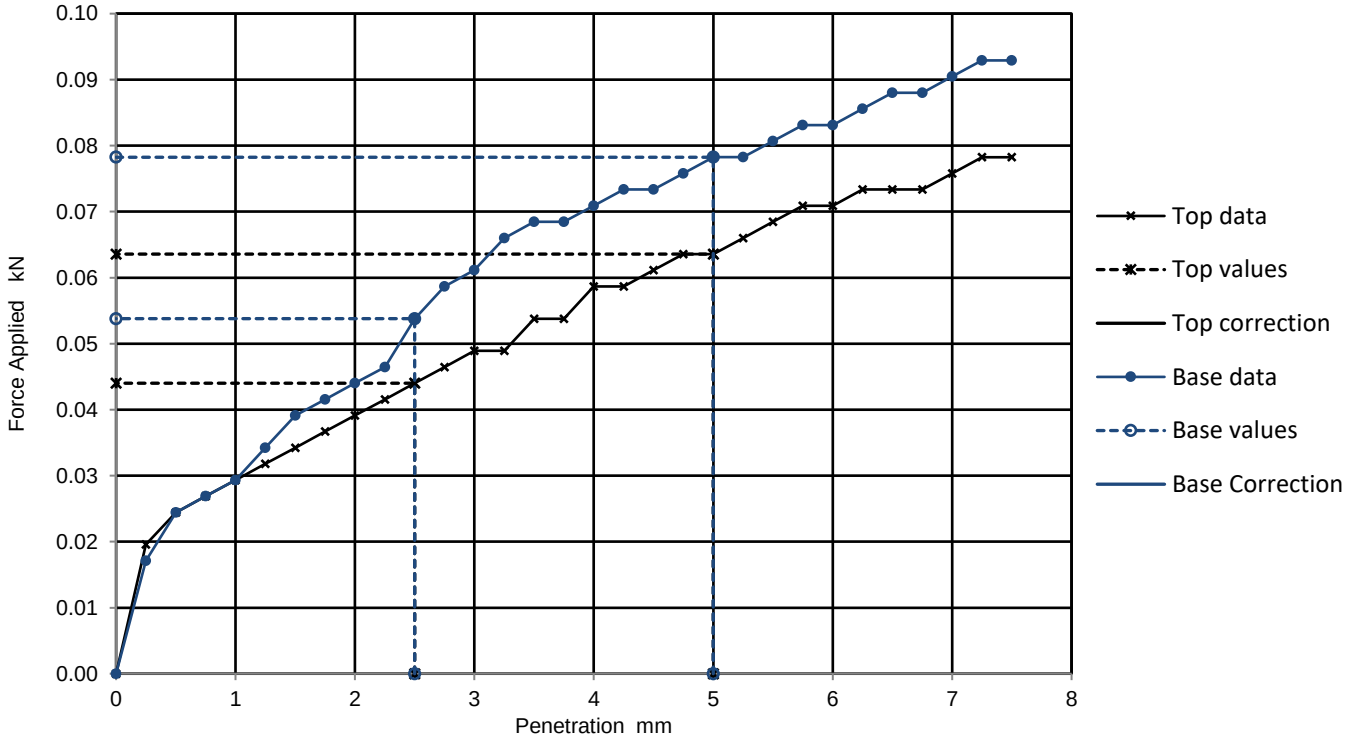
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPC09
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description	Bluish-grey slightly sandy gravelly SILT.			Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081625
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	12.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.3	0.3	0.3		
BASE		0.4	0.4	0.4		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	136

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

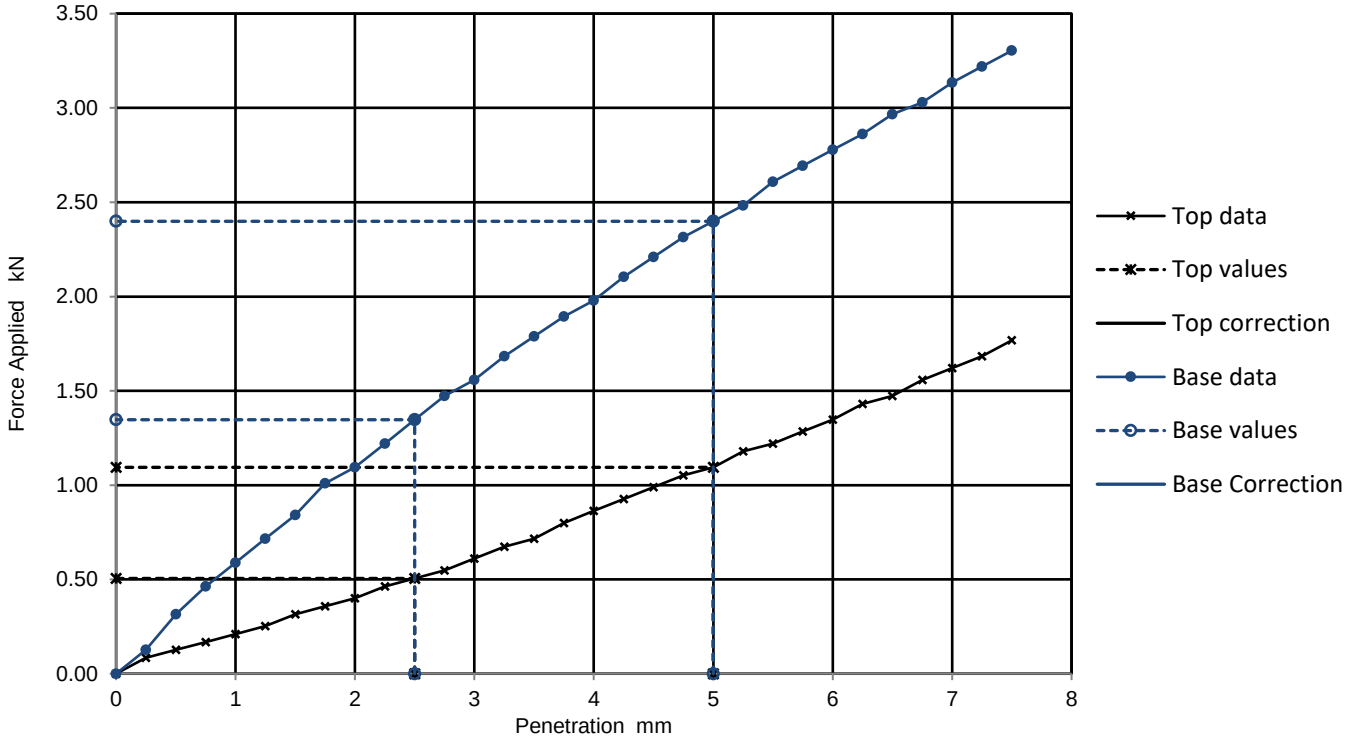
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPC09
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081625
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.26	Mg/m3	Surcharge applied	2	kg
	Dry density	2.07	Mg/m3		1	kPa
	Moisture content	9.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.8	5.5	5.5		
BASE		10.0	12.0	12.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	137

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

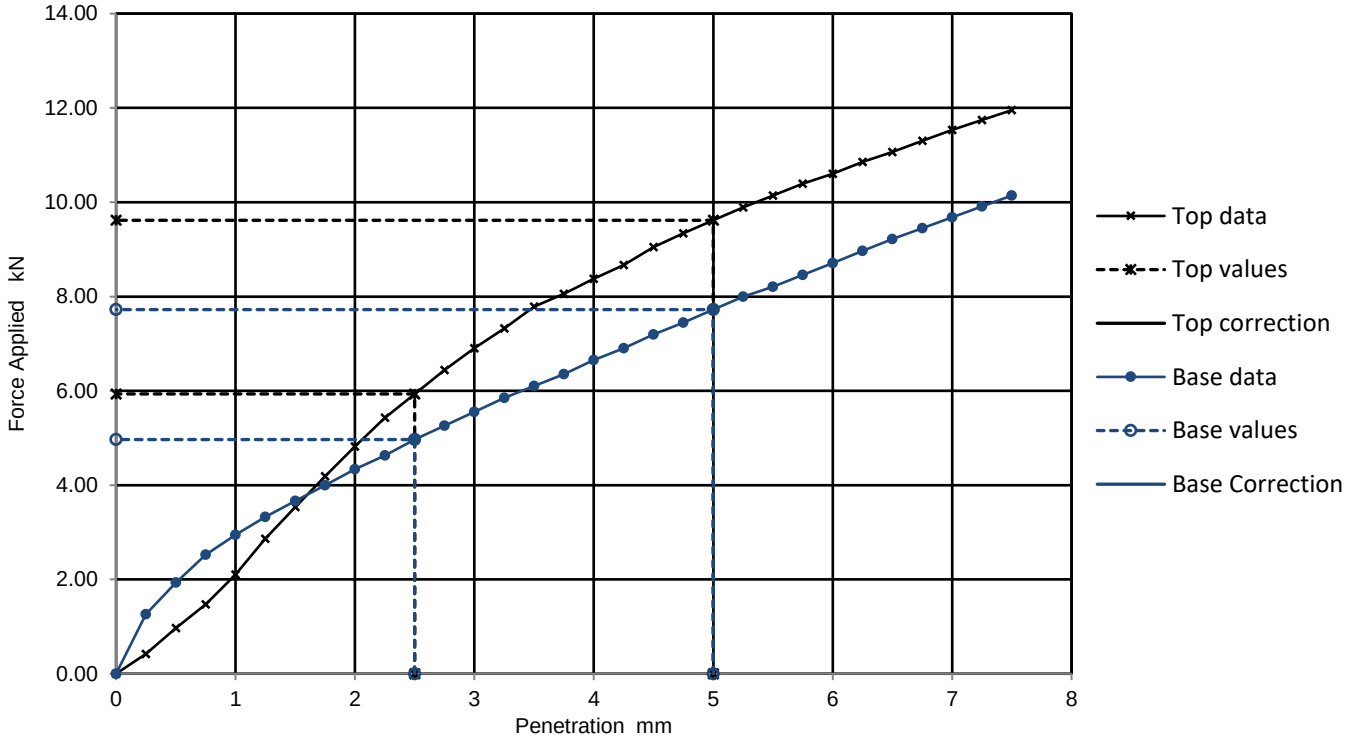
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPC09
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081625
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.11	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	6.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		45.0	48.0	48.0		
BASE		38.0	39.0	39.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	138

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

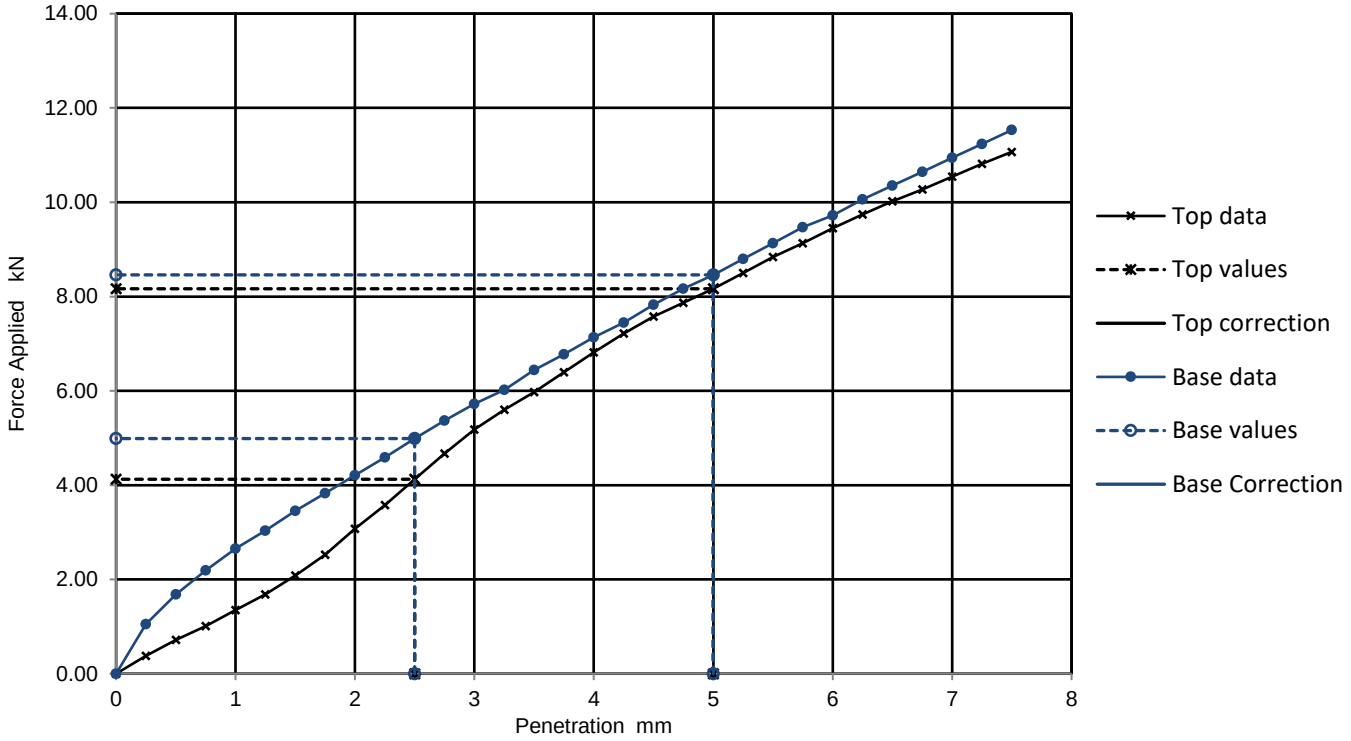
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPC09
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081625
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.20	Mg/m3	Surcharge applied	2	kg
	Dry density	2.07	Mg/m3		1	kPa
	Moisture content	6.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		31.0	41.0	41.0	42.0	
BASE		38.0	42.0	42.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	139

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

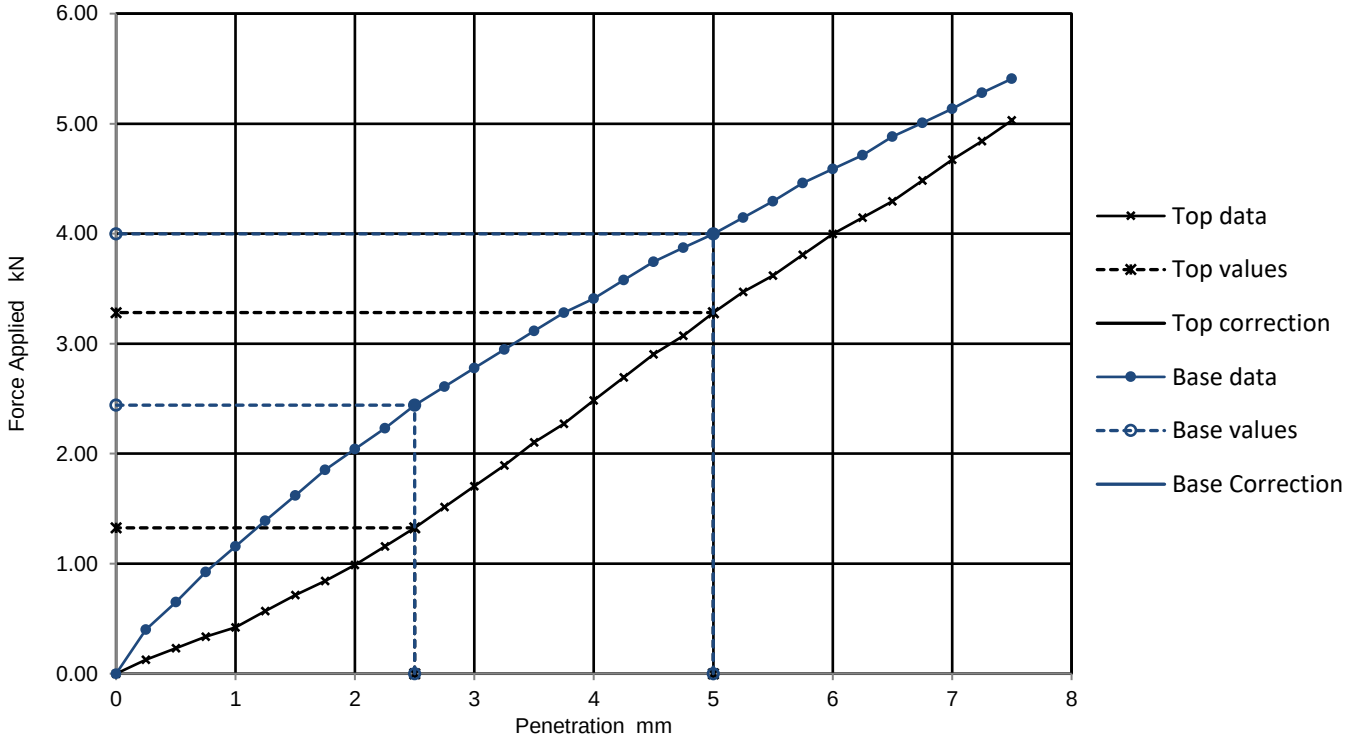
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPC09
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081625
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.26	Mg/m3	Surcharge applied	2	kg
	Dry density	2.07	Mg/m3		1	kPa
	Moisture content	9.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		10.0	16.0	16.0	18.0	
BASE		18.0	20.0	20.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	140

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

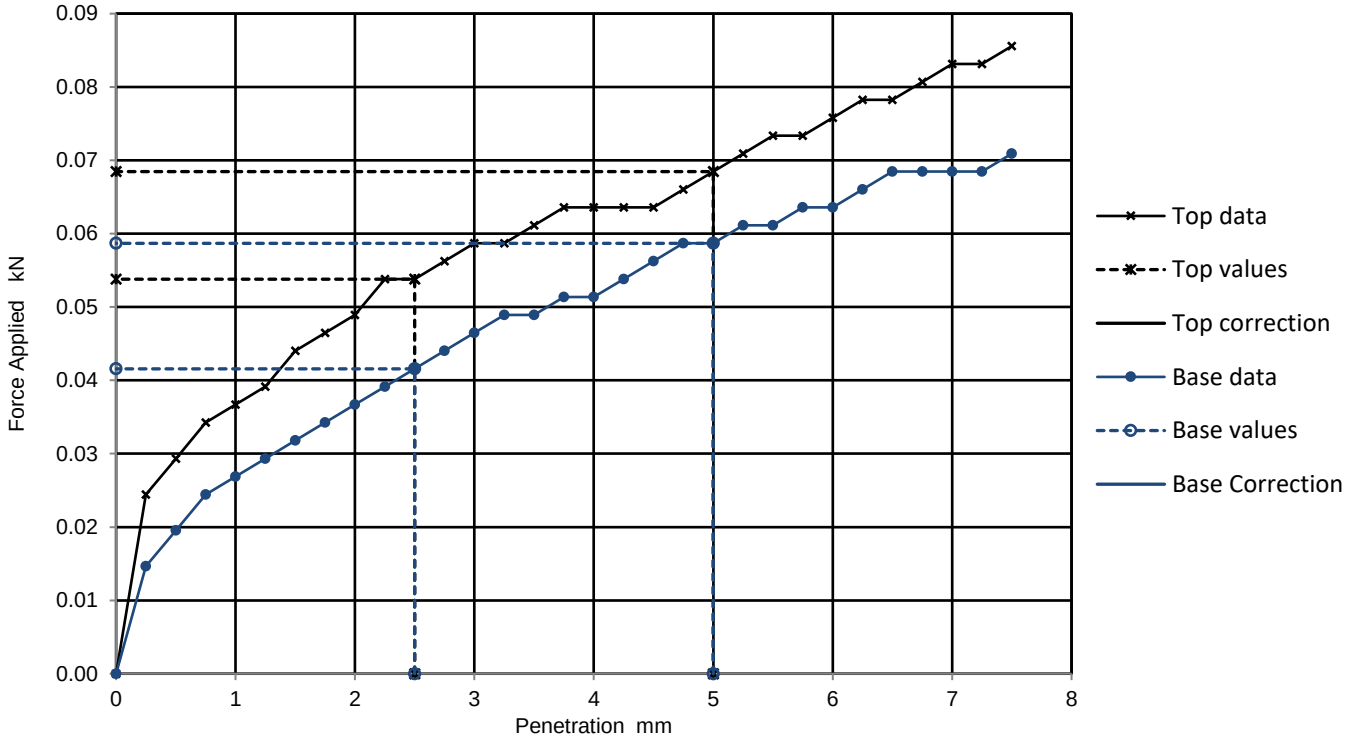
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Light grey very silty SAND and GRAVEL.			Depth m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081680
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.29	Mg/m3	Surcharge applied	2	kg
	Dry density	2.05	Mg/m3		1	kPa
	Moisture content	11.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.4	0.3	0.4		
BASE		0.3	0.3	0.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	141

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

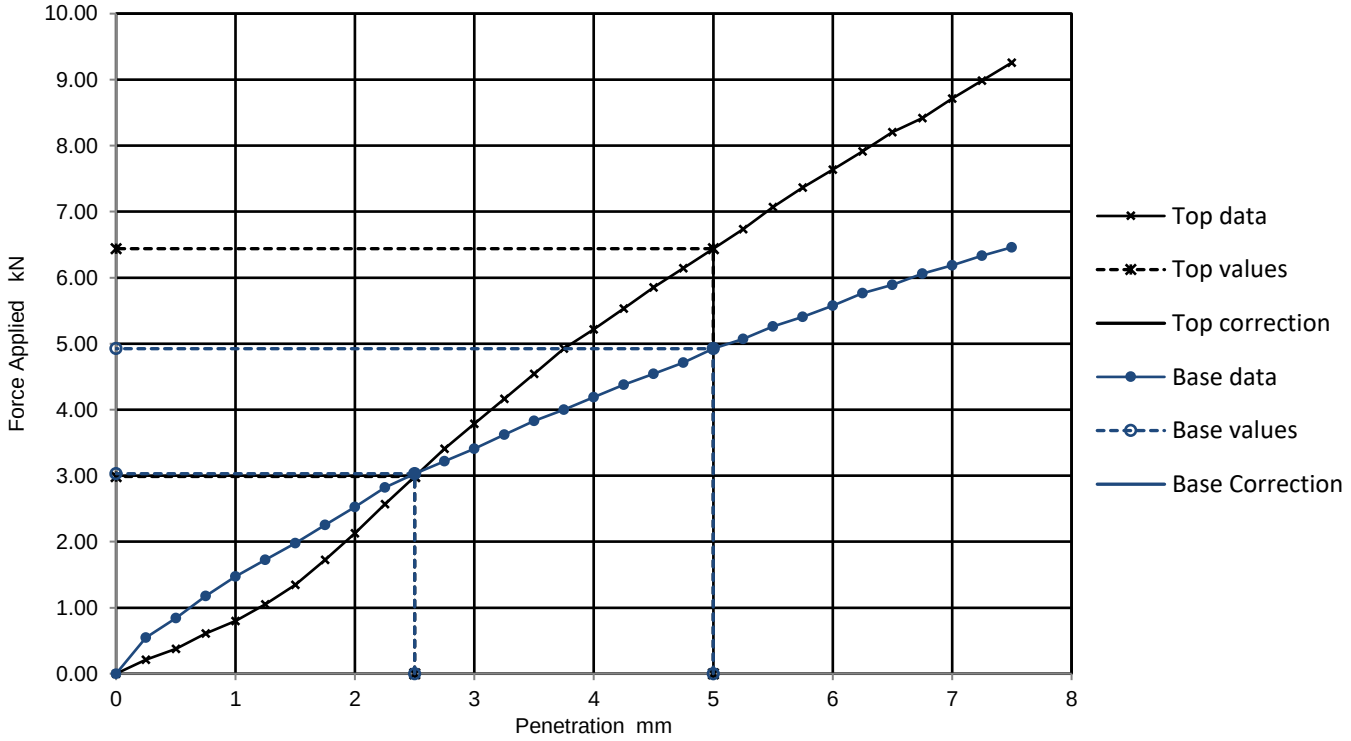
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081680
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.22	Mg/m3	Surcharge applied	2	kg
	Dry density	2.07	Mg/m3		1	kPa
	Moisture content	7.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		23.0	32.0	32.0		
BASE		23.0	25.0	25.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	142

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

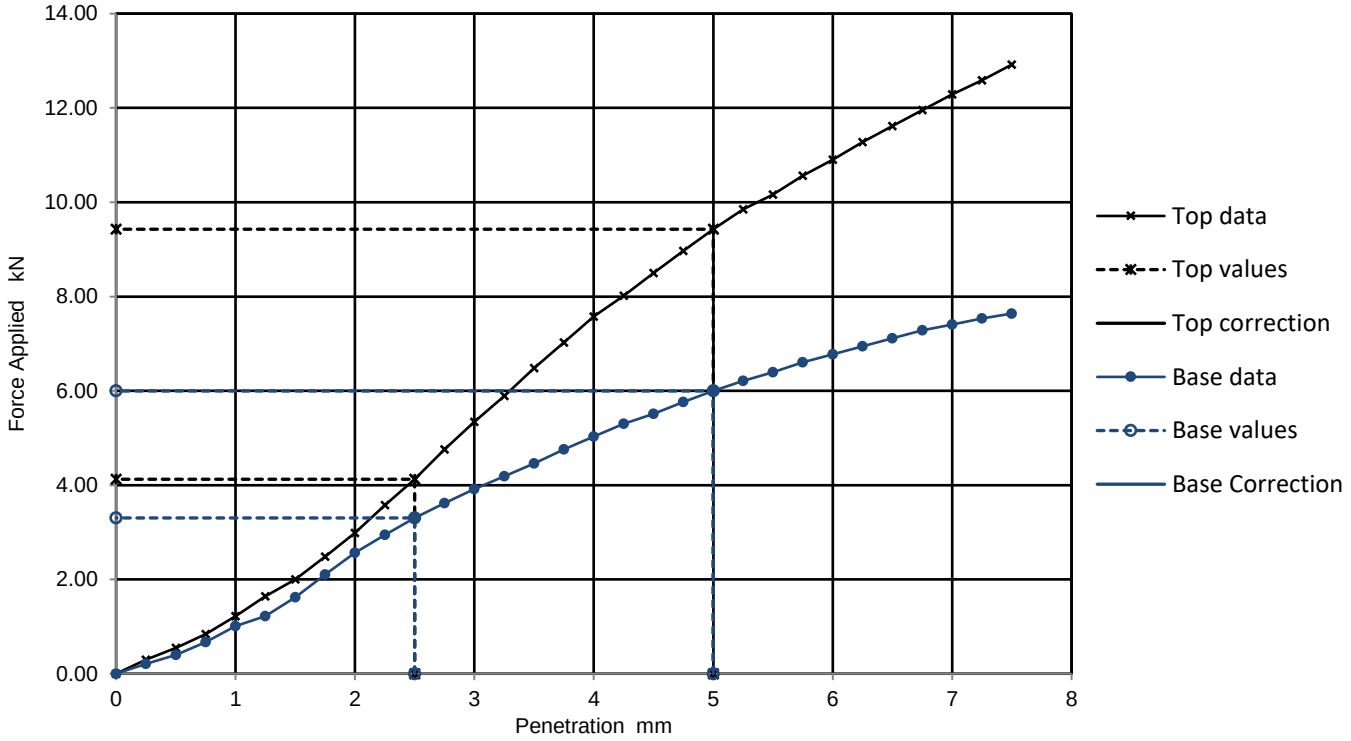
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081680
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.99	Mg/m3	Surcharge applied	kg
	Dry density	1.89	Mg/m3		kPa
	Moisture content	5.3	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		31.0	47.0	47.0		
BASE		25.0	30.0	30.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	143

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

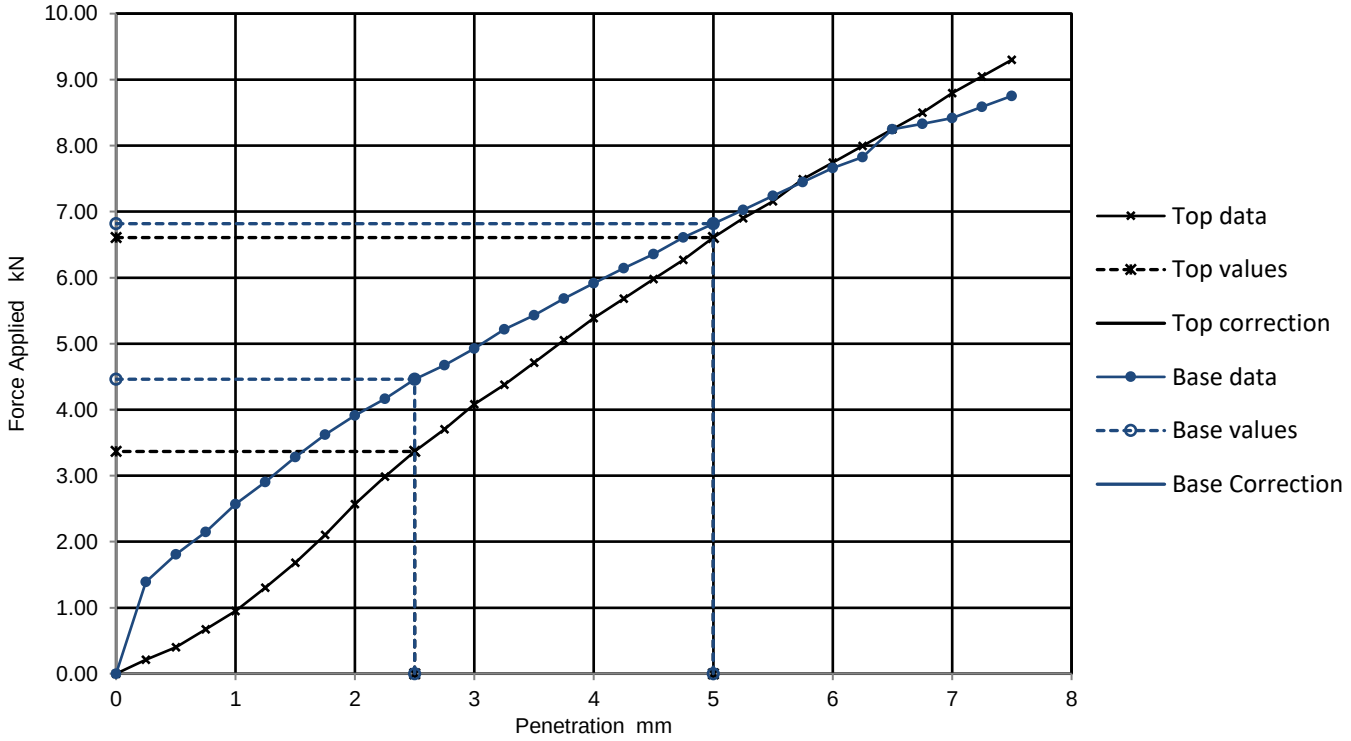
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081680
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.19	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	7.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		26.0	33.0	33.0	34.0	
BASE		34.0	34.0	34.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	144

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

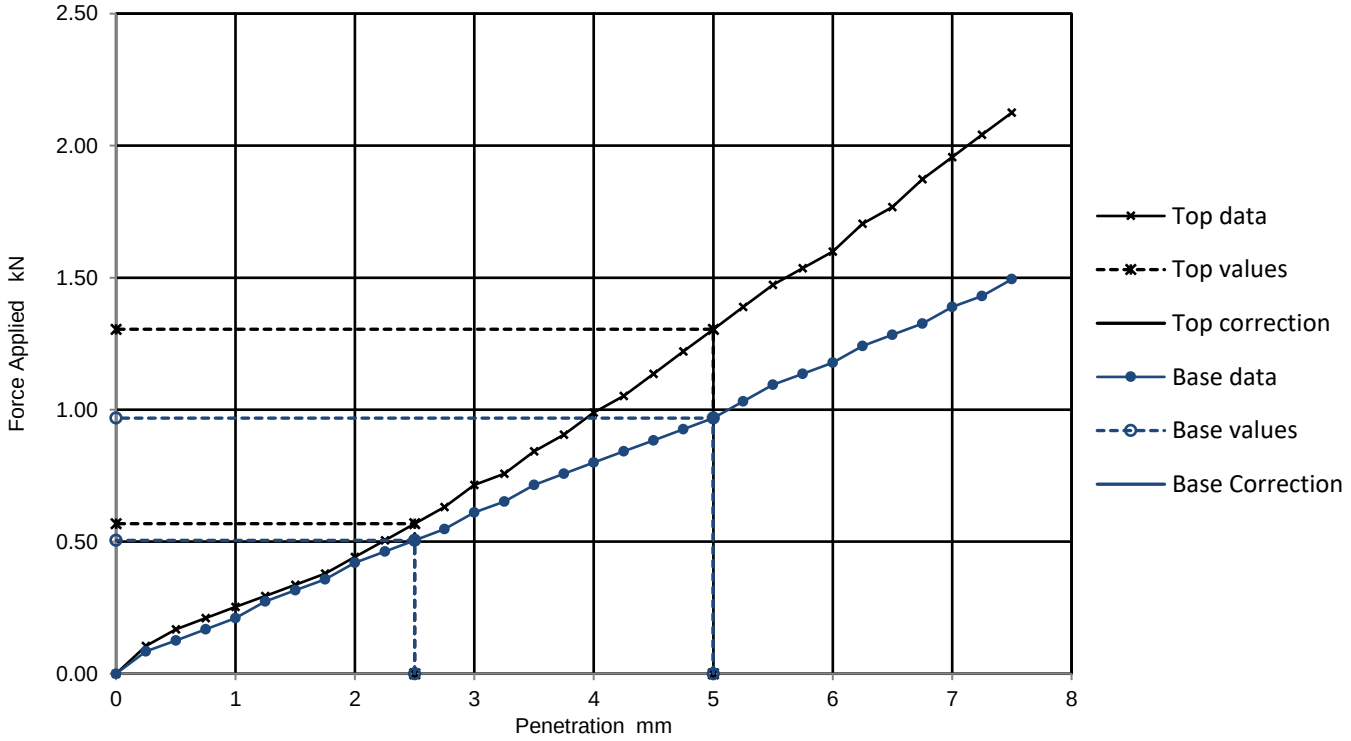
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081680
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.30	Mg/m3	Surcharge applied	2	kg
	Dry density	2.11	Mg/m3		1	kPa
	Moisture content	9.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.3	6.5	6.5		
BASE		3.8	4.8	4.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	145

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

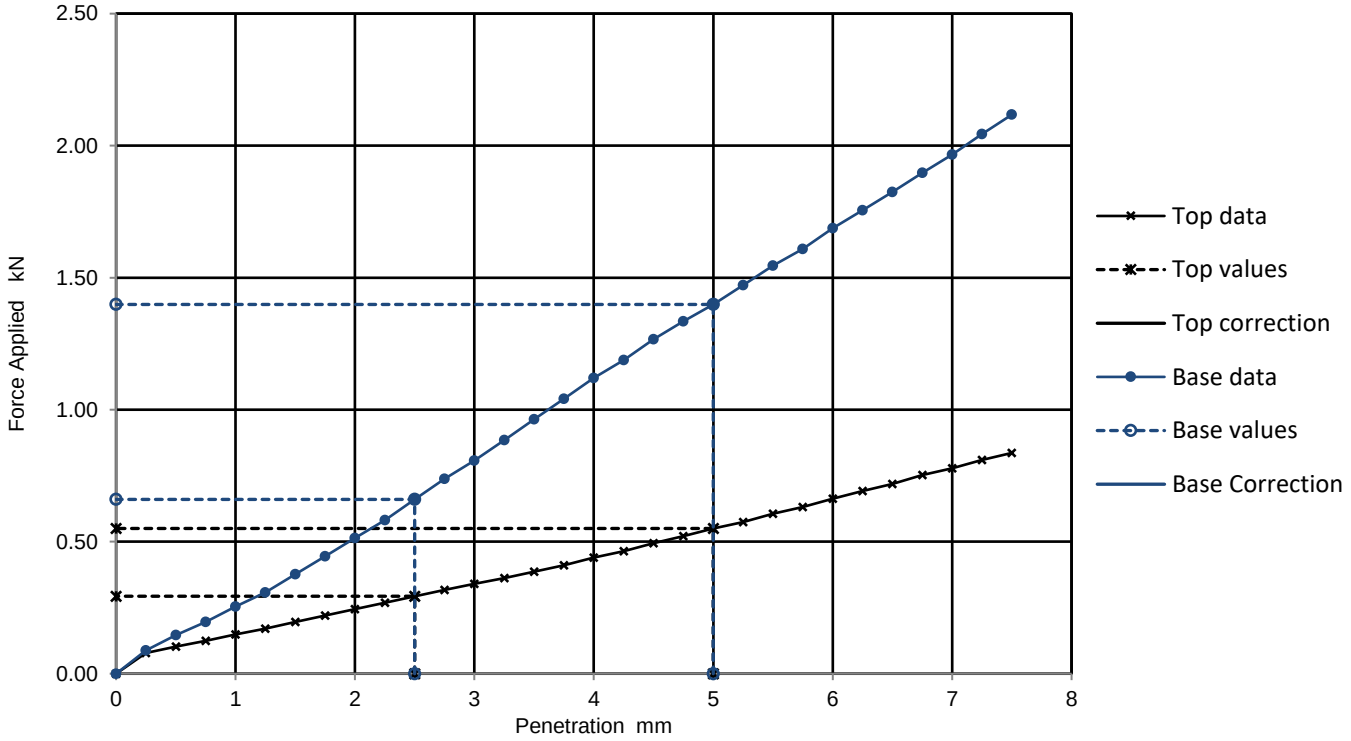
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT01
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description	Dark grey slightly silty very gravelly coarse SAND.			Depth m	3.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060983
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.17	Mg/m3	Surcharge applied	kg
	Dry density	1.91	Mg/m3		kPa
	Moisture content	13.6	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.2	2.8	2.8		
BASE		5.0	7.0	7.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	146

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

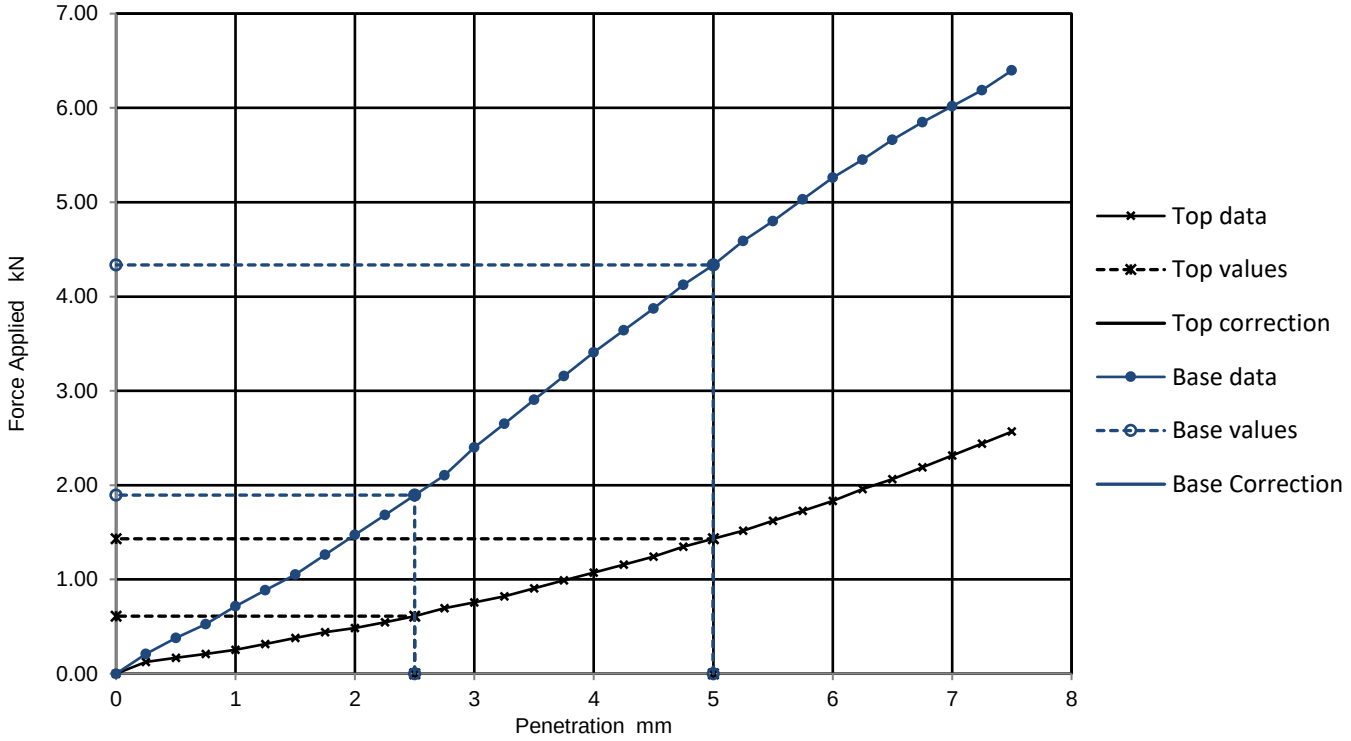
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT01
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	3.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060983
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.13	Mg/m3	Surcharge applied	2	kg
	Dry density	1.93	Mg/m3		1	kPa
	Moisture content	10.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.6	7.2	7.2		
BASE		14.0	22.0	22.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	147

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

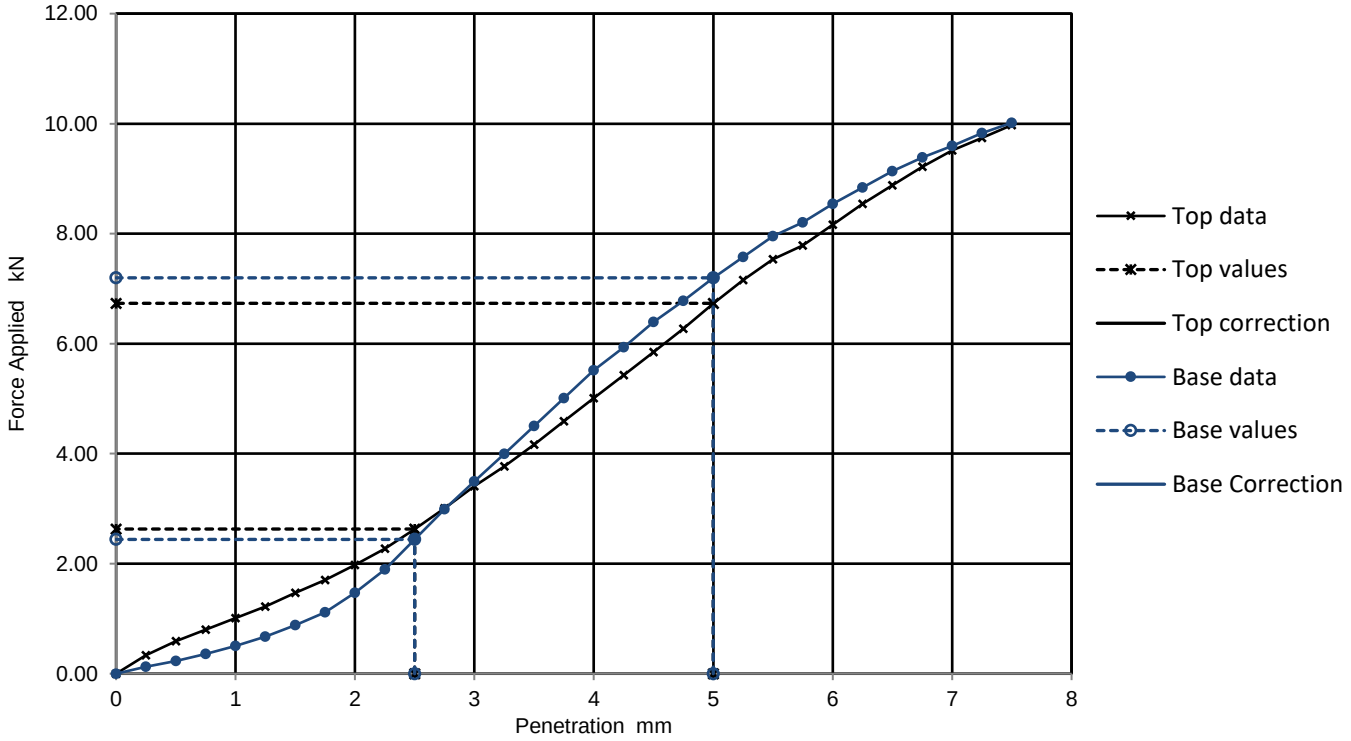
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT01
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	3.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060983
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	8.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		20.0	34.0	34.0	35.0	
BASE		18.0	36.0	36.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	148

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

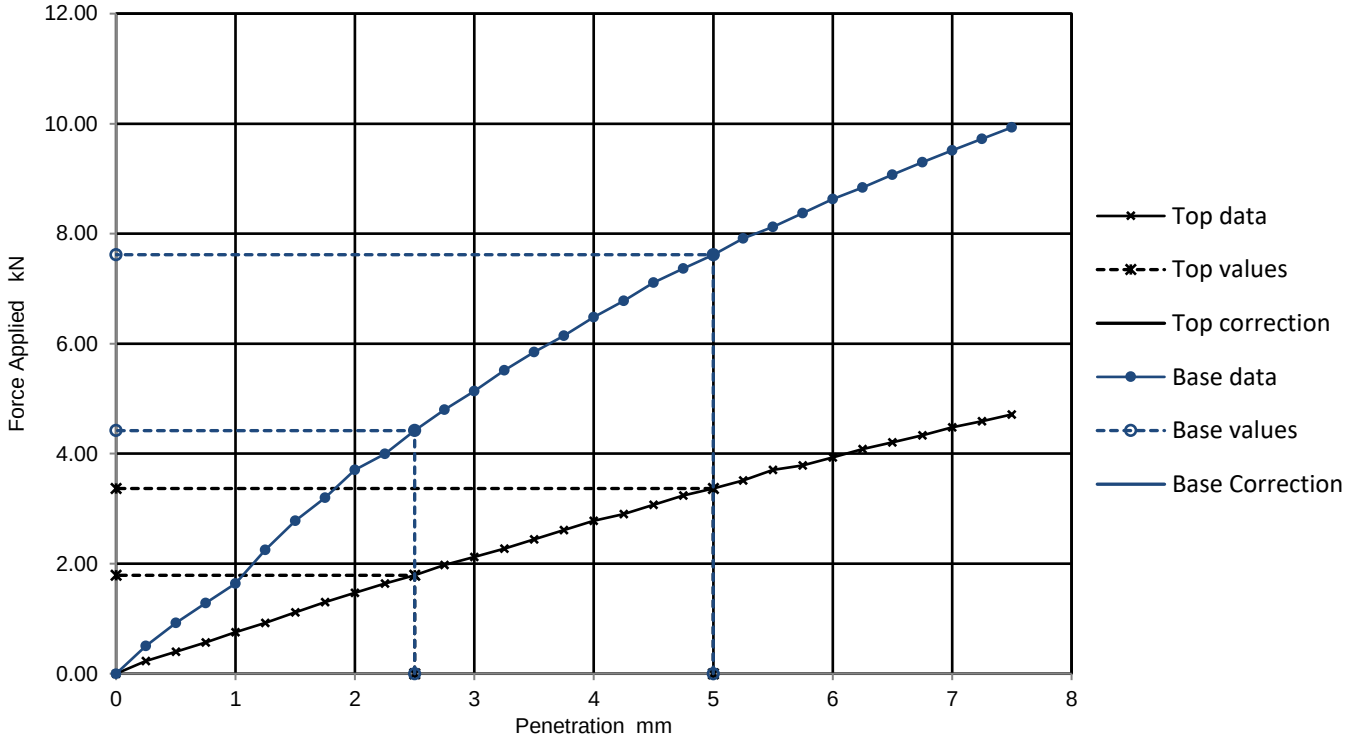
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT01
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	3.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060983
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.09	Mg/m3	Surcharge applied	2	kg
	Dry density	1.94	Mg/m3		1	kPa
	Moisture content	7.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		14.0	17.0	17.0		
BASE		33.0	38.0	38.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	149

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

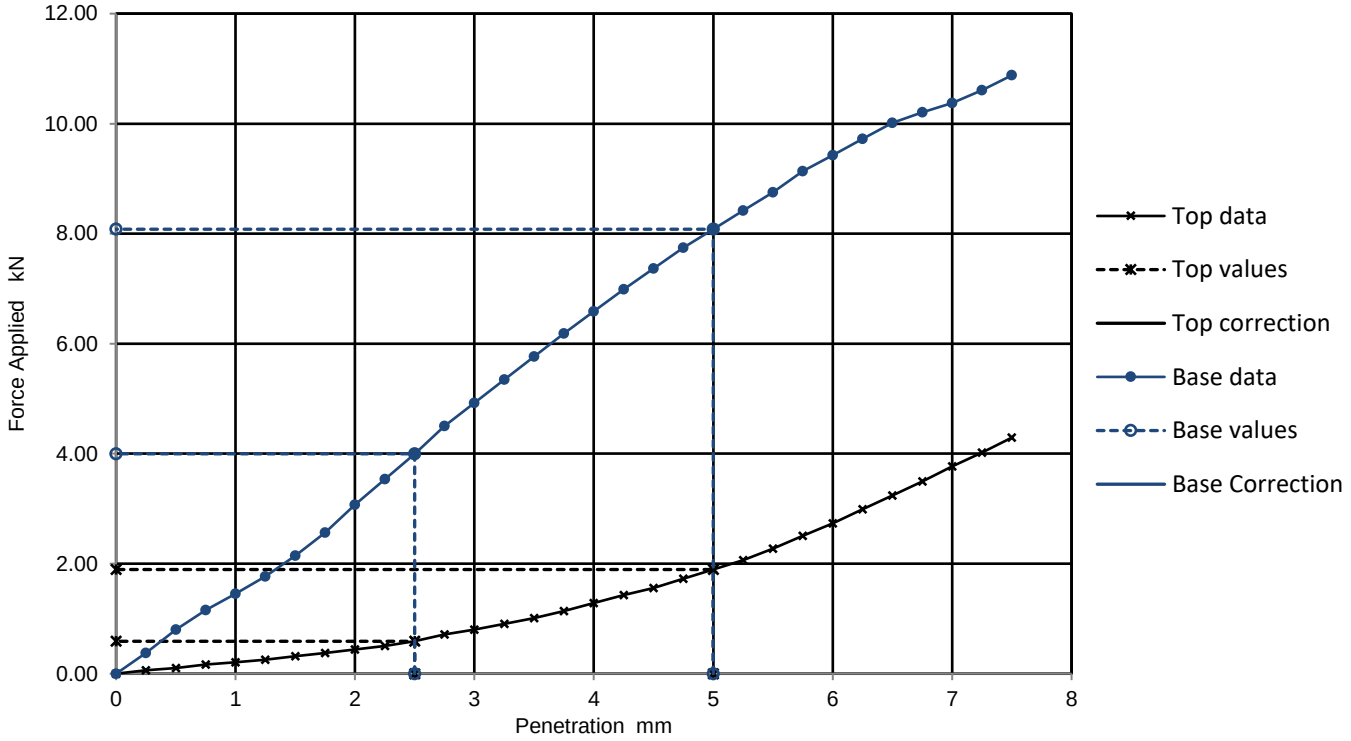
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT01
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	3.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060983
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	2	kg
	Dry density	1.95	Mg/m3		1	kPa
	Moisture content	6.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.5	9.5	9.5		
BASE		30.0	40.0	40.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	150

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

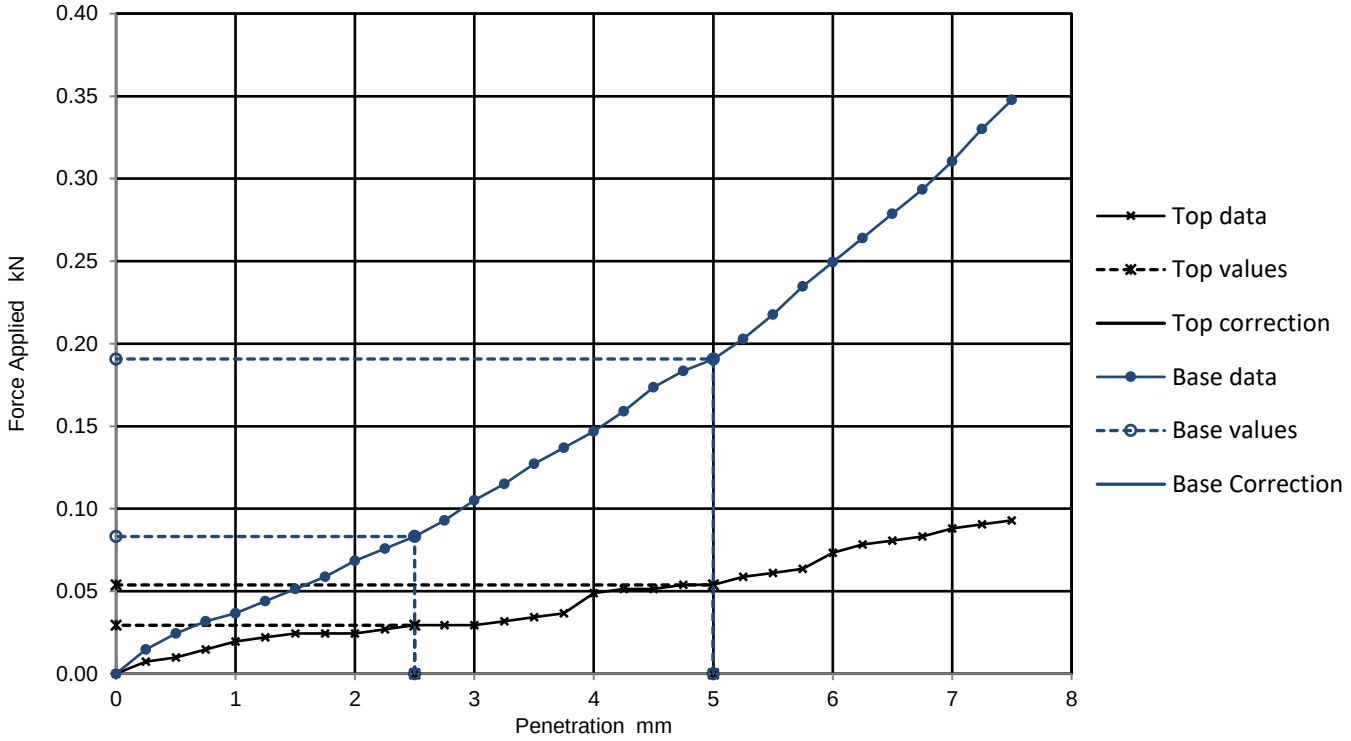
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT03
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description	Dark grey silty very gravelly medium SAND.			Depth m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060995
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.01	Mg/m3	Surcharge applied	2	kg
	Dry density	1.63	Mg/m3		1	kPa
	Moisture content	23.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.2	0.3	0.3		
BASE		0.6	1.0	1.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	151

Lab Sheet Reference : 01/11/2023

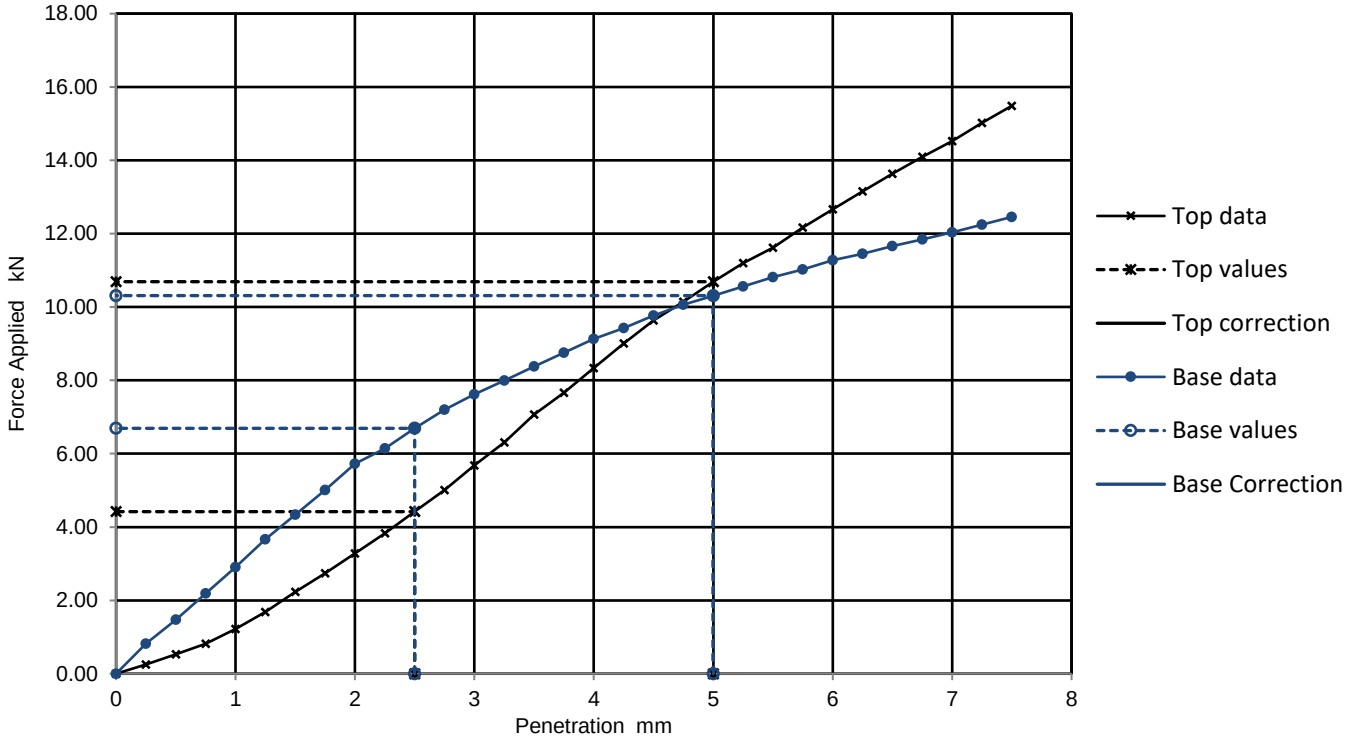
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT03
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060995
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	days
				Time to surface	days
				Amount of swell recorded	mm
Material retained on 20mm sieve removed			%	Dry density after soaking	Mg/m3
Initial Specimen details	Bulk density	2.05	Mg/m3	Surcharge applied	2 kg
	Dry density	1.74	Mg/m3		1 kPa
	Moisture content	17.5	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		33.0	53.0	53.0	53.0	
BASE		51.0	52.0	52.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	152

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

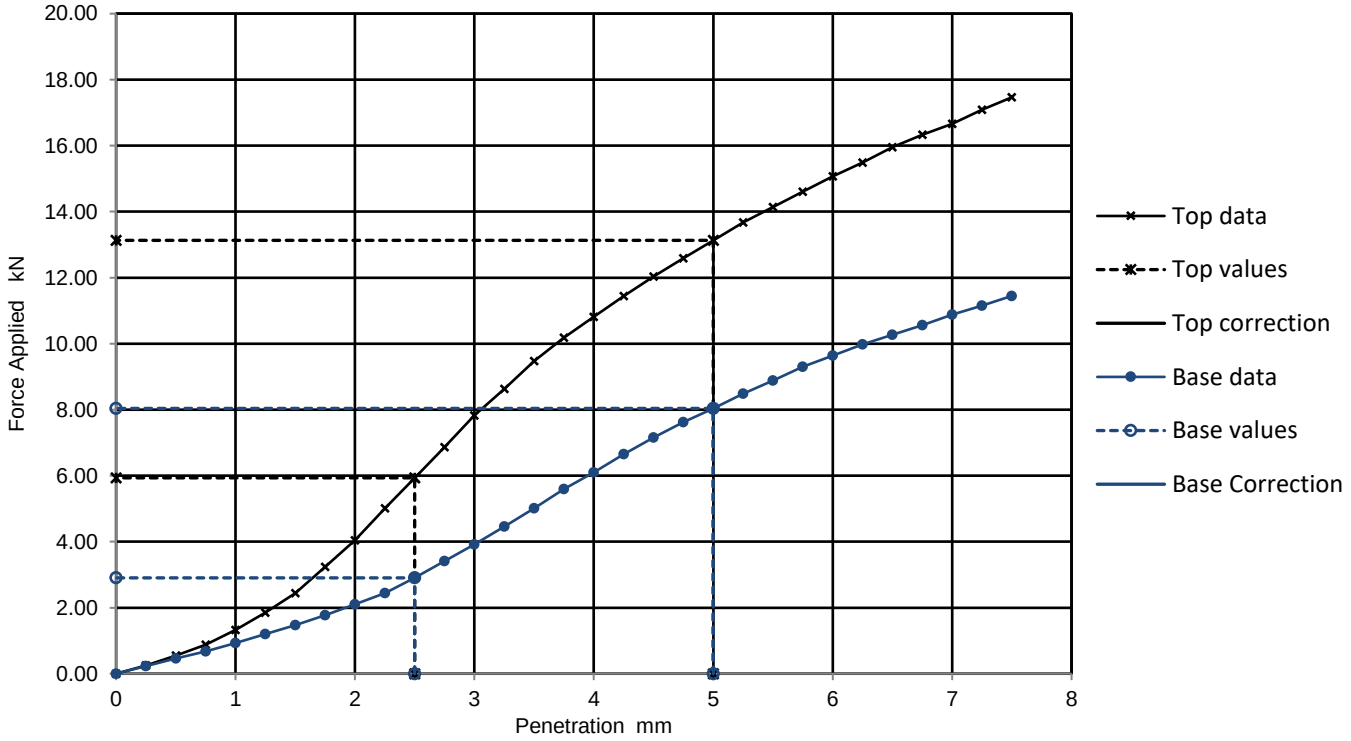
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT03
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060995
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	days
				Time to surface	days
				Amount of swell recorded	mm
Material retained on 20mm sieve removed			%	Dry density after soaking	Mg/m3
Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2 kg
	Dry density	1.74	Mg/m3		1 kPa
	Moisture content	16.4	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		45.0	66.0	66.0		
BASE		22.0	40.0	40.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No. 1
QC From R9
Sheet No 153

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

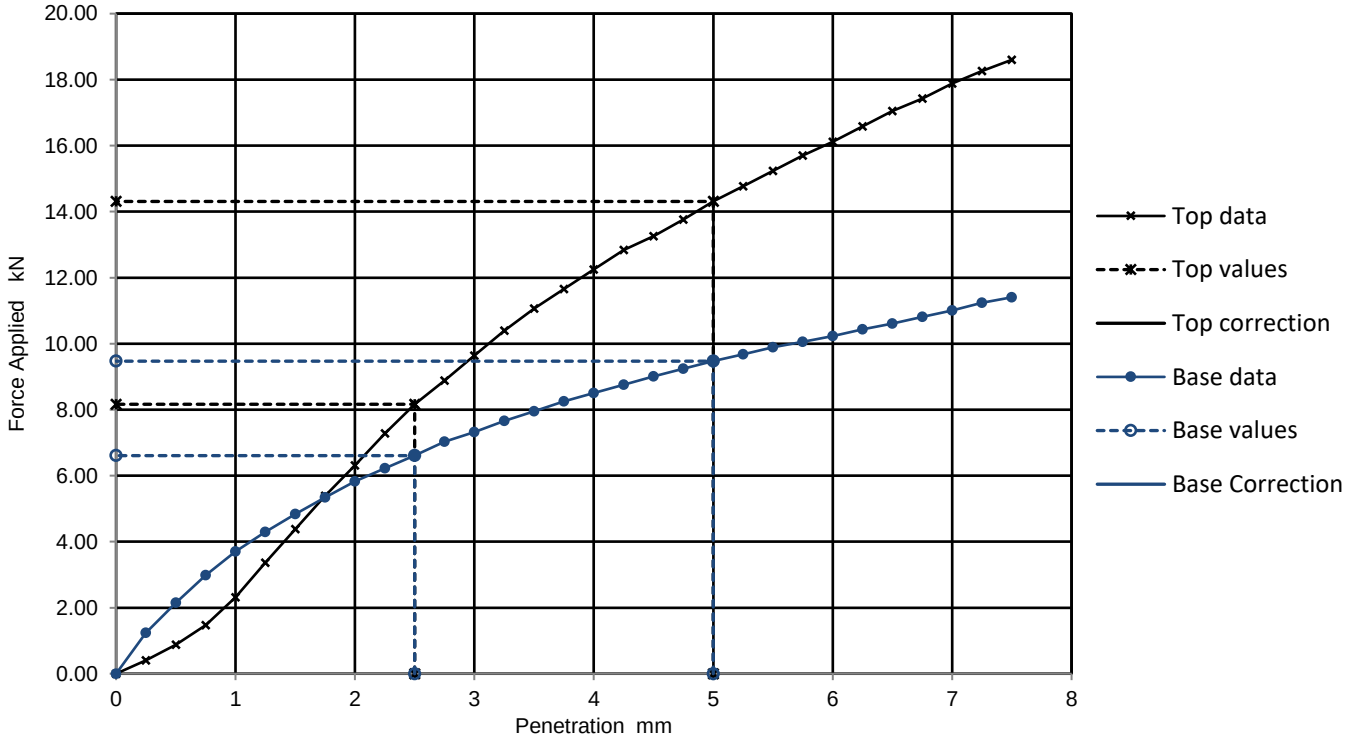
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT03
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060995
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.99	Mg/m3	Surcharge applied	2	kg
	Dry density	1.75	Mg/m3		1	kPa
	Moisture content	13.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		62.0	72.0	72.0		
BASE		50.0	47.0	50.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	154

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

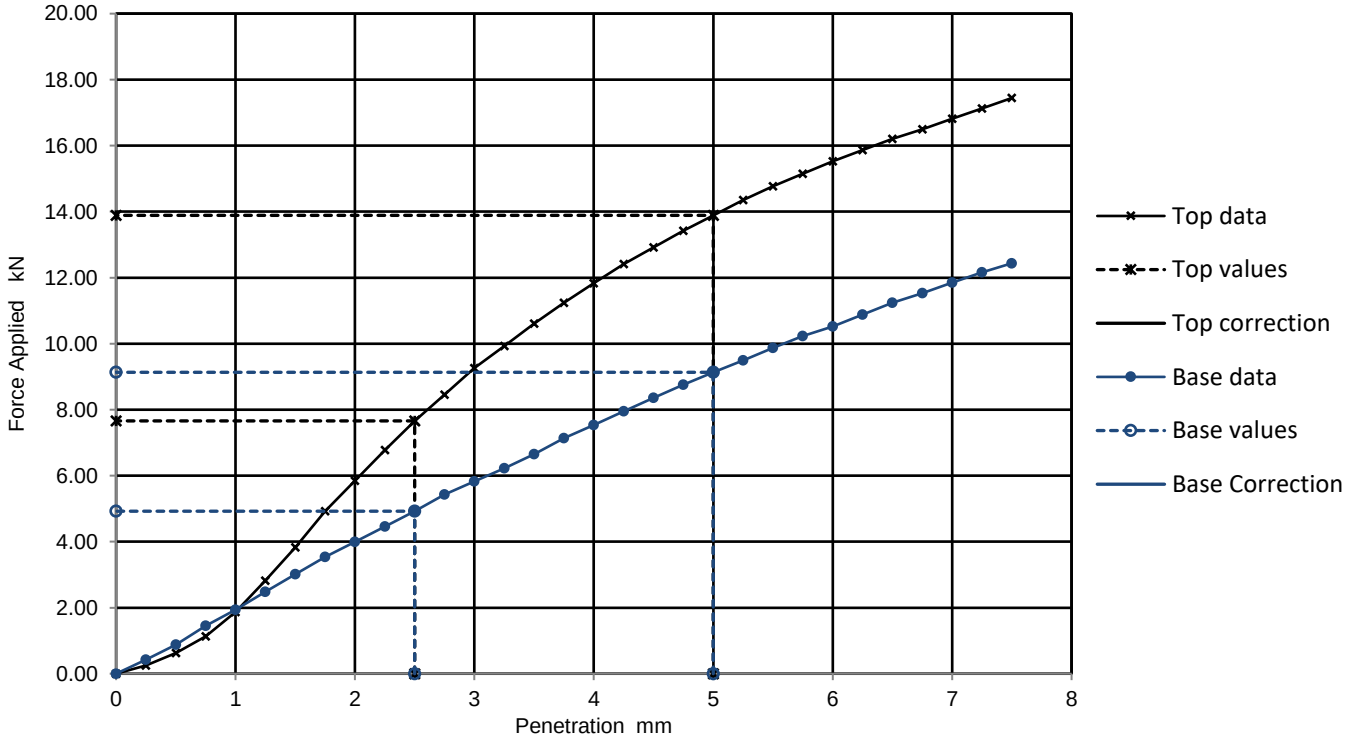
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT03
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060995
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.97	Mg/m3	Surcharge applied	2	kg
	Dry density	1.77	Mg/m3		1	kPa
	Moisture content	11.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		58.0	69.0	69.0		
BASE		37.0	46.0	46.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	155

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

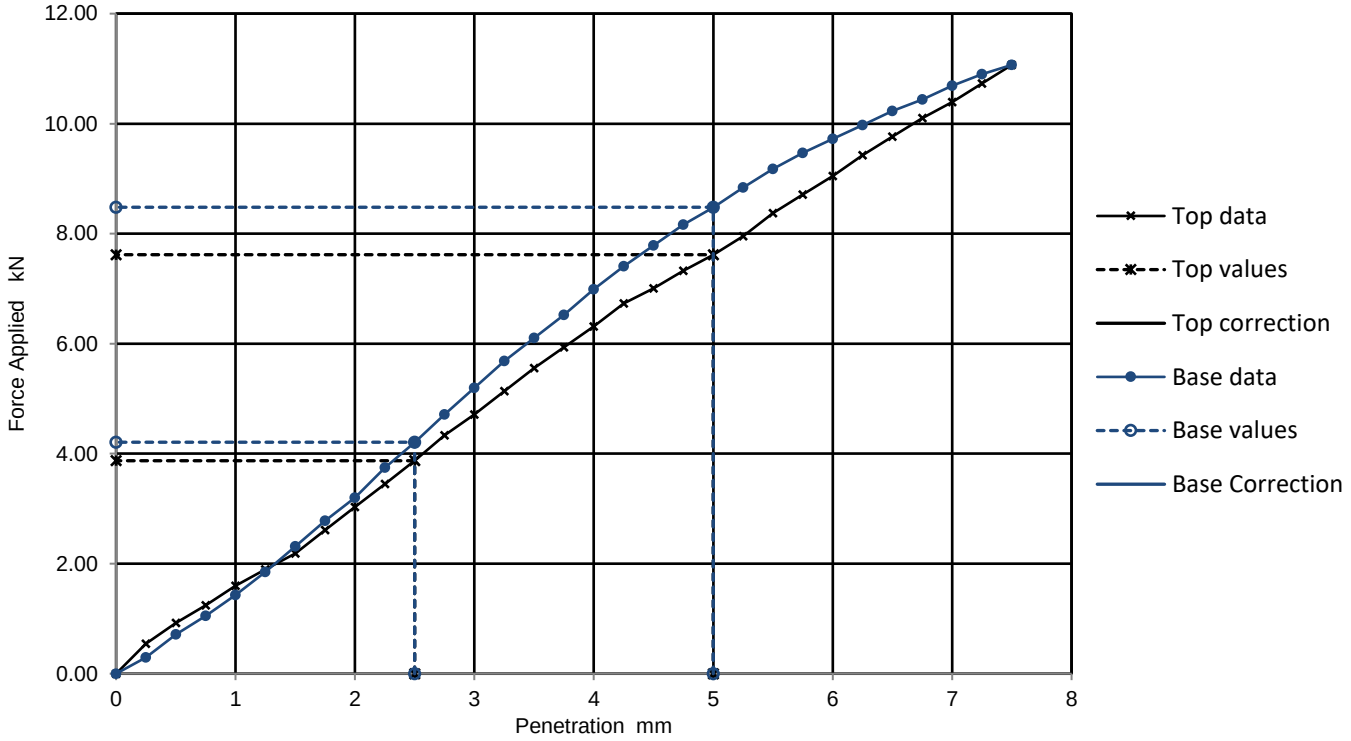
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT04
Site Name	Derrygreenagh Power			Sample No.	5
Soil Description	Dark grey silty very gravelly medium SAND.			Depth m	2.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230609103
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	2.06	Mg/m3		1	kPa
	Moisture content	8.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		29.0	38.0	38.0	40.0	
BASE		32.0	42.0	42.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	156

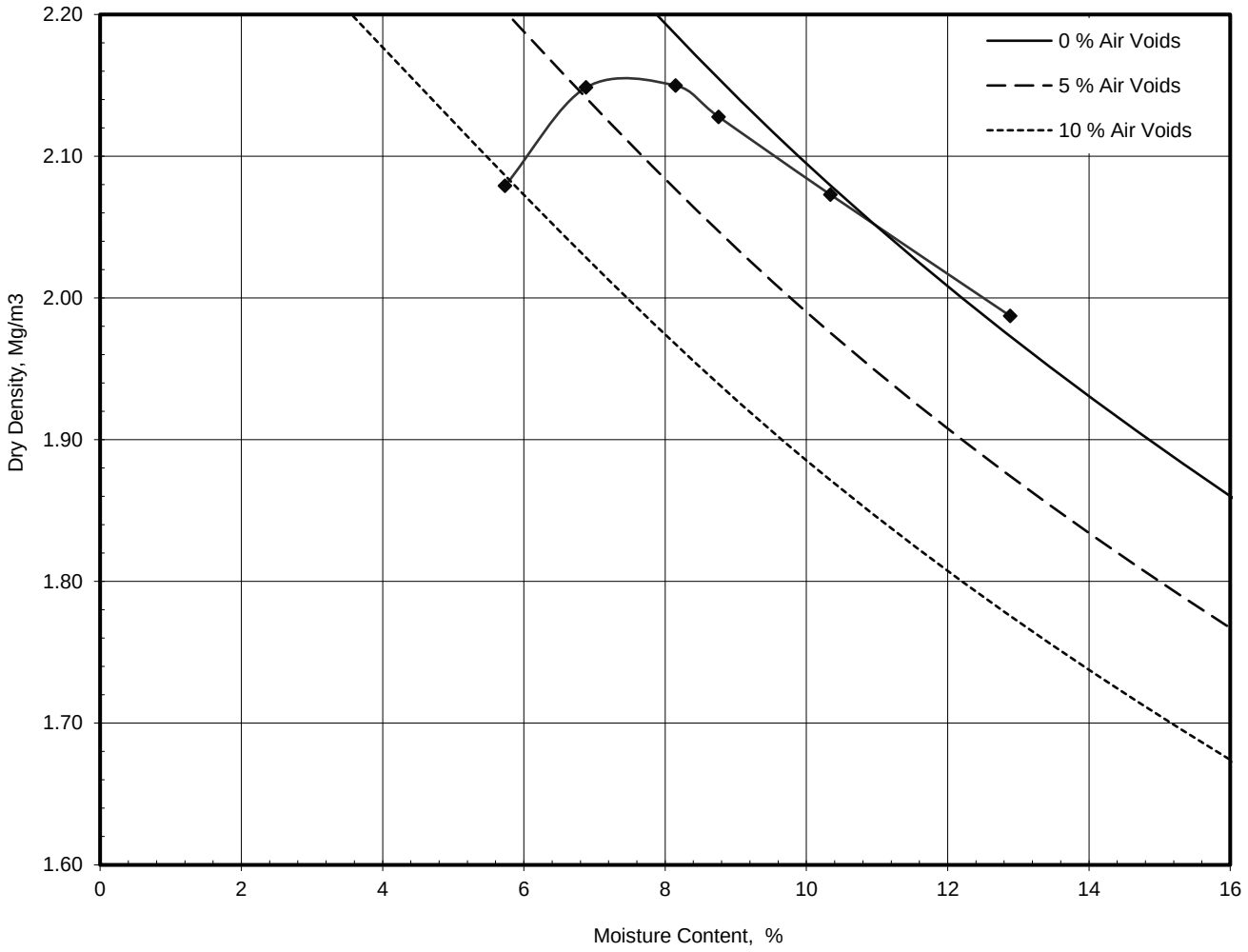
Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHSS01
Site Name	Derrygreenagh Power			Sample No	11
Soil Description	Grey and black slightly sandy gravelly SILT and PEAT.			Depth	4.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer			Keylab ID	IDL12023060710
				Compaction Test Reference/No.	



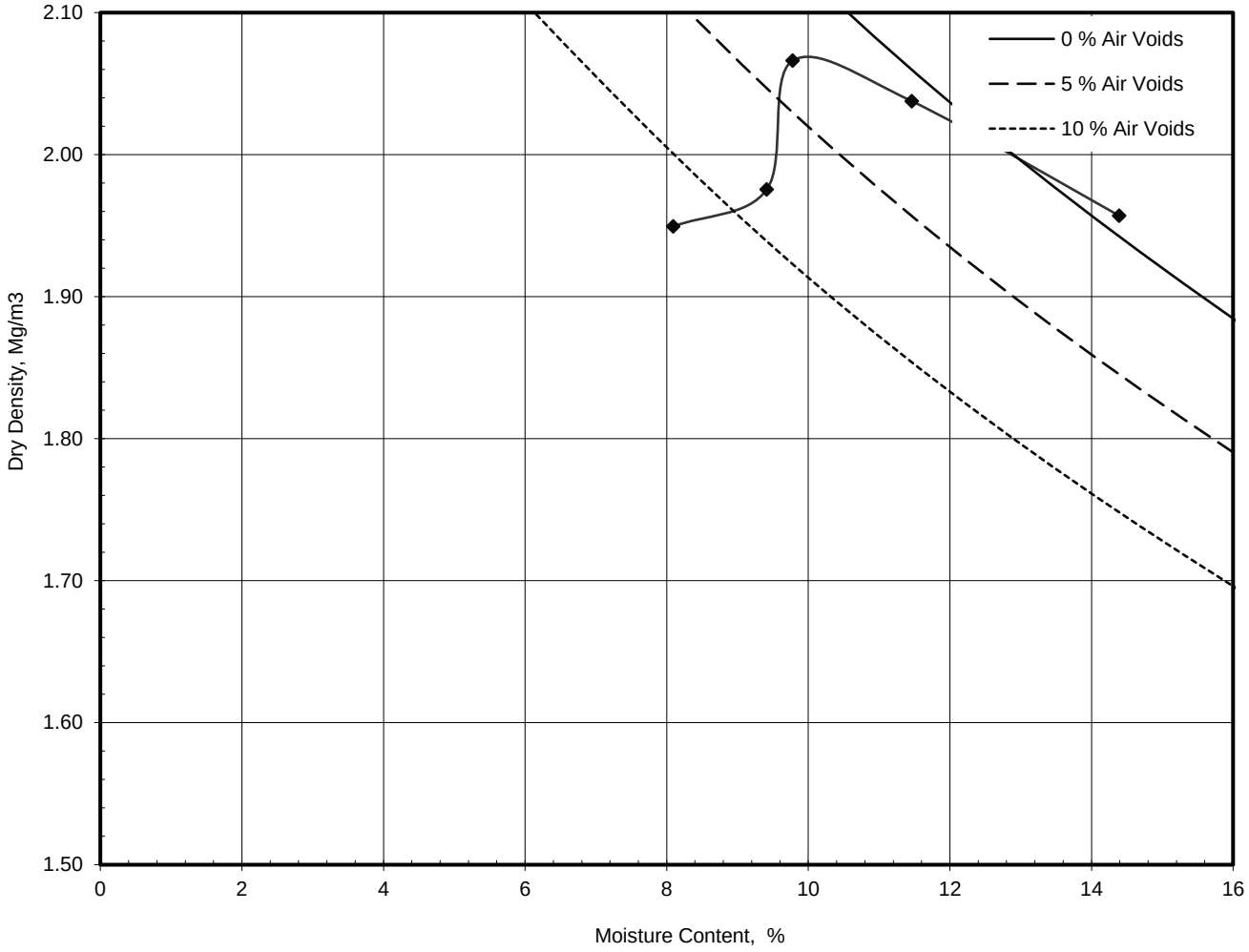
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	44
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.16**
Optimum Moisture Content	%	**7.5**

Operator	Checked	Approved	Remarks	
Administrator	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHSS02
Site Name	Derrygreenagh Power			Sample No	9
Soil Description	Light grey slightly gravelly sandy SILT.			Depth	3.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer			Keylab ID	IDL1202305188
				Compaction Test Reference/No.	



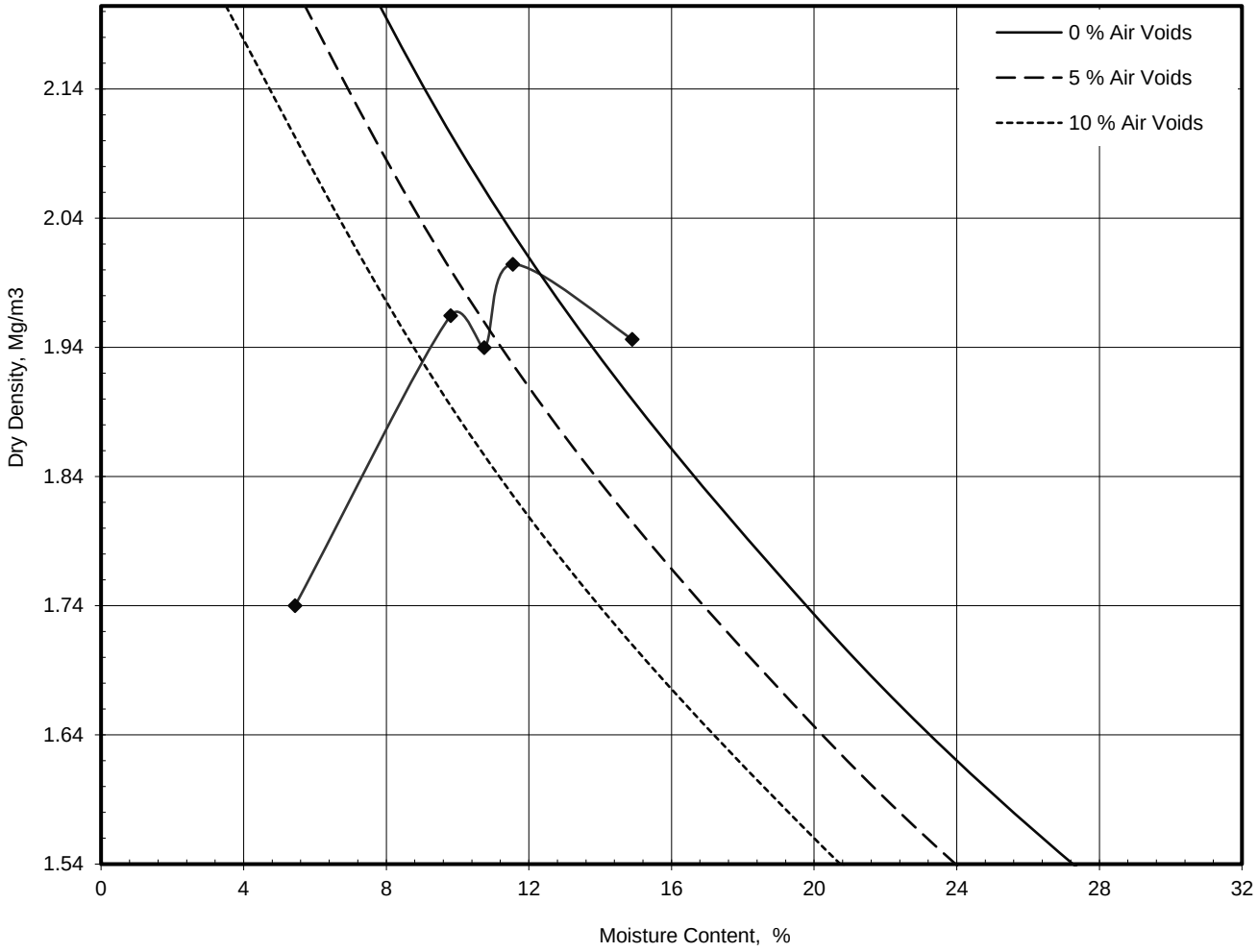
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	9
Particle Density - Assumed	Mg/m³	2.70

Maximum Dry Density	Mg/m³	**2.07**
Optimum Moisture Content	%	**9.8**

Operator	Checked	Approved	Remarks	
	BCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH102
Site Name	Derrygreenagh Power			Sample No	13
Soil Description	Brown very silty very sandy fine and medium GRAVEL.			Depth	4.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426195
				Compaction Test Reference/No.	



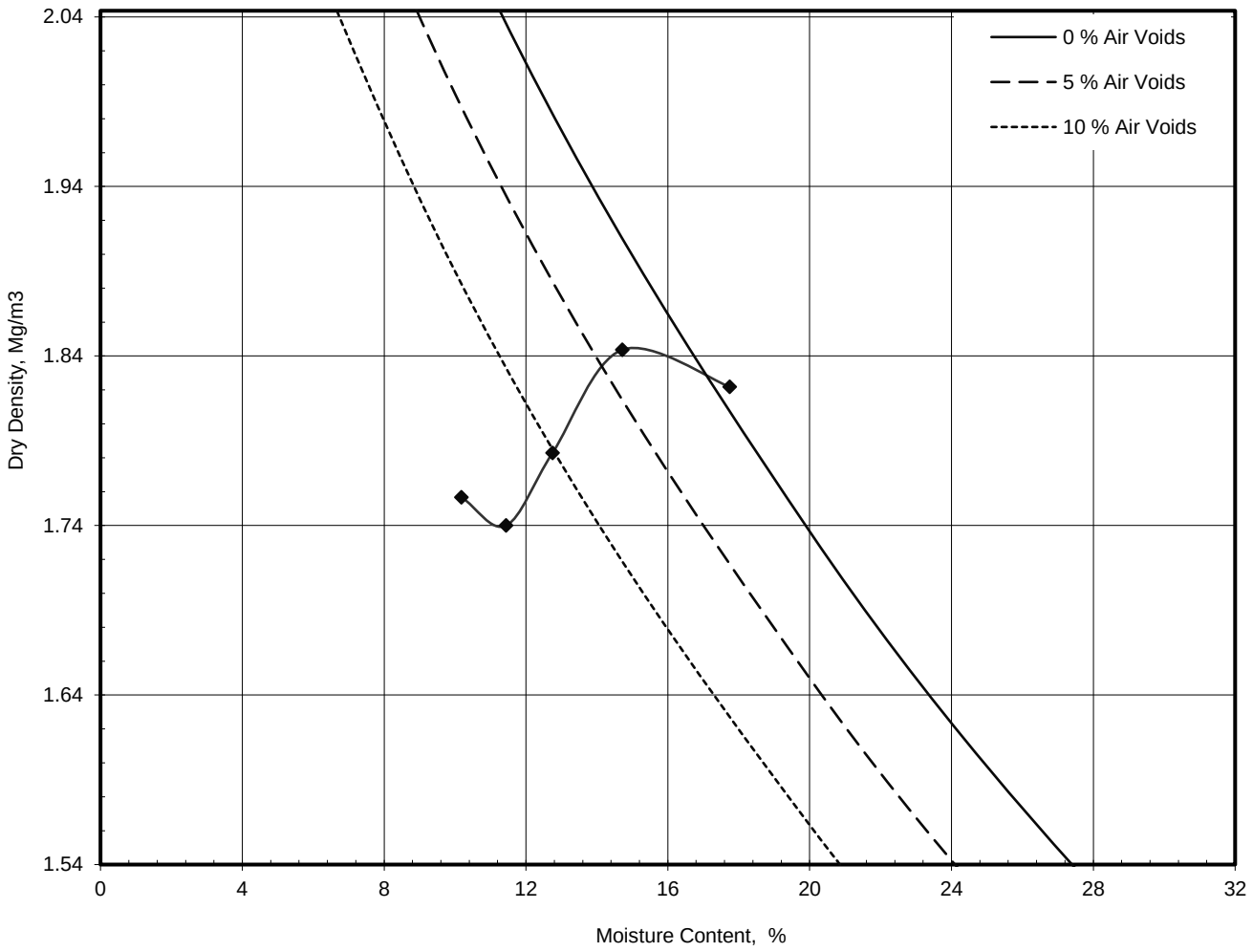
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	10
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.00**
Optimum Moisture Content	%	**12**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH103
Site Name	Derrygreenagh Power			Sample No	10
Soil Description	Greyish-brown slightly sandy gravelly SILT. Gravel is fine.			Depth	3.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426207
				Compaction Test Reference/No.	



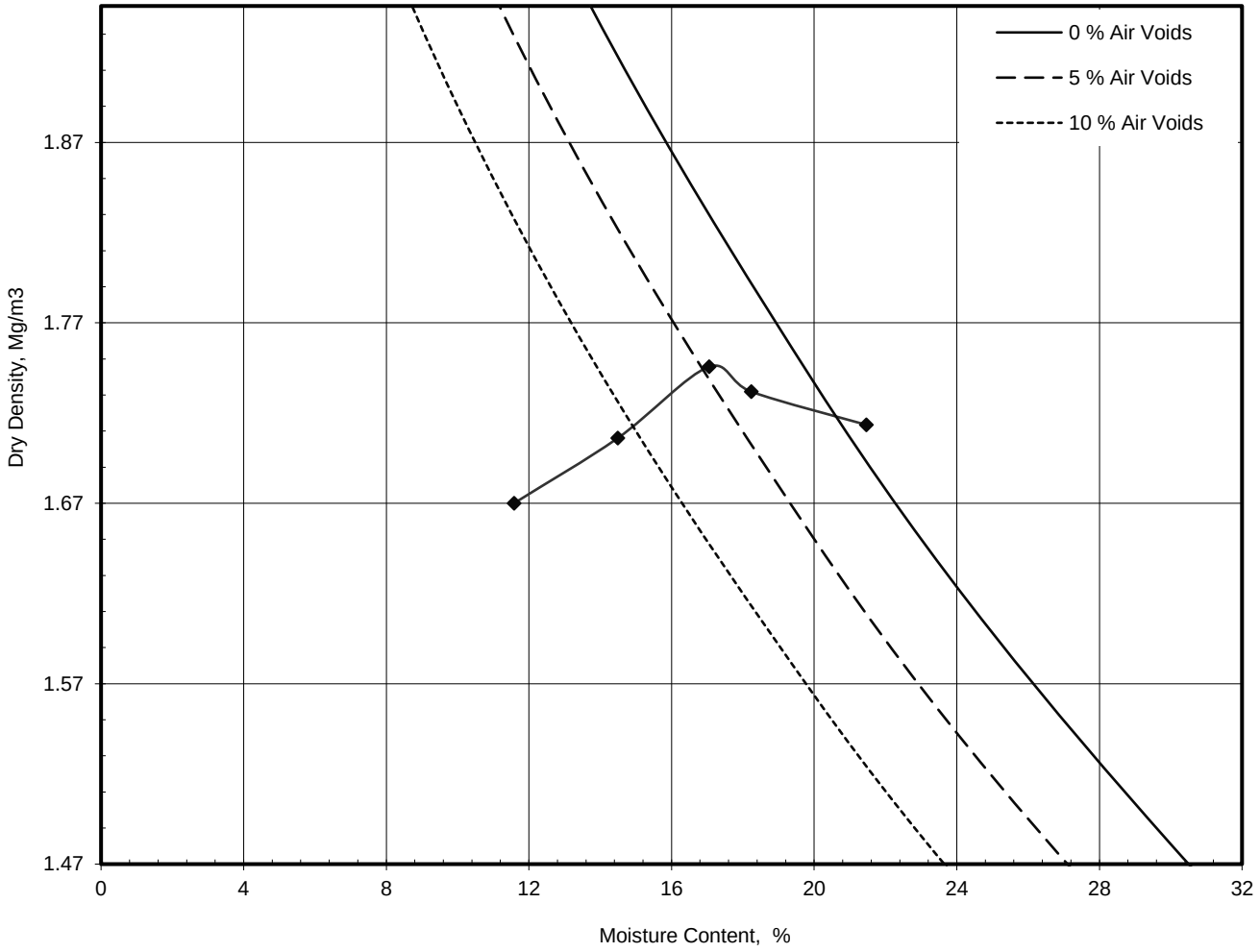
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	5
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.84**
Optimum Moisture Content	%	**15**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH104
Site Name	Derrygreenagh Power			Sample No	13
Soil Description	Yellowish-brown very sandy very gravelly SILT.			Depth	4.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426222
				Compaction Test Reference/No.	



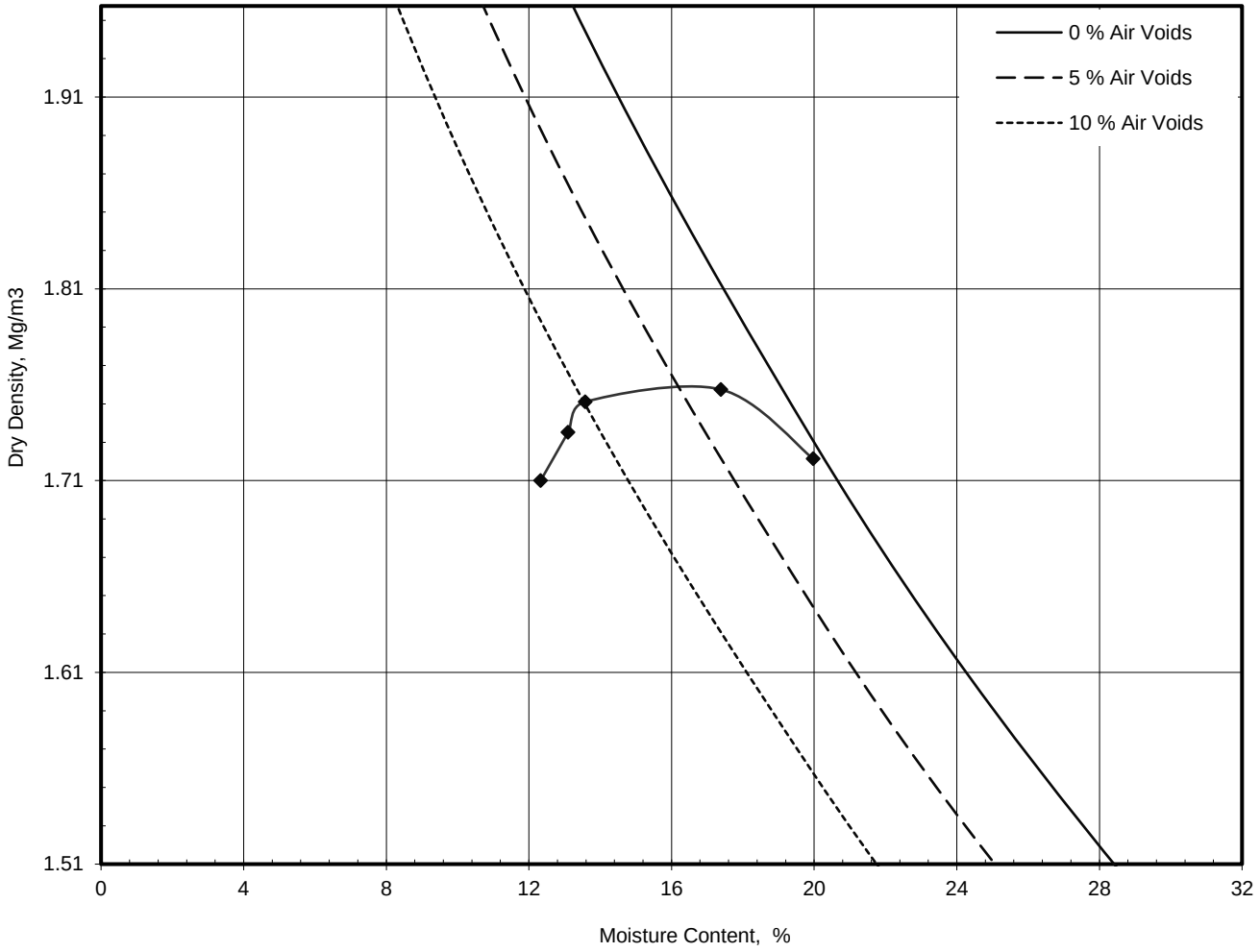
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	13
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.74**
Optimum Moisture Content	%	**17**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH105
Site Name	Derrygreenagh Power			Sample No	12
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth	4.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426245
				Compaction Test Reference/No.	



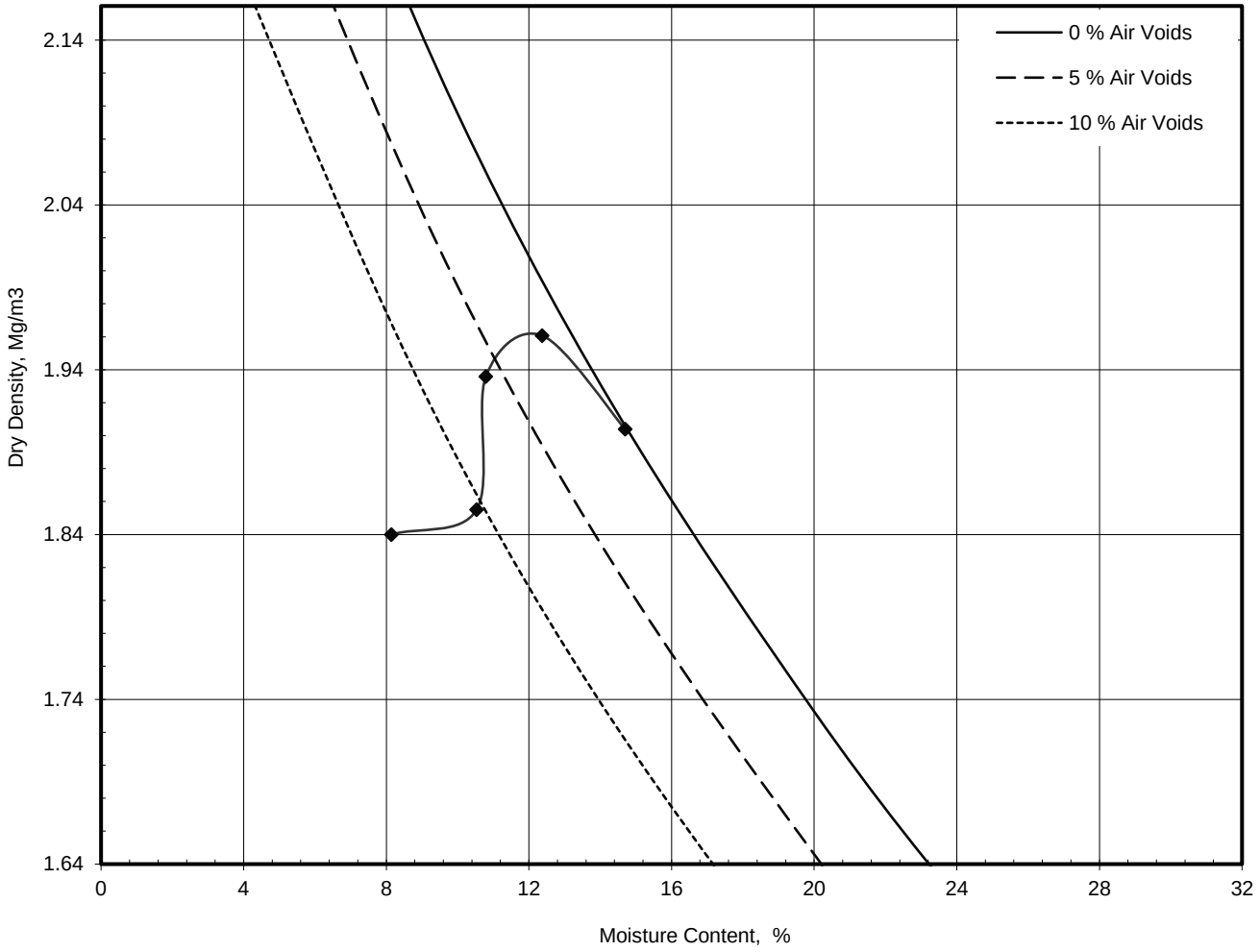
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	3
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.76**
Optimum Moisture Content	%	**16**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH106
Site Name	Derrygreenagh Power			Sample No	7
Soil Description	Greyish-brown slightly sandy slightly gravelly SILT.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426266
				Compaction Test Reference/No.	



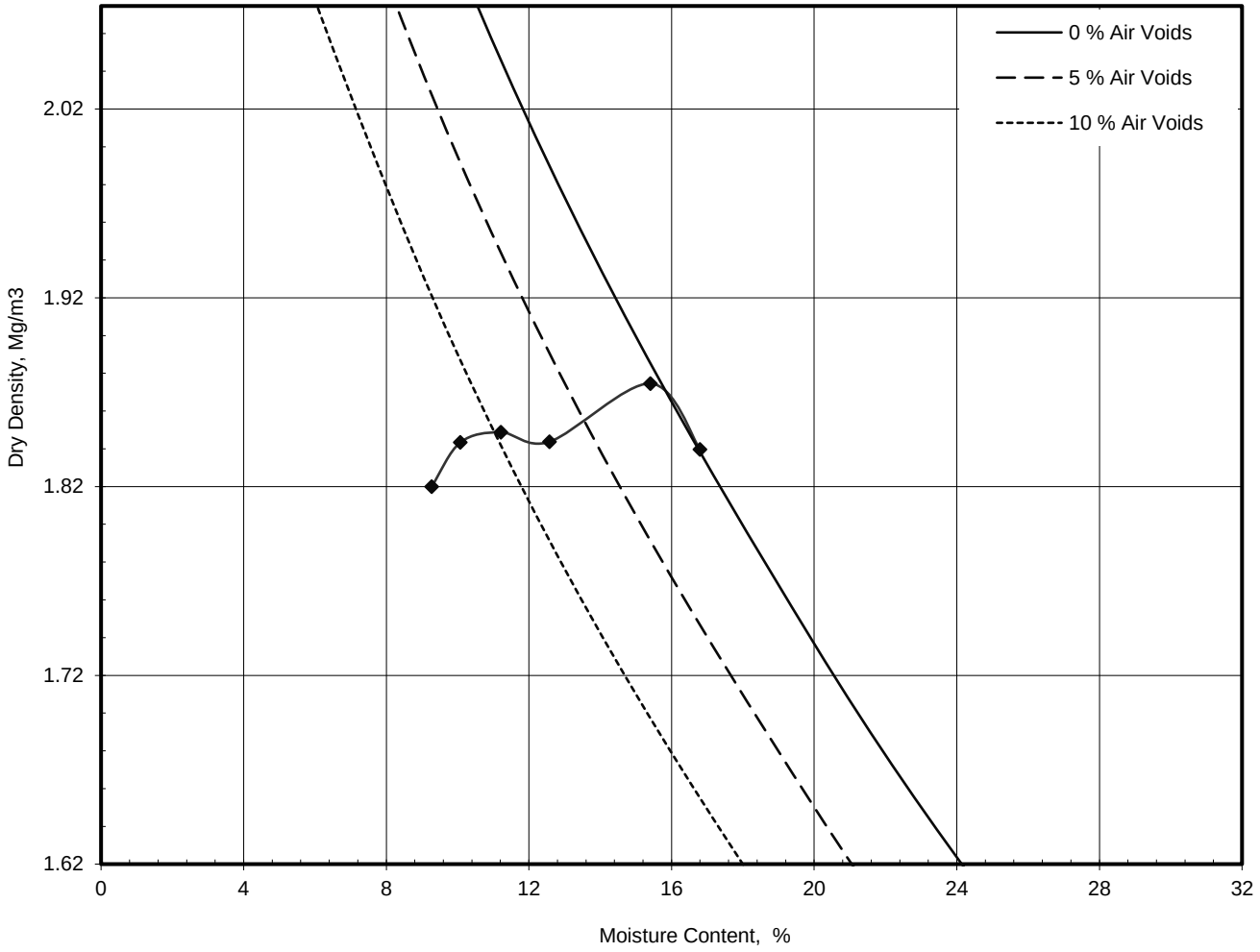
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	15
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.96**
Optimum Moisture Content	%	**12**

Operator	Checked	Approved	Remarks / Report Date:	
	BCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH107
Site Name	Derrygreenagh Power			Sample No	7
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL1202305057
				Compaction Test Reference/No.	



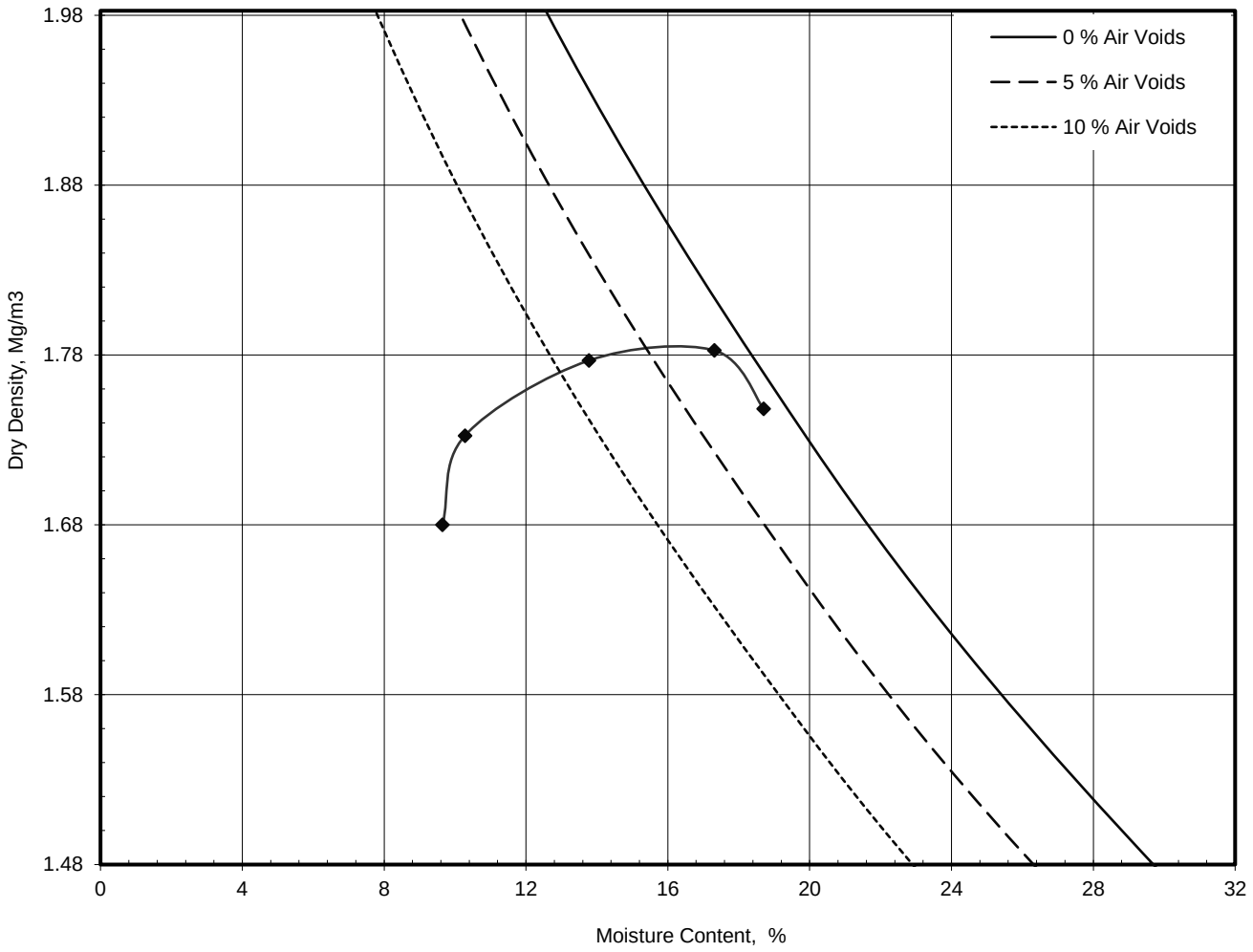
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	9
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.87**
Optimum Moisture Content	%	**15**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	BCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH109
Site Name	Derrygreenagh Power			Sample No	19
Soil Description	Creamy-brown slightly sandy gravelly SILT.			Depth	6.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426297
				Compaction Test Reference/No.	



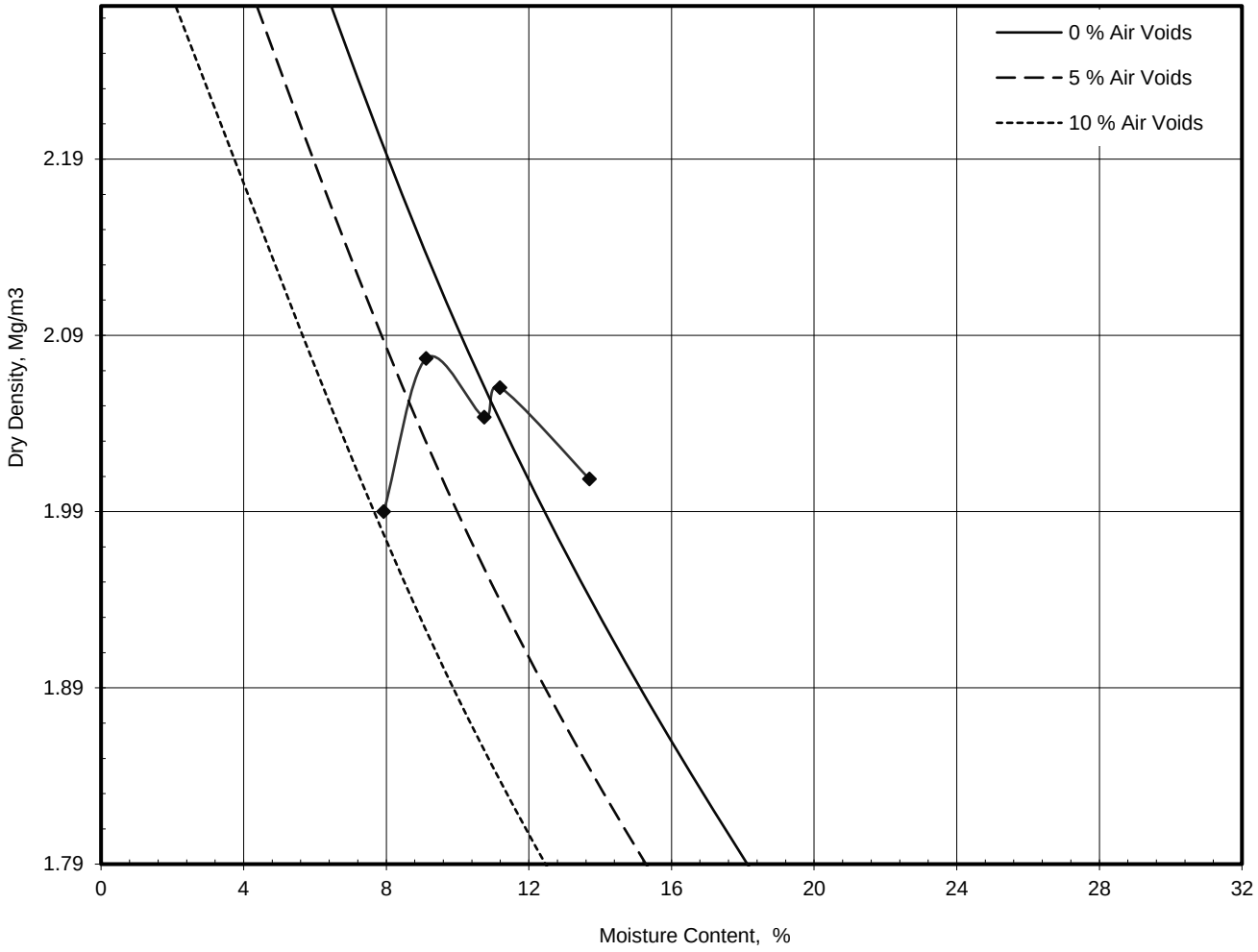
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	12
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.79**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	
	BCS	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH110
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Light greyish-brown slightly sandy gravelly SILT. Gravel is coarse.			Depth	1.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023050539
				Compaction Test Reference/No.	



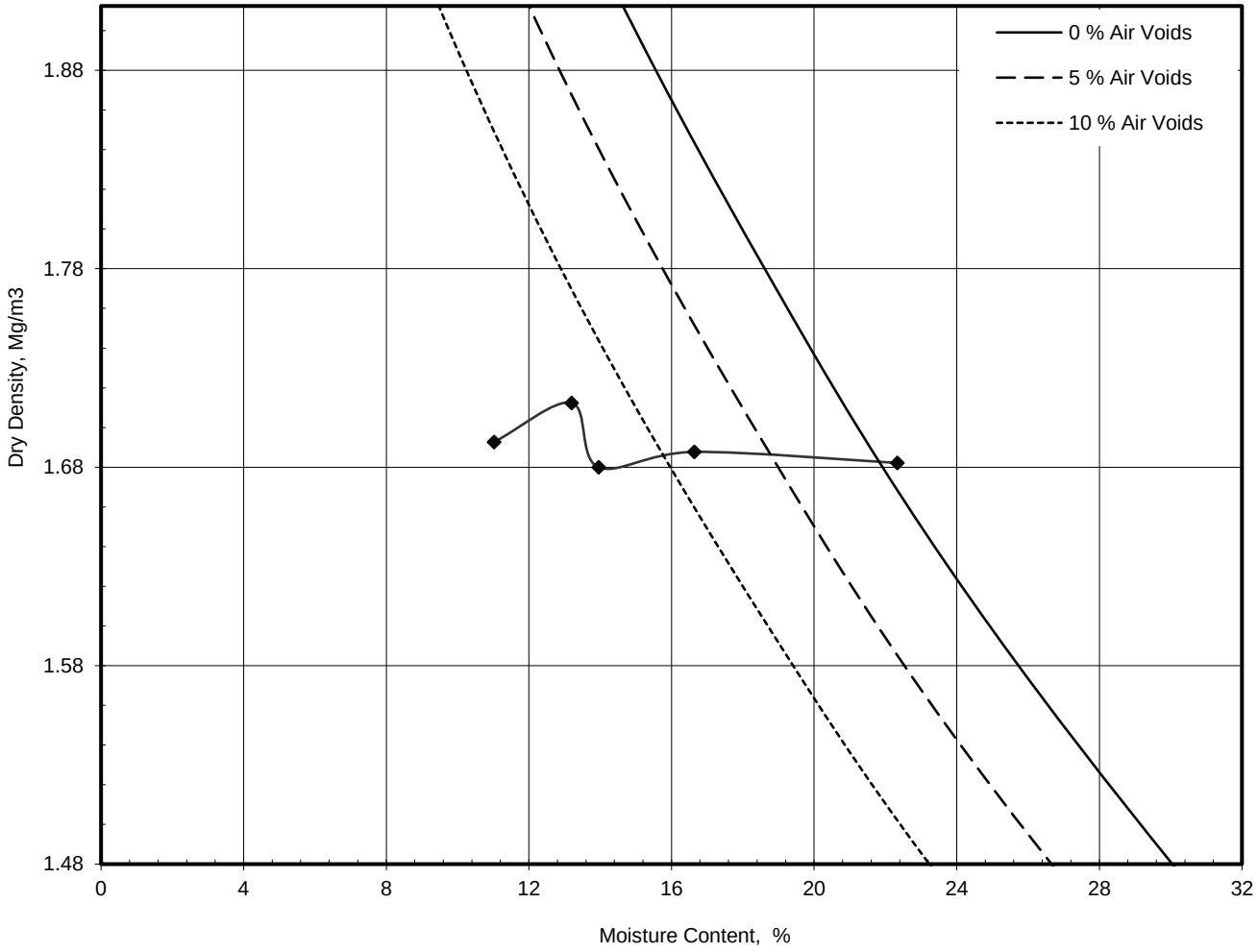
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	19
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.08**
Optimum Moisture Content	%	**8.8**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH110
Site Name	Derrygreenagh Power			Sample No	10
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth	3.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL12023050545
				Compaction Test Reference/No.	



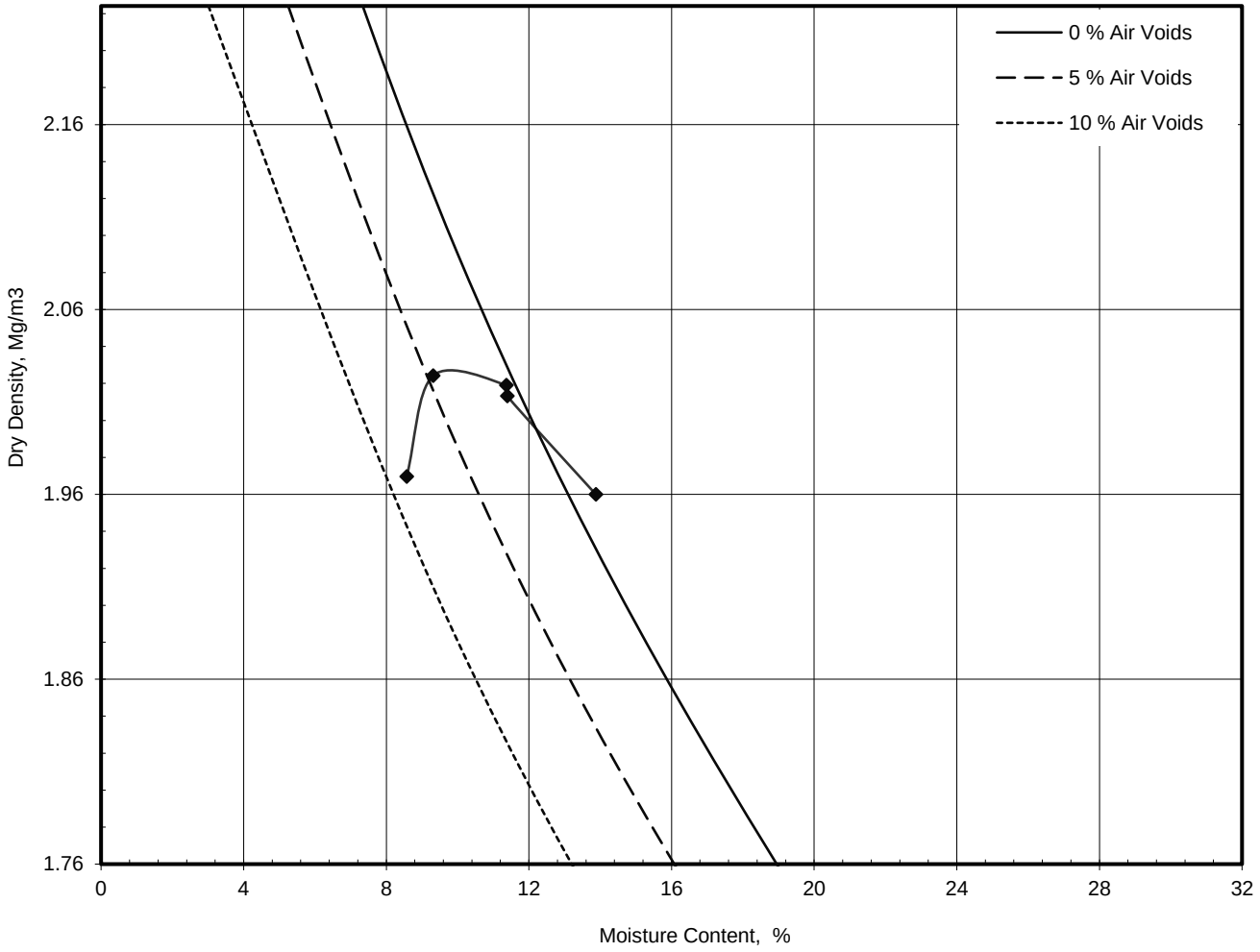
Preparation		-2146826273
Mould Type		One Litre
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.71**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH111
Site Name	**Derrygreenagh Power**			Sample No	13
Soil Description	Greyish-brown slightly gravelly sandy SILT.			Depth	4.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023050570
				Compaction Test Reference/No.	



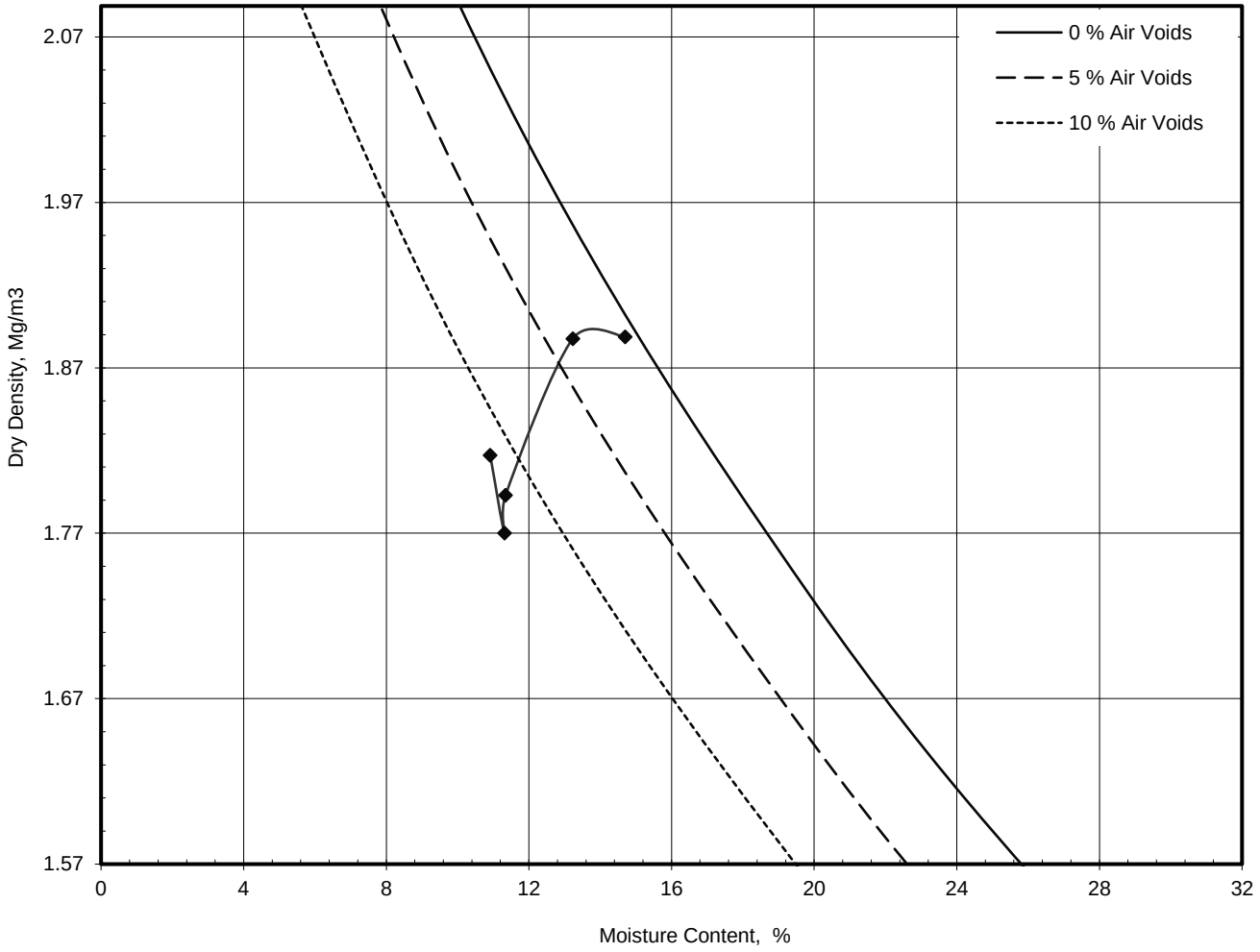
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	3
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.03**
Optimum Moisture Content	%	**10**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH112
Site Name	Derrygreenagh Power			Sample No	10
Soil Description	Brown slightly sandy slightly gravelly SILT.			Depth	3.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426177
				Compaction Test Reference/No.	



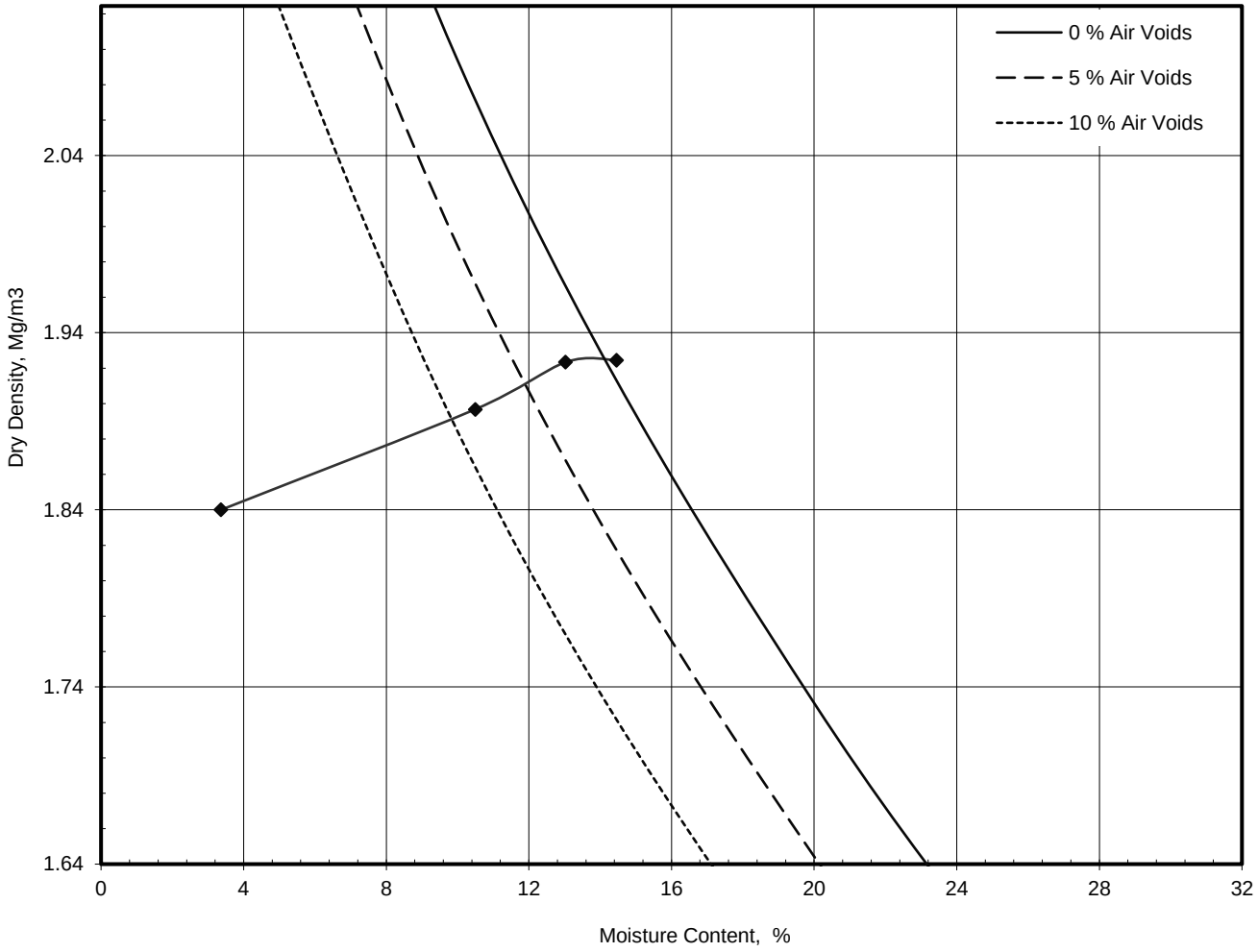
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	4
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.89**
Optimum Moisture Content	%	**13**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH113
Site Name	Derrygreenagh Power			Sample No	13
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth	4.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL12023050588
				Compaction Test Reference/No.	



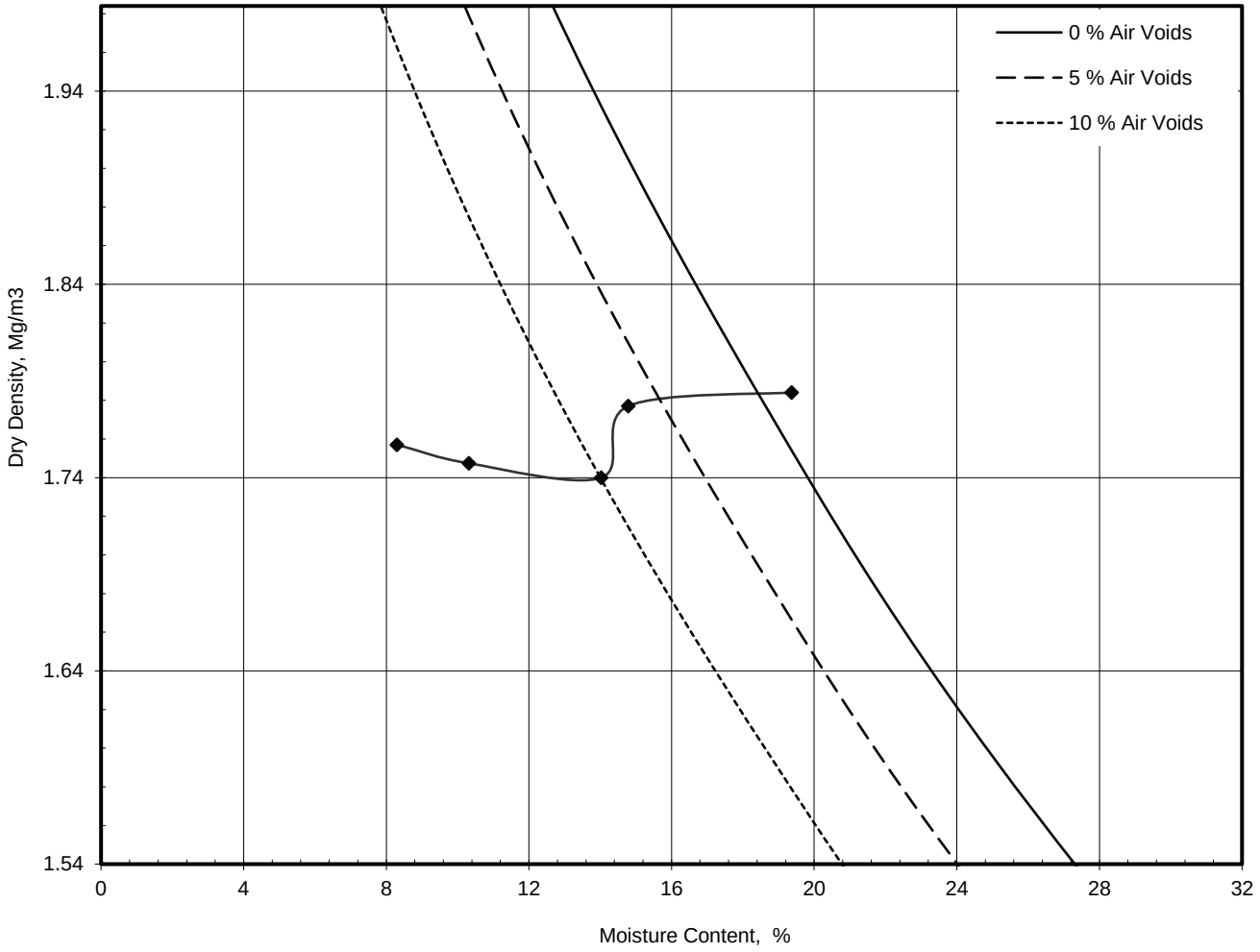
Preparation		-2146826273
Mould Type		One Litre
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	56
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.93**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	
	BCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH114
Site Name	Derrygreenagh Power			Sample No	7
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL1202305087
				Compaction Test Reference/No.	



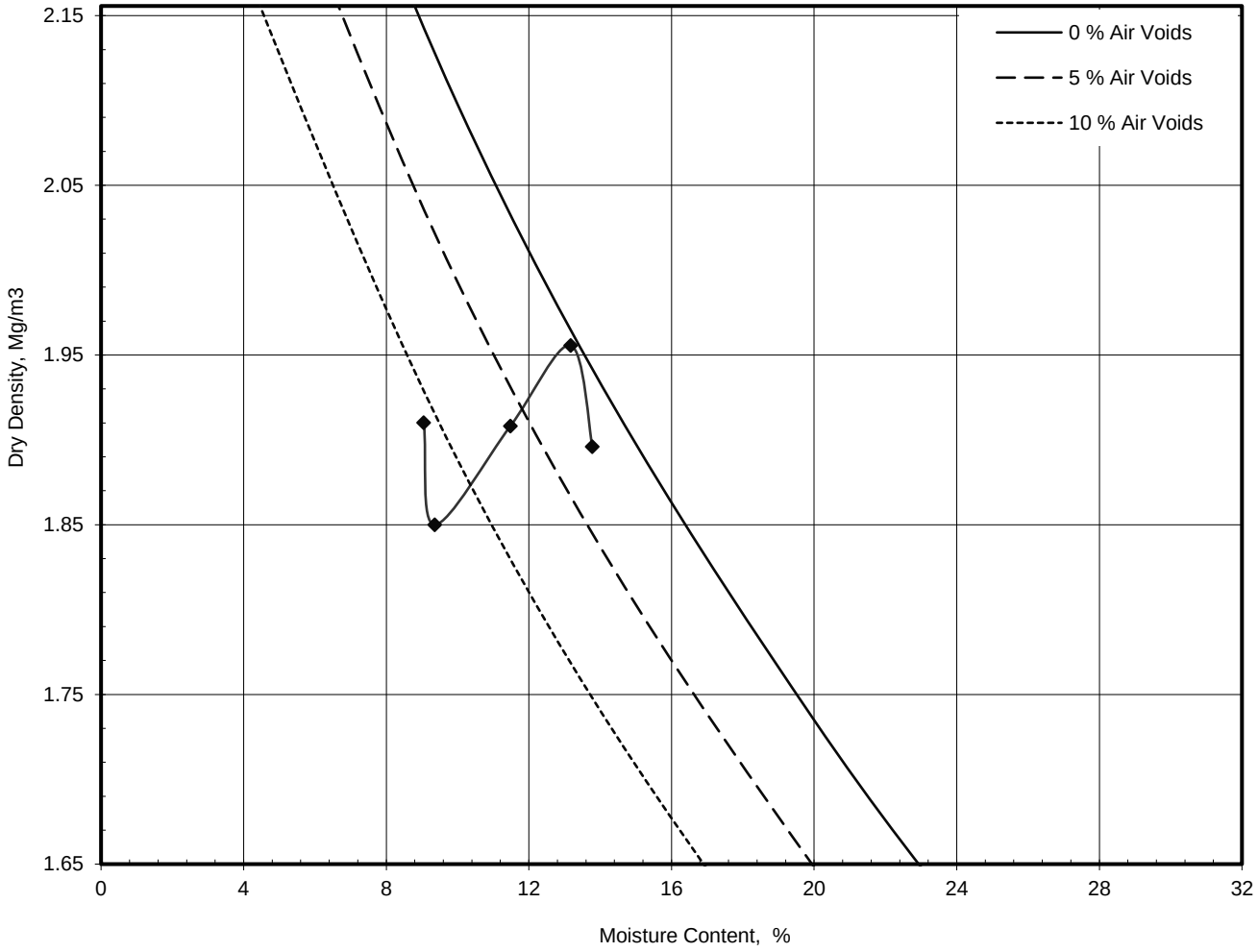
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	6
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.78**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH115
Site Name	Derrygreenagh Power			Sample No	10
Soil Description	Light brown slightly sandy gravelly SILT.			Depth	3.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL120230426314
				Compaction Test Reference/No.	



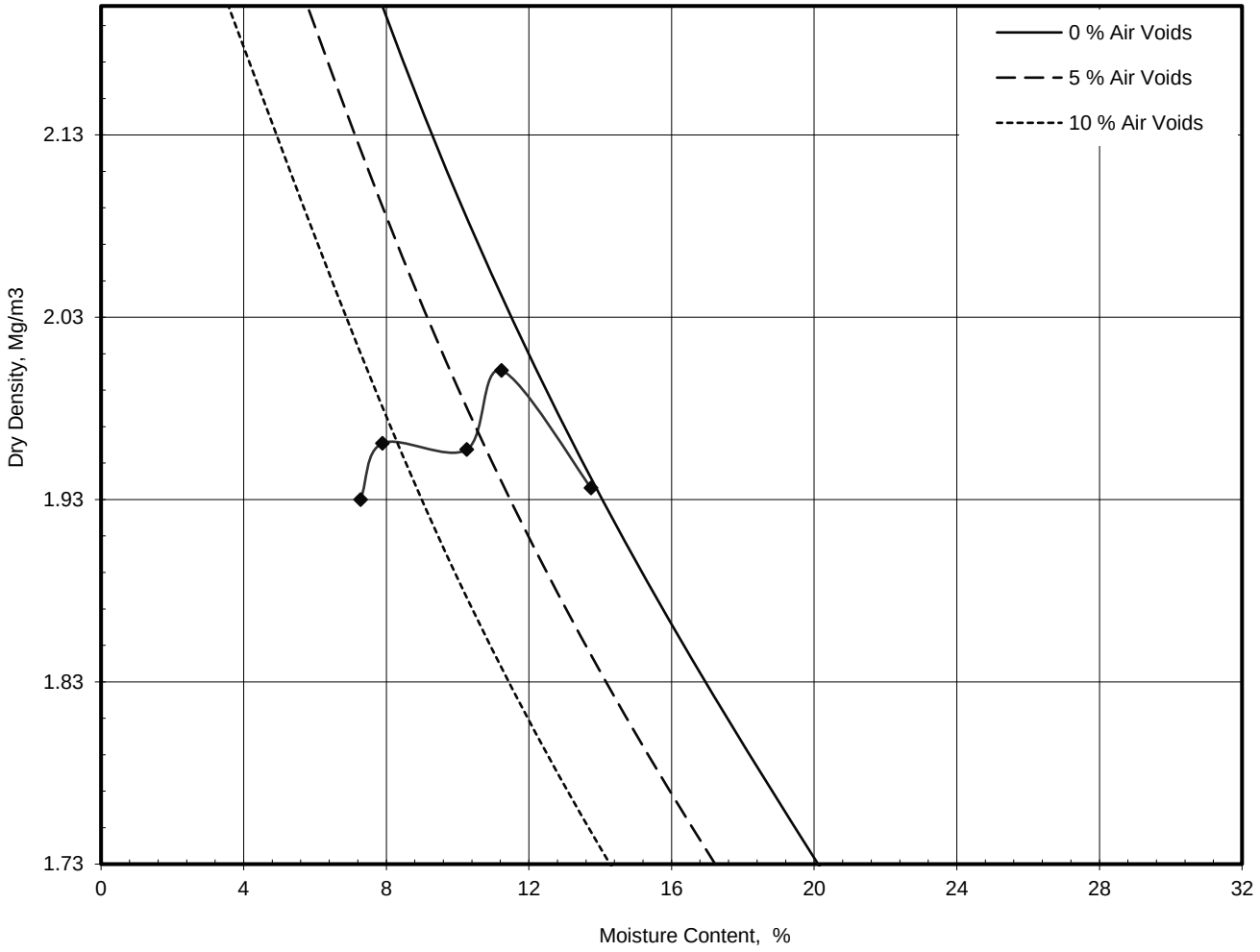
Preparation		Material used was natural and air dried
Mould Type		One Litre
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	16
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.95**
Optimum Moisture Content	%	**13**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH117
Site Name	Derrygreenagh Power			Sample No	6
Soil Description	Brownish-grey slightly gravelly sandy SILT.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023052381
				Compaction Test Reference/No.	



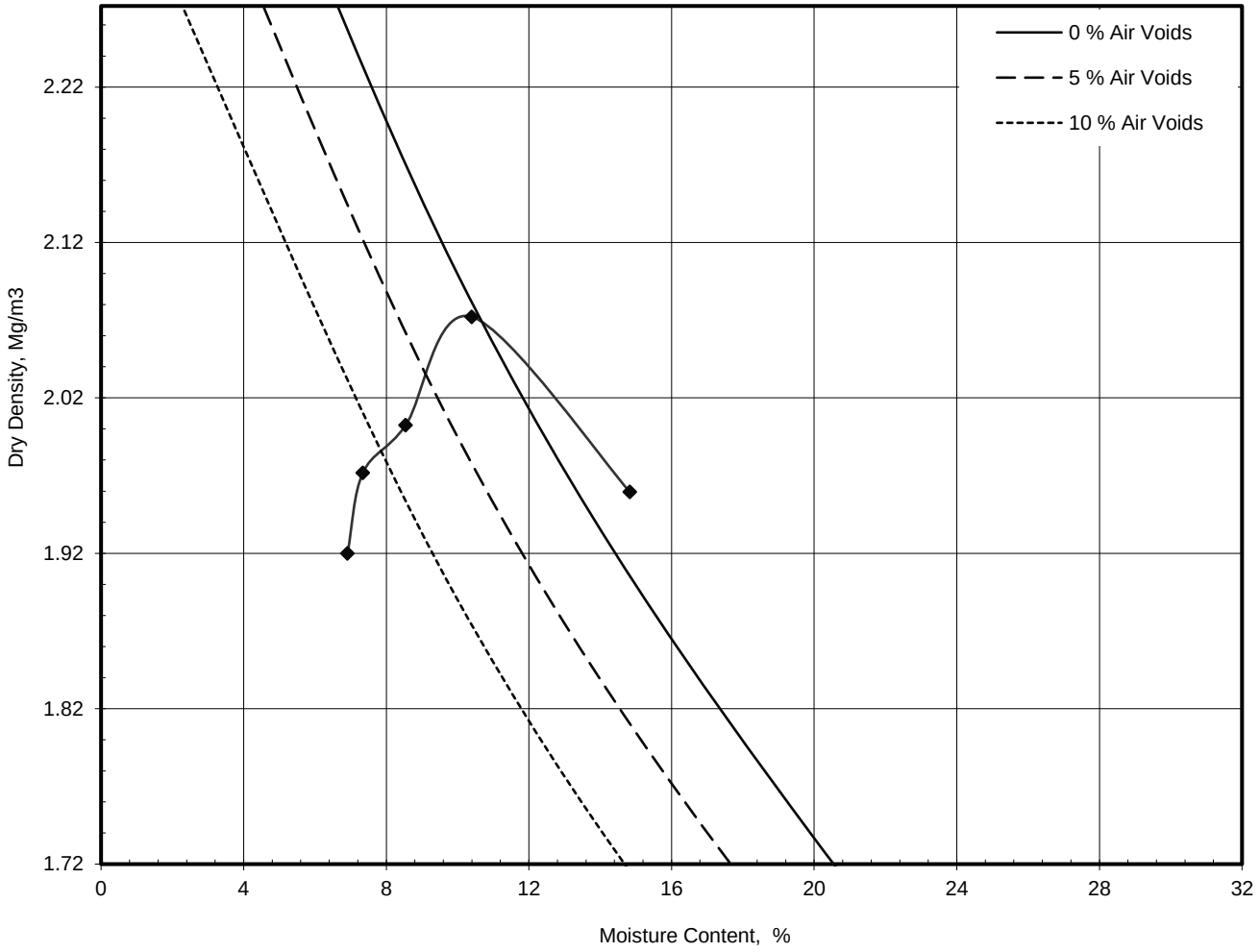
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	11
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.00**
Optimum Moisture Content	%	**11**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHSS101
Site Name	**Derrygreenagh Power**			Sample No	10
Soil Description	Grey gravelly SILT.			Depth	3.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023081444
				Compaction Test Reference/No.	



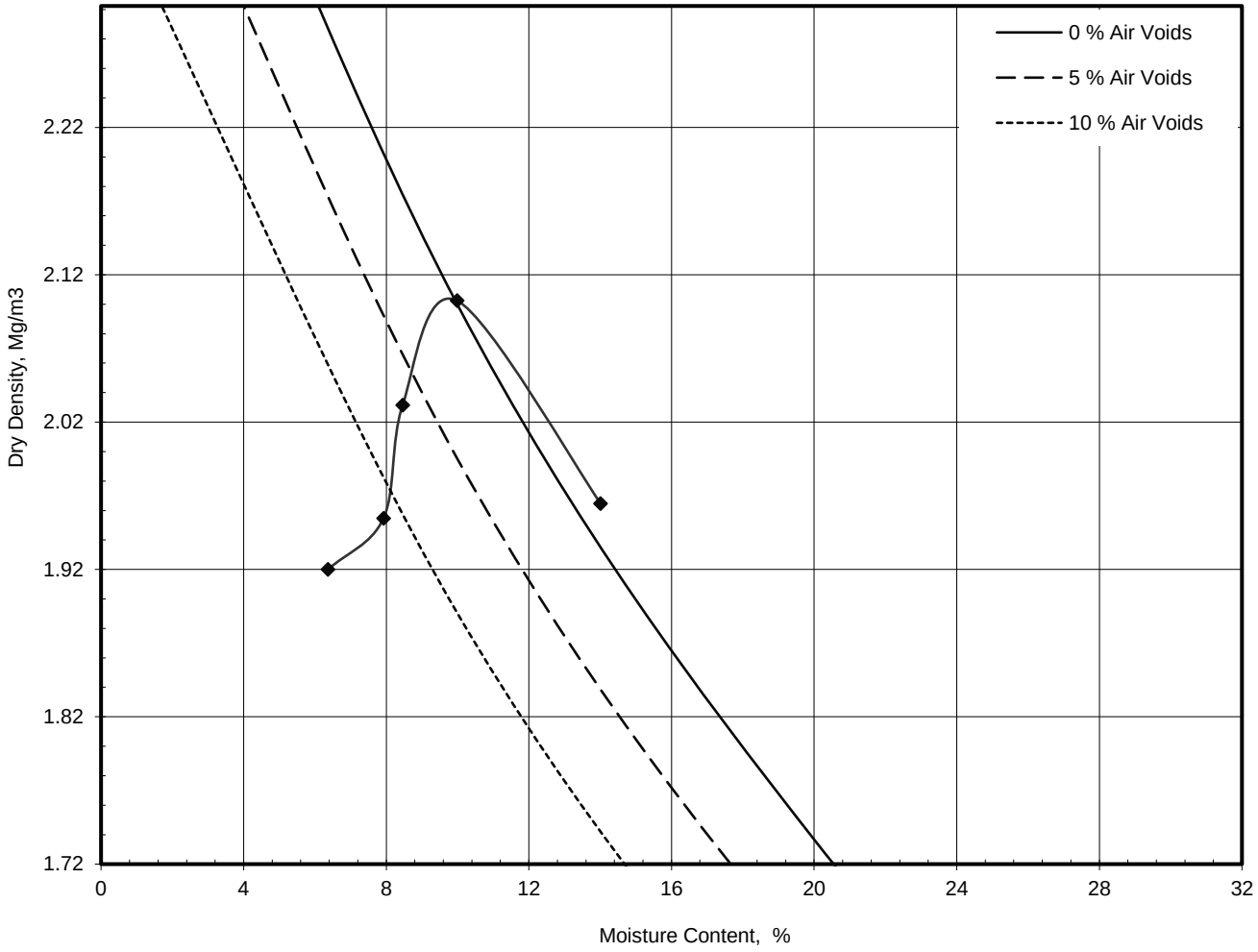
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	18
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.07**
Optimum Moisture Content	%	**11**

Operator	Checked	Approved	Remarks / Report Date:	
	BCS	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHSS103
Site Name	Derrygreenagh Power			Sample No	7
Soil Description	Light greyish-brown slightly gravelly slightly sandy SILT.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023081471
				Compaction Test Reference/No.	



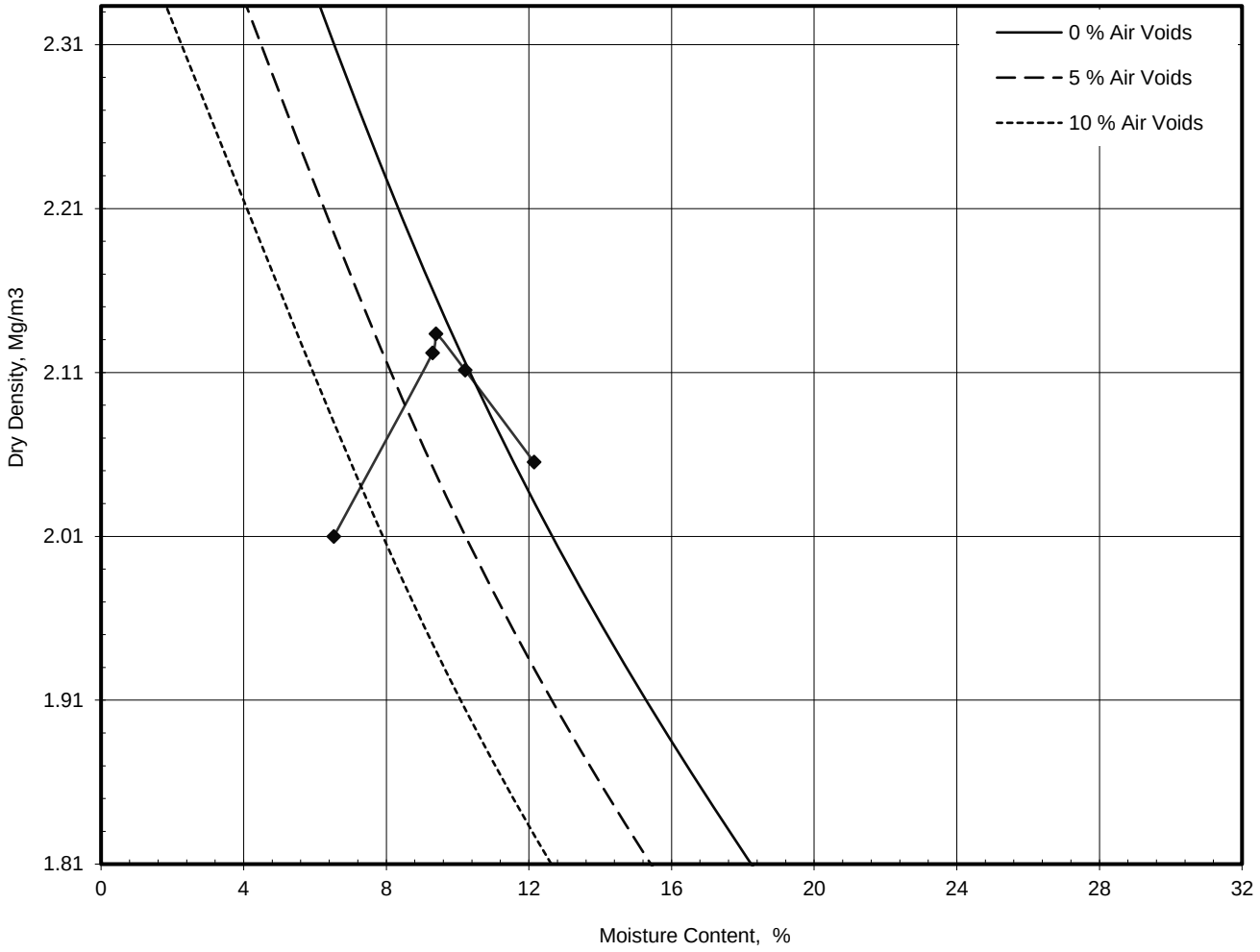
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	15
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.10**
Optimum Moisture Content	%	**10**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHSS106
Site Name	**Derrygreenagh Power**			Sample No	7
Soil Description	Greenish-grey slightly gravelly sandy SILT.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230814108
				Compaction Test Reference/No.	



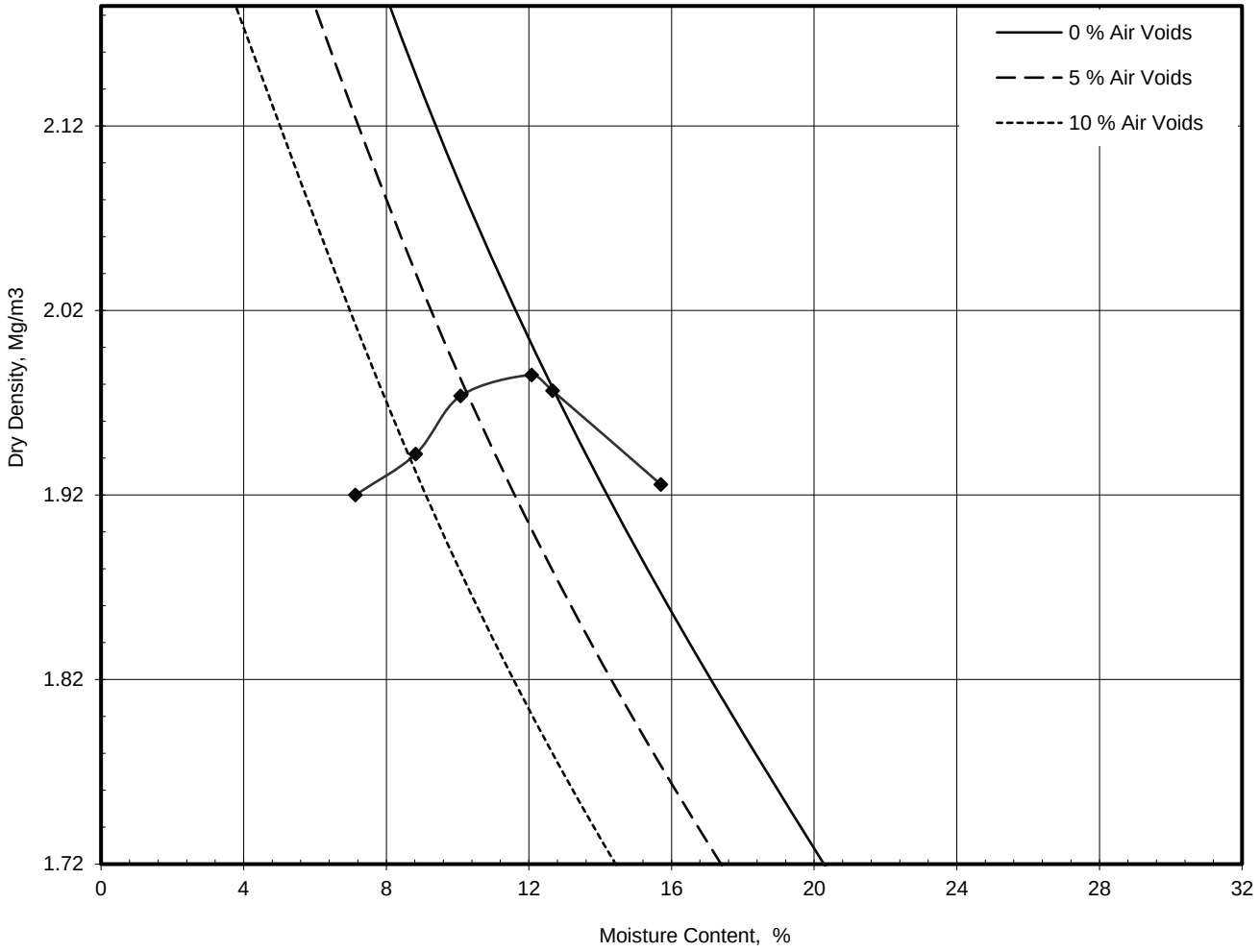
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	27
Particle Density - Assumed	Mg/m³	2.70

Maximum Dry Density	Mg/m³	**2.13**
Optimum Moisture Content	%	**9.4**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHT04
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Brownish-grey silty very gravelly medium and coarse SAND.			Depth	1.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023062235
				Compaction Test Reference/No.	



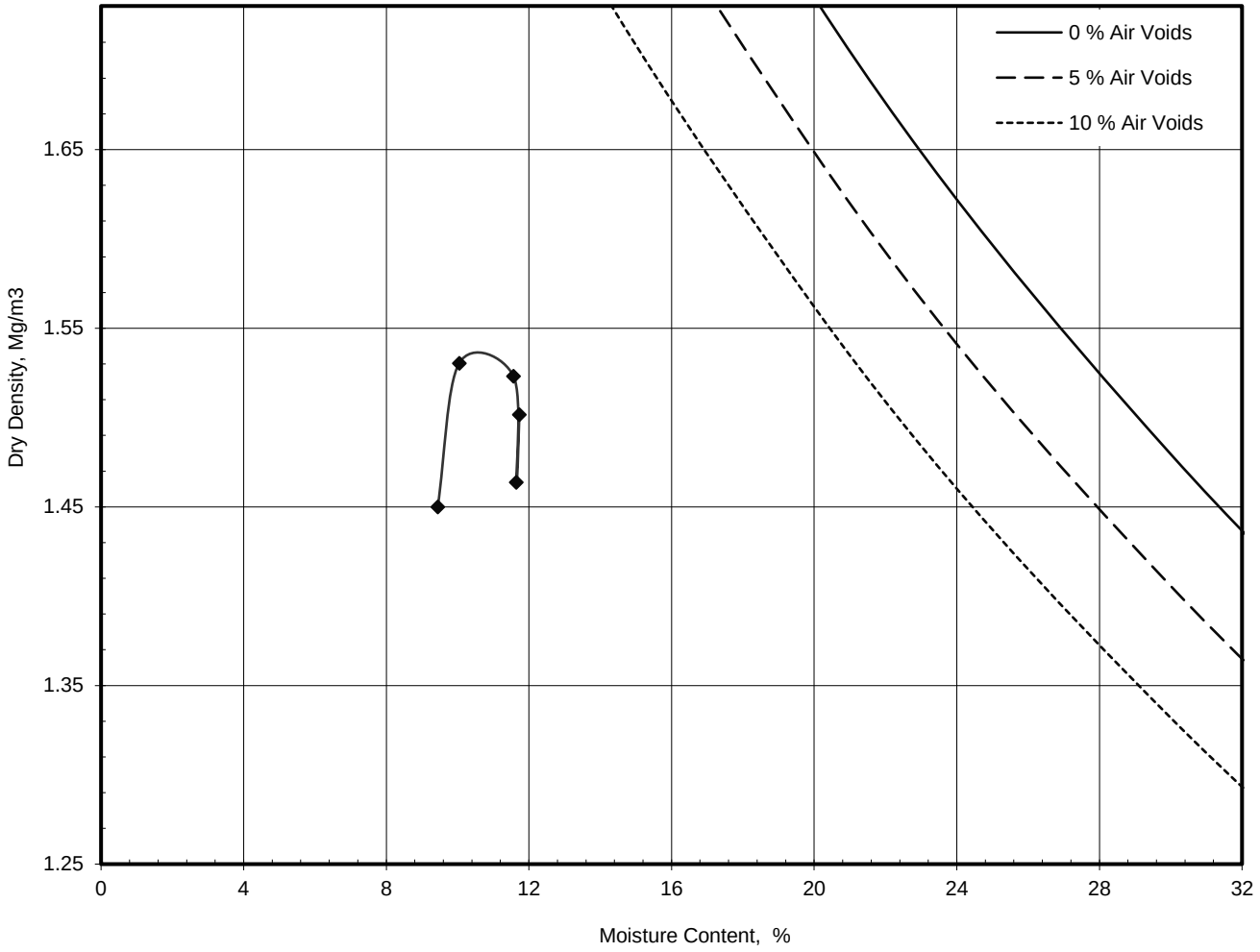
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	9
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.99**
Optimum Moisture Content	%	**11**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHT05
Site Name	Derrygreenagh Power			Sample No	6
Soil Description	Greyish-brown slightly gravelly sandy SILT. SAND is fine.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230607171
				Compaction Test Reference/No.	



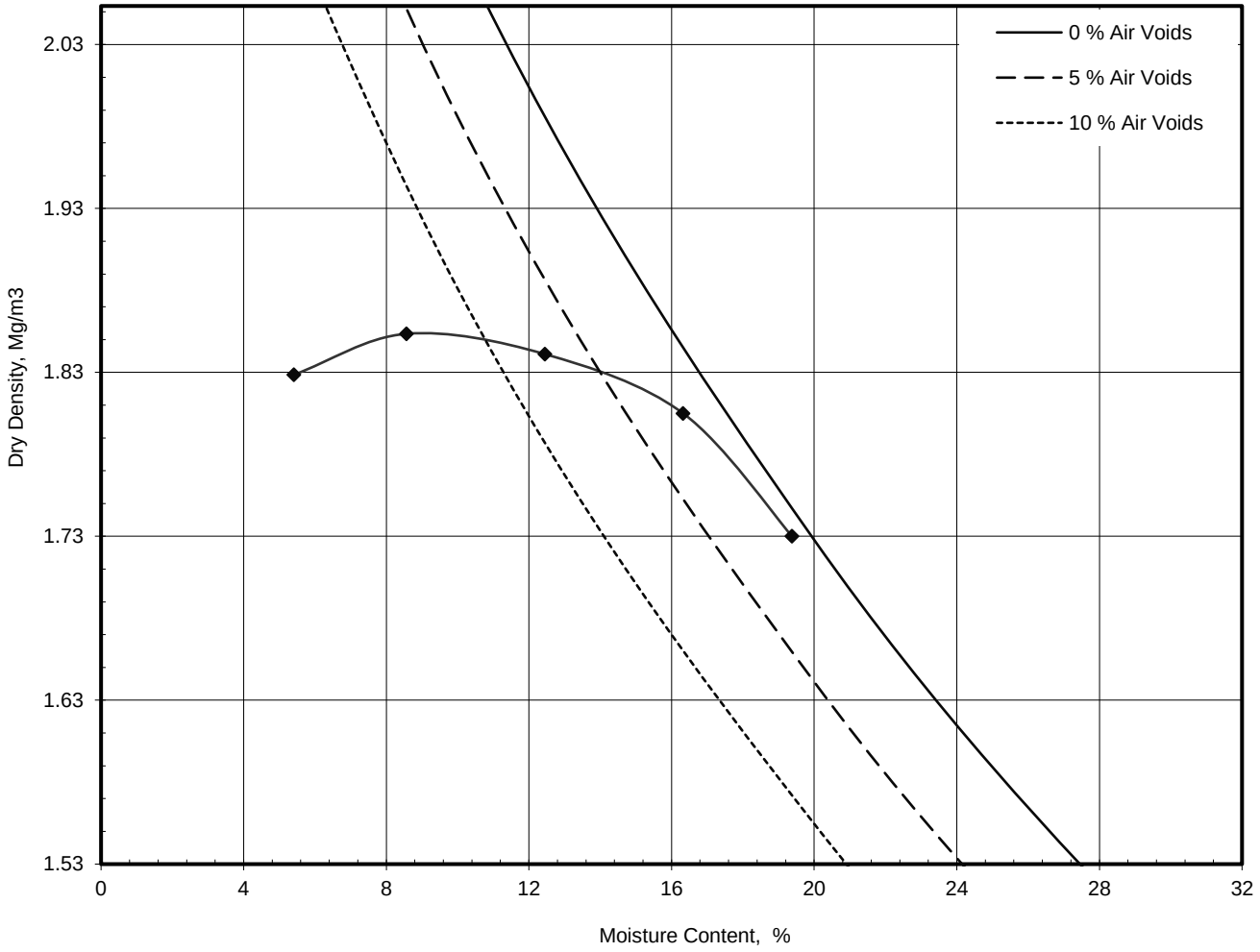
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	3
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.53**
Optimum Moisture Content	%	**12**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHT06
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Blackish-grey very silty coarse SAND and fine GRAVEL.			Depth	1.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023062251
				Compaction Test Reference/No.	



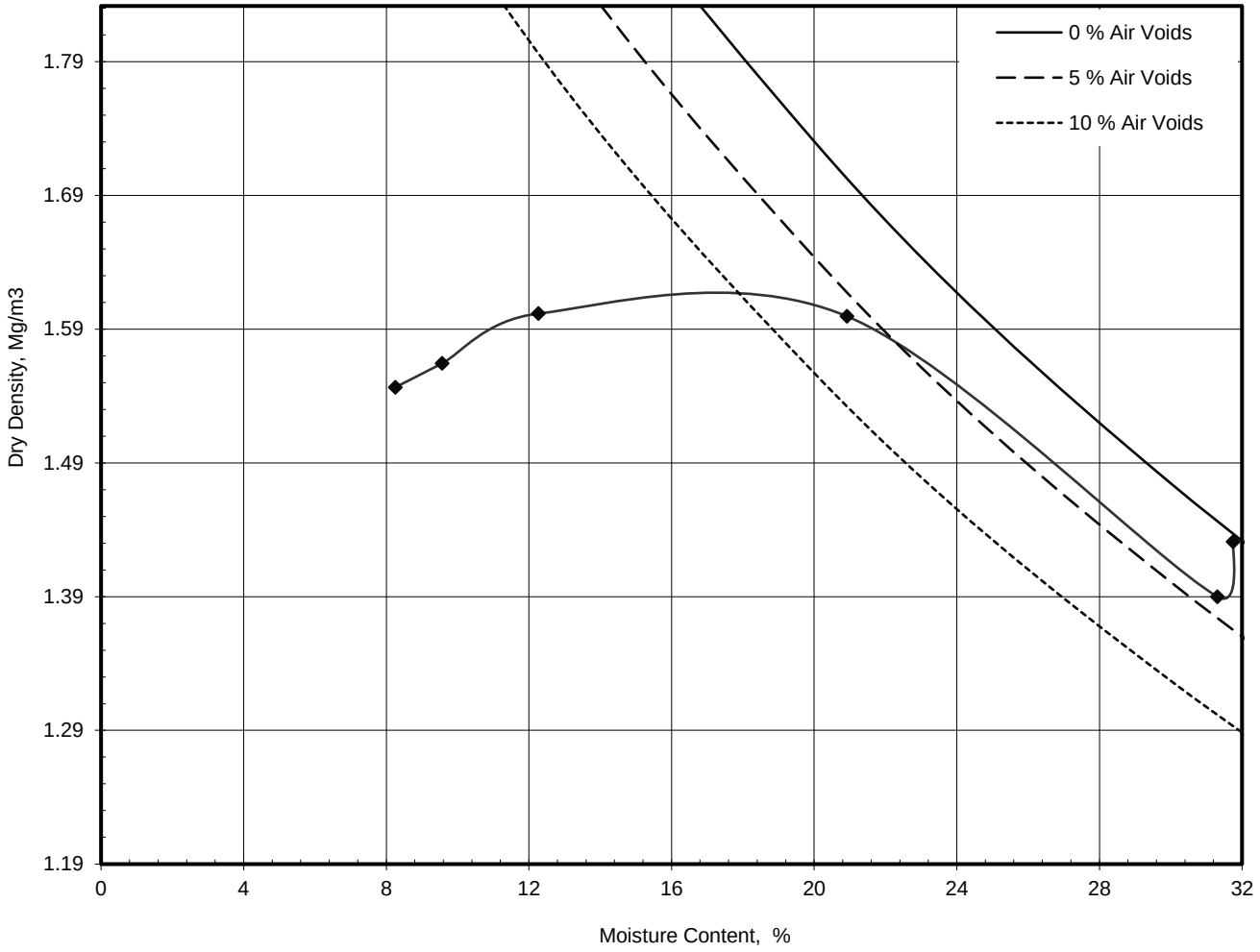
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	8
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.86**
Optimum Moisture Content	%	**9.4**

Operator	Checked	Approved	Remarks / Report Date:	
	BCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHT07
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Black and grey silty SAND and GRAVEL.			Depth	1.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230607190
				Compaction Test Reference/No.	



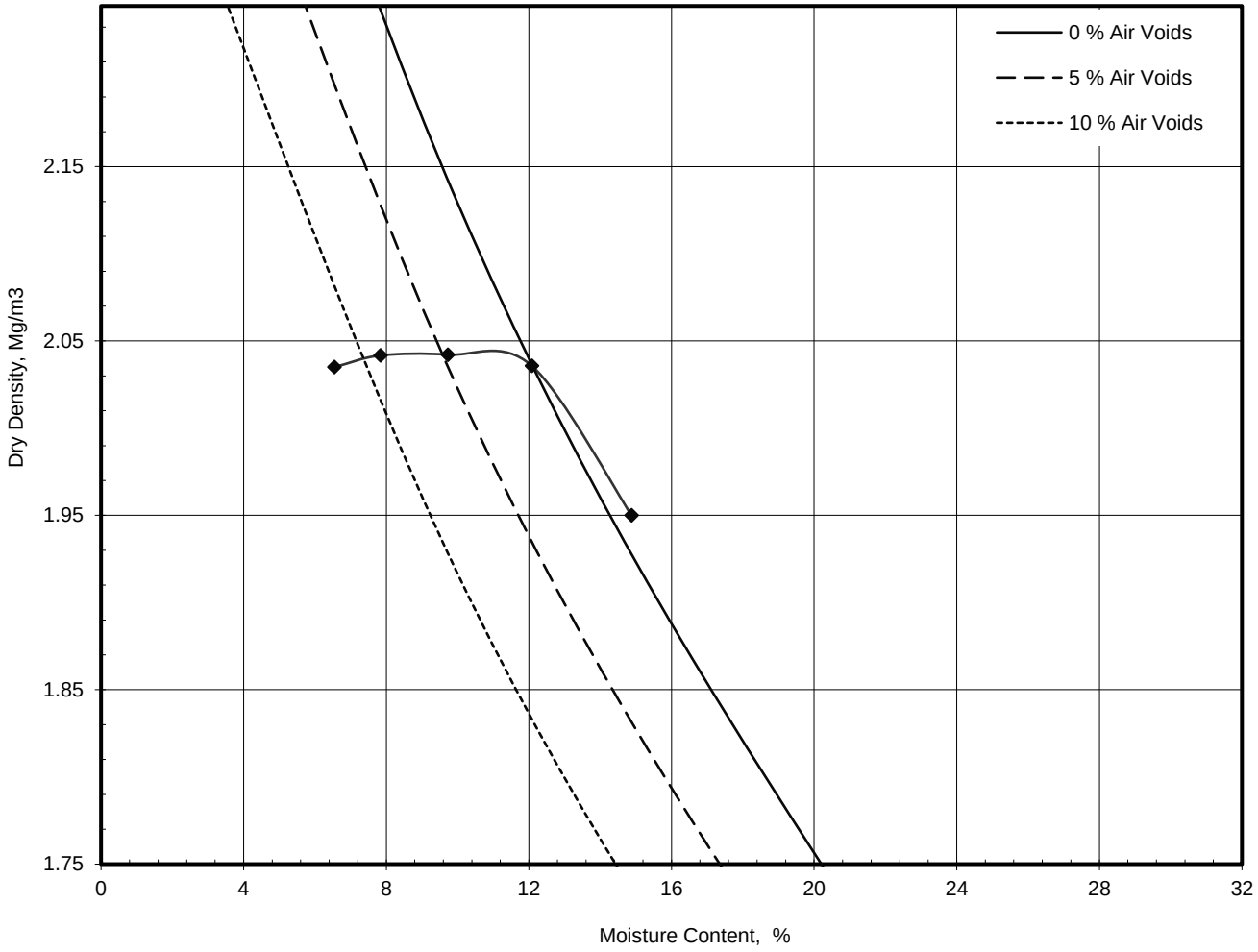
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	11
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.63**
Optimum Moisture Content	%	**17**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	BCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHT17A
Site Name	**Derrygreenagh Power**			Sample No	13
Soil Description	Brownish-grey slightly gravelly sandy SILT.			Depth	4.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023080820
				Compaction Test Reference/No.	



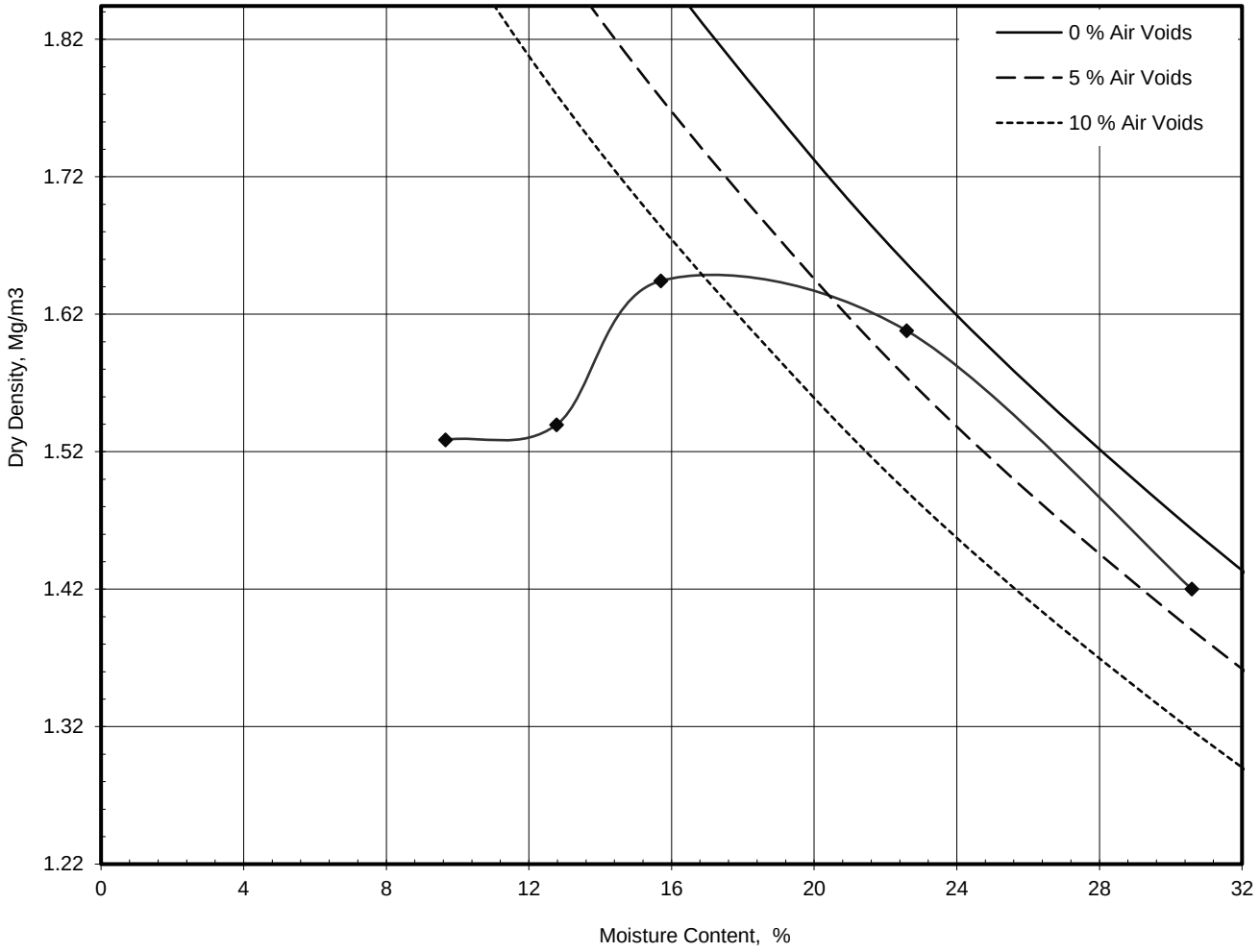
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	14
Particle Density - Assumed	Mg/m³	2.70

Maximum Dry Density	Mg/m³	**2.04**
Optimum Moisture Content	%	**9.7**

Operator	Checked	Approved	Remarks / Report Date:	
	BCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP204
Site Name	Derrygreenagh Power			Sample No	5
Soil Description	Greenish-grey slightly gravelly slightly sandy SILT.			Depth	2.50 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL120230505129
				Compaction Test Reference/No.	



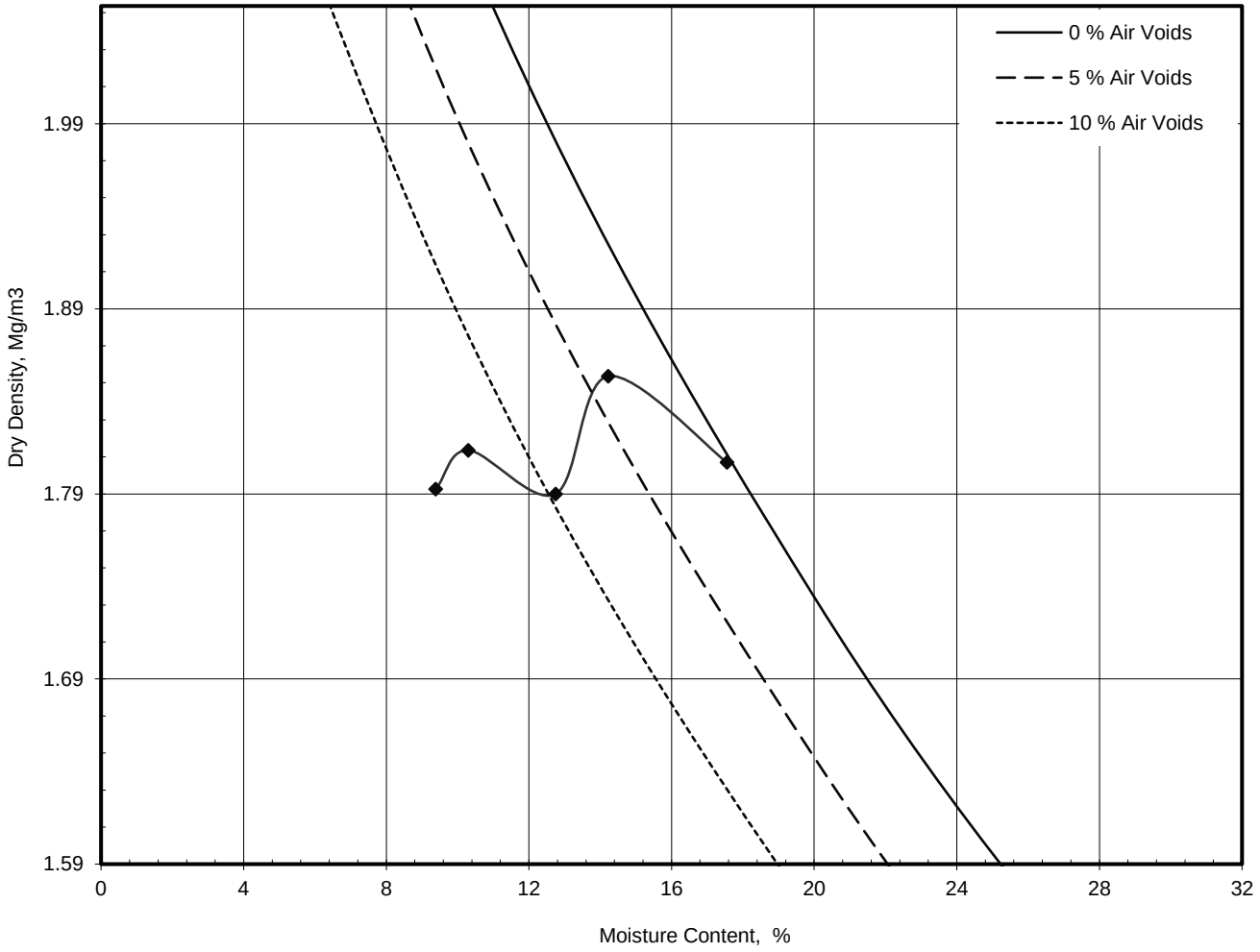
Preparation		Material used was natural and air dried
Mould Type		One Litre
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	7
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.64**
Optimum Moisture Content	%	**16**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP206A
Site Name	Derrygreenagh Power			Sample No	1
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth	0.50 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL1202305170
				Compaction Test Reference/No.	



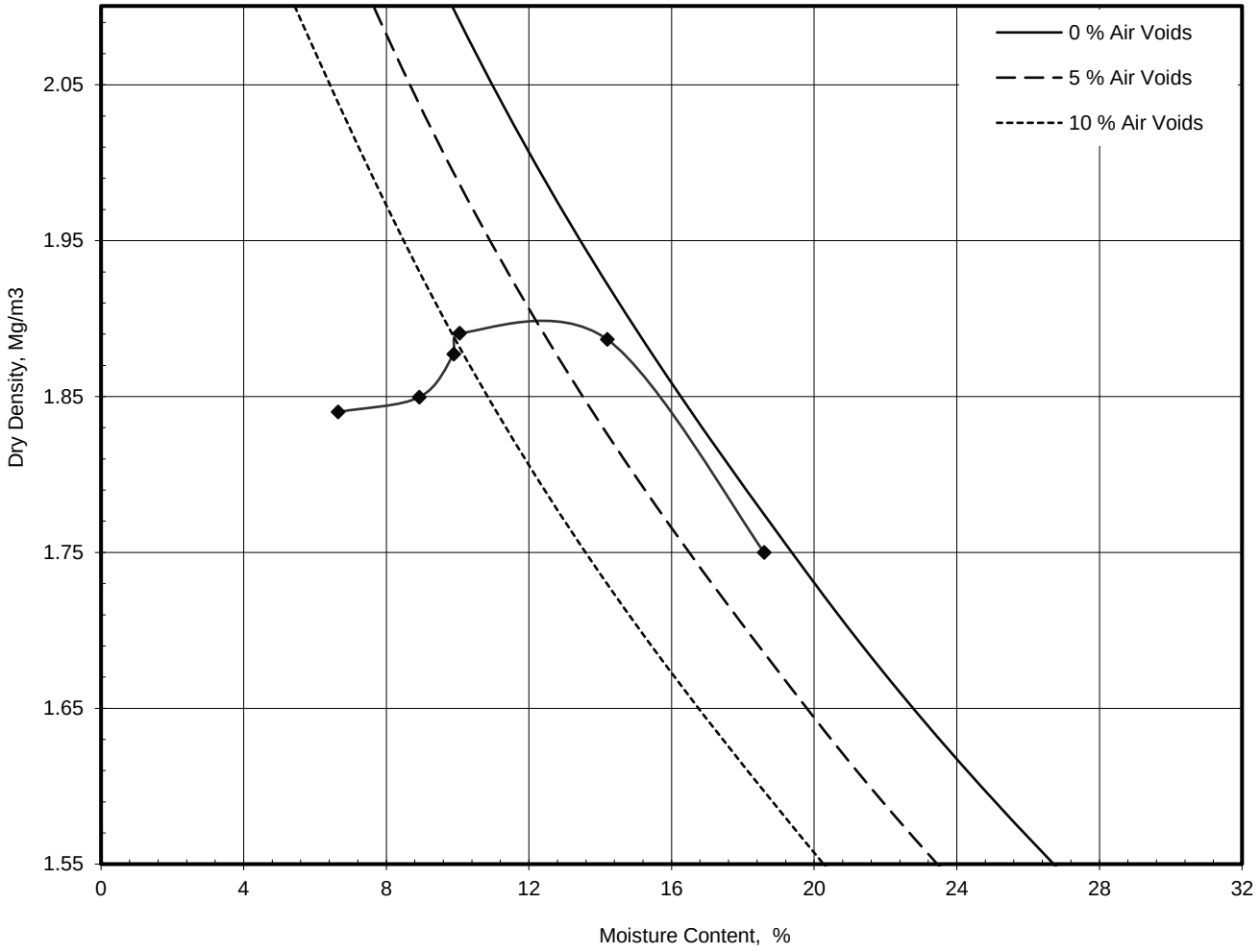
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	8
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.85**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP208
Site Name	Derrygreenagh Power			Sample No	6
Soil Description	Light brown slightly gravelly slightly sandy SILT.			Depth	2.50 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL1202308165
				Compaction Test Reference/No.	



Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	21
Particle Density - Assumed	Mg/m³	2.65

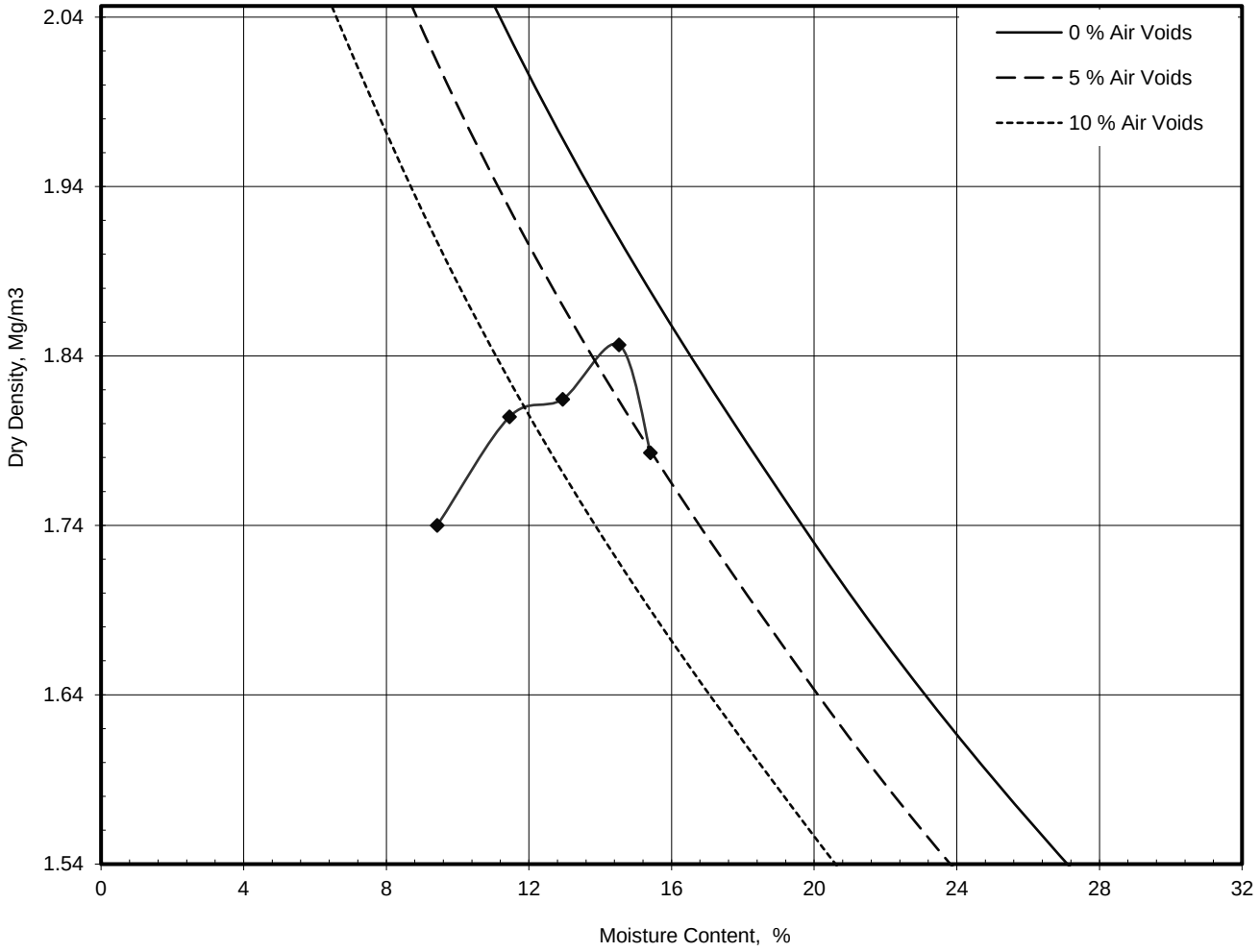
Maximum Dry Density	Mg/m³	**1.90**

Optimum Moisture Content	%	**12**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	BCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP209
Site Name	Derrygreenagh Power			Sample No	2
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth	1.30 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051711
				Compaction Test Reference/No.	



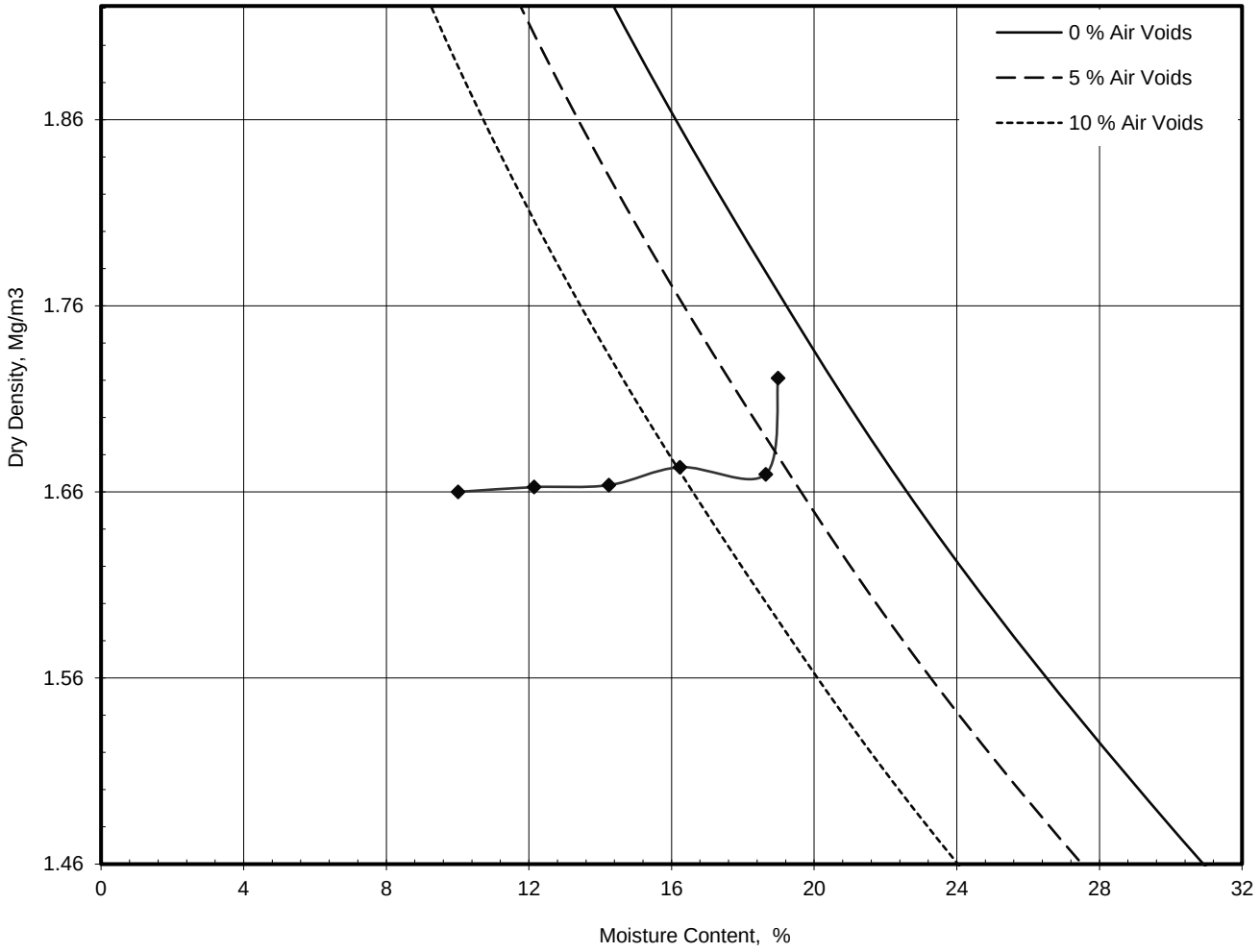
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	3
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.85**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP210
Site Name	Derrygreenagh Power			Sample No	1
Soil Description	Light brown slightly sandy slightly gravelly SILT.			Depth	0.50 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051715
				Compaction Test Reference/No.	



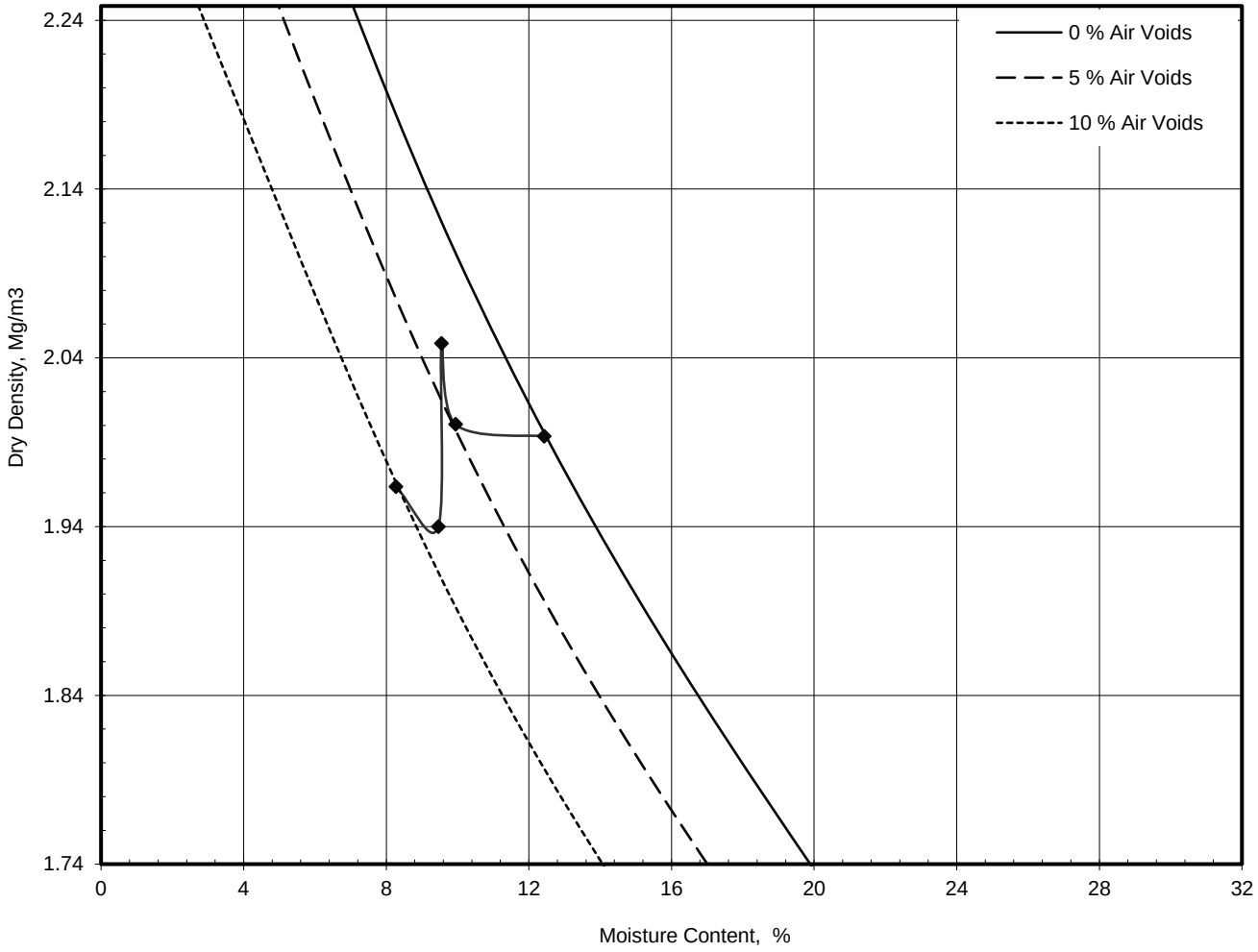
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	7
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.72**
Optimum Moisture Content	%	**19**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP211
Site Name	**Derrygreenagh Power**			Sample No	3
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth	1.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051723
				Compaction Test Reference/No.	



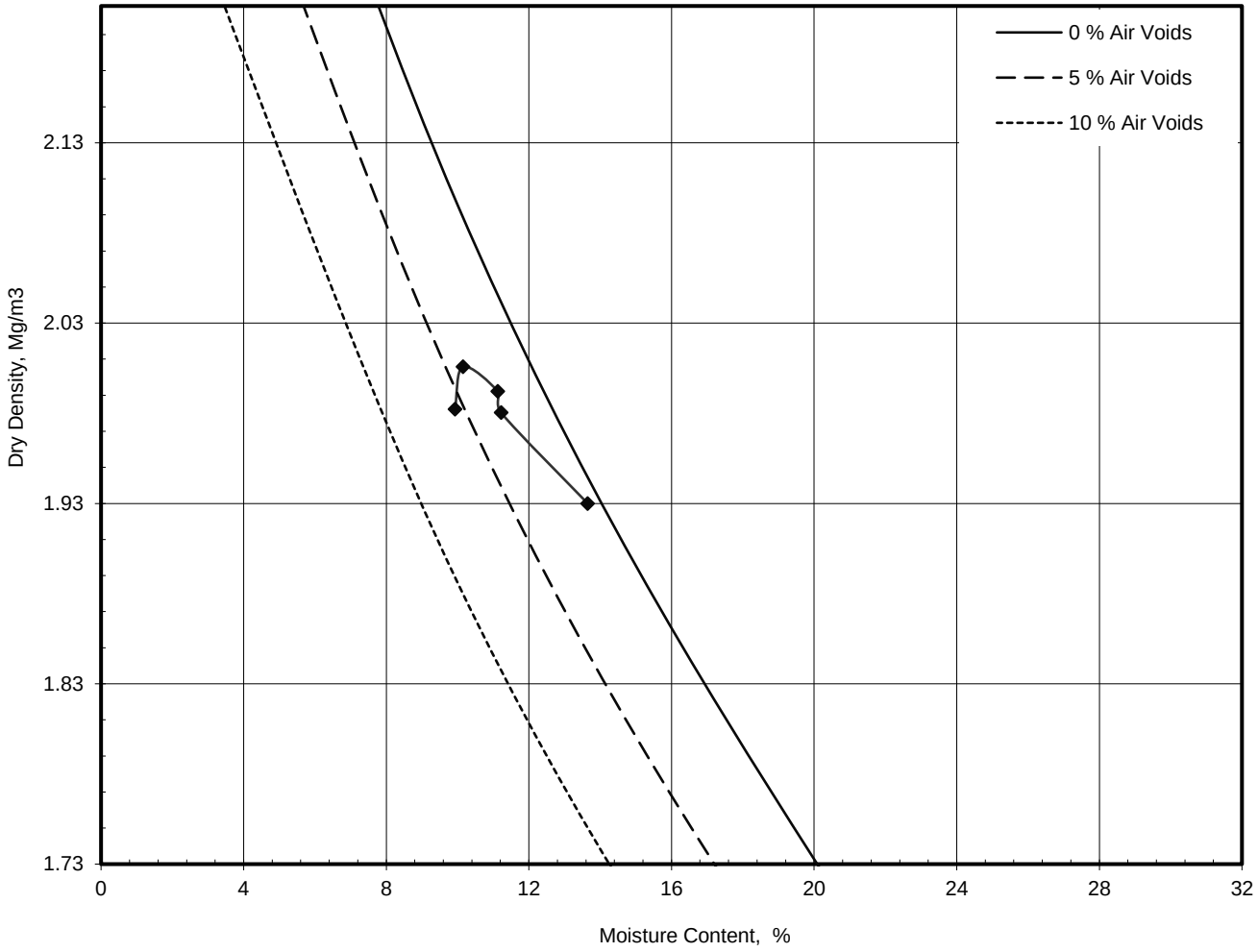
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	12
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.04**
Optimum Moisture Content	%	**9.6**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP212
Site Name	Derrygreenagh Power			Sample No	3
Soil Description	Brown slightly gravelly sandy SILT. Sand is fine.			Depth	1.10 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051732
				Compaction Test Reference/No.	



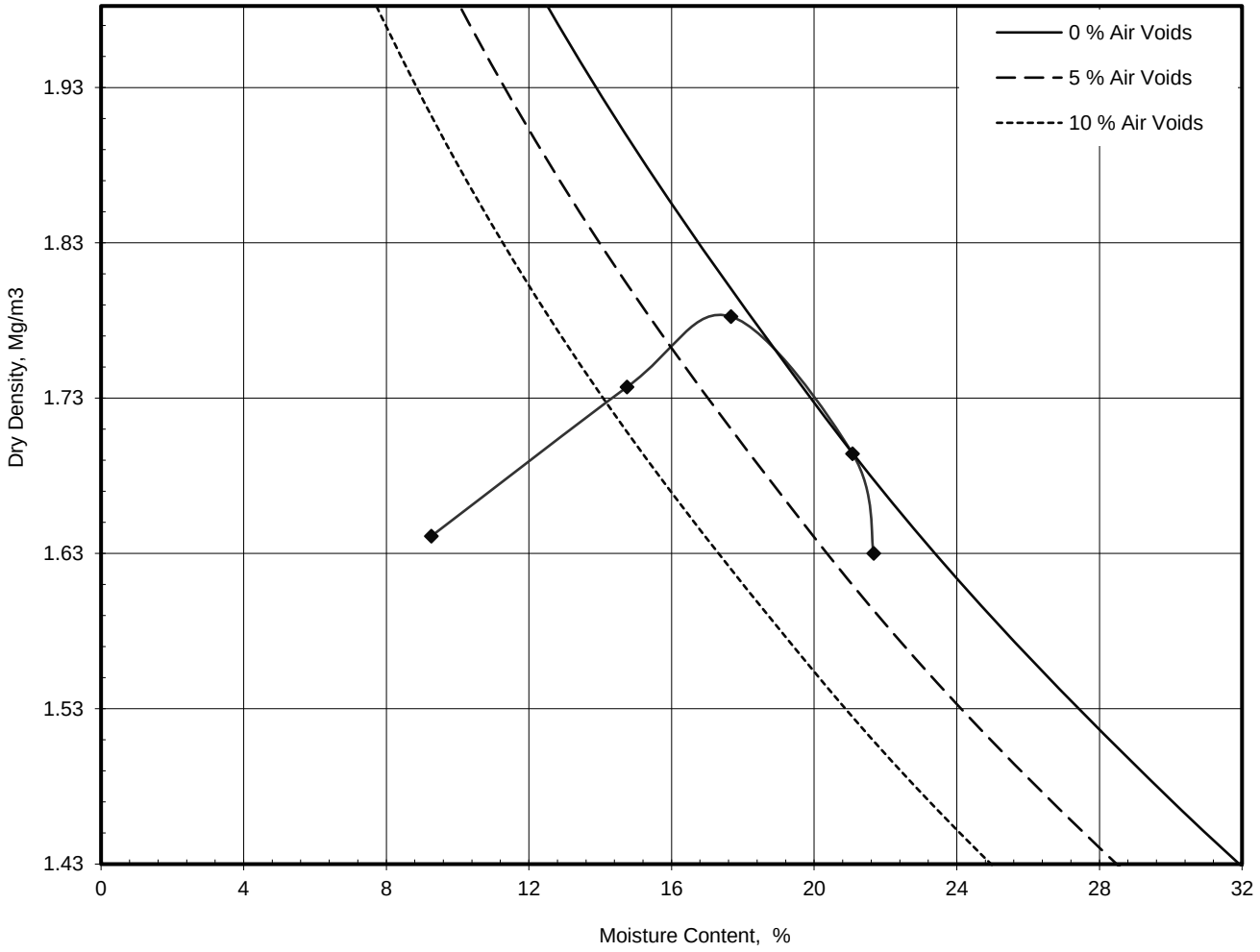
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	6
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.01**
Optimum Moisture Content	%	**10**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP216
Site Name	**Derrygreenagh Power**			Sample No	1
Soil Description	Brown slightly gravelly sandy SILT.			Depth	0.50 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051738
				Compaction Test Reference/No.	



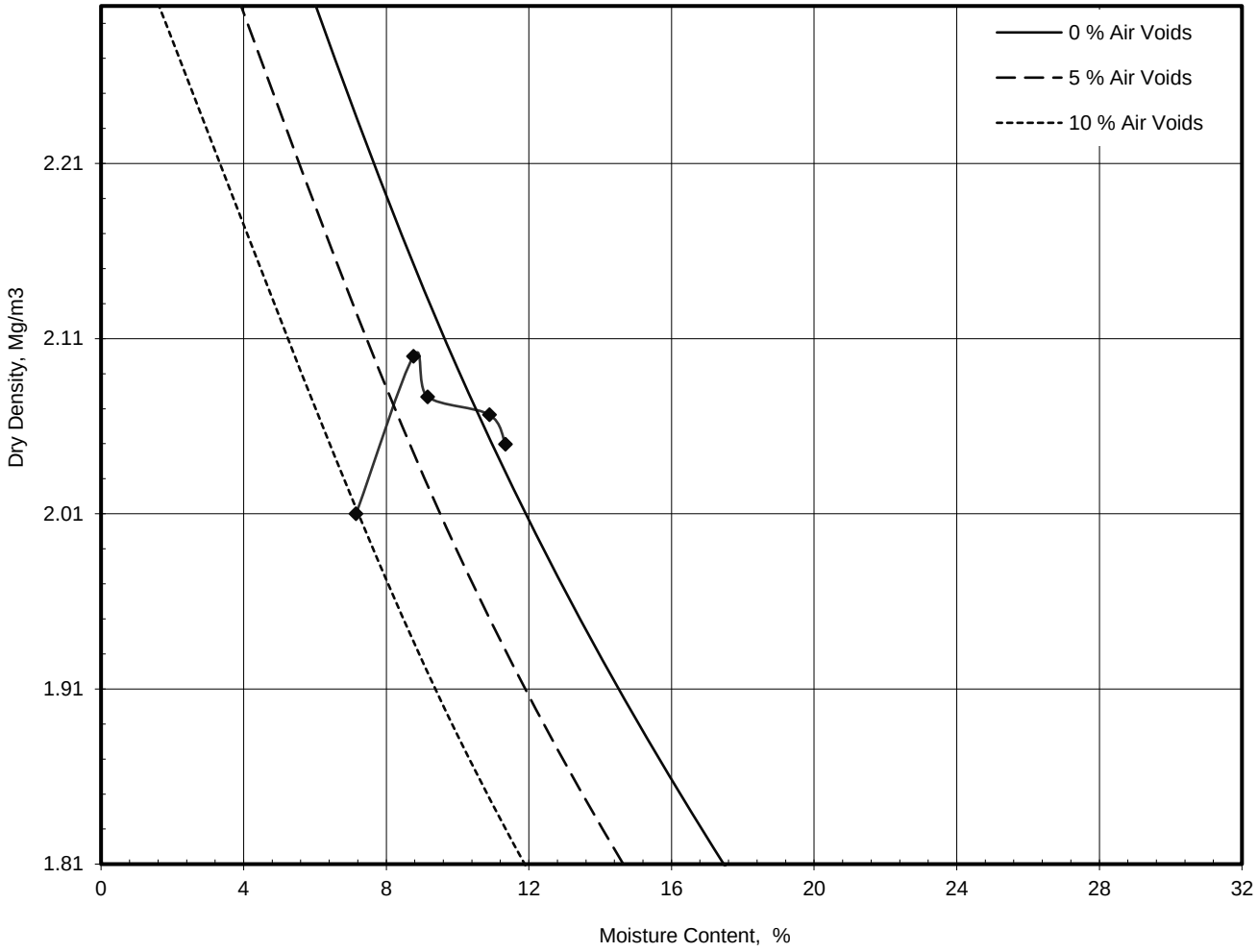
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	7
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.79**
Optimum Moisture Content	%	**18**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP217
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Greyish-brown slightly gravelly sandy SILT.			Depth	1.60 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051747
				Compaction Test Reference/No.	



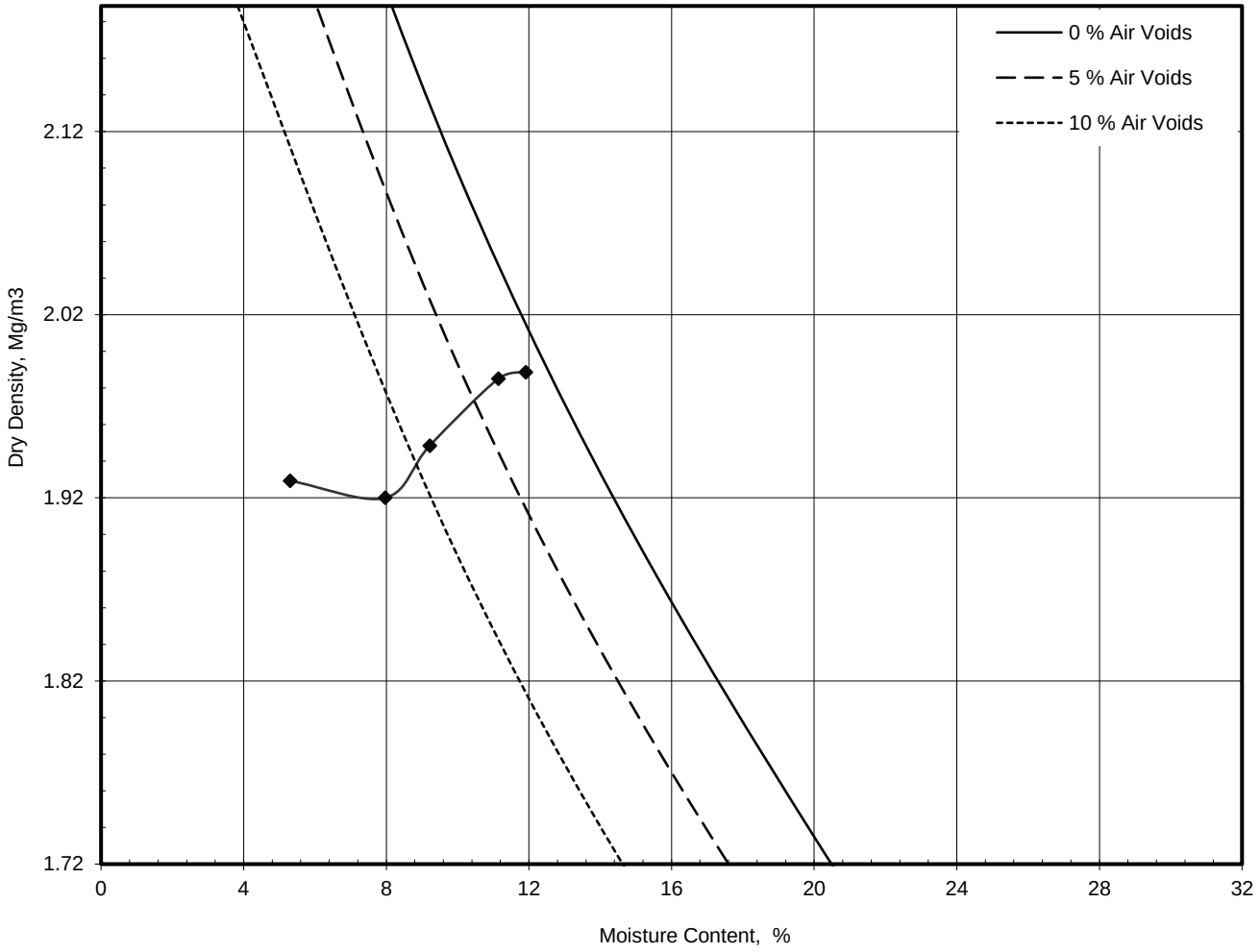
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	15
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.10**
Optimum Moisture Content	%	**9.2**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP218
Site Name	**Derrygreenagh Power**			Sample No	1
Soil Description	Brown slightly sandy slightly gravelly SILT.			Depth	0.60 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051753
				Compaction Test Reference/No.	



Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	16
Particle Density - Assumed	Mg/m³	2.65

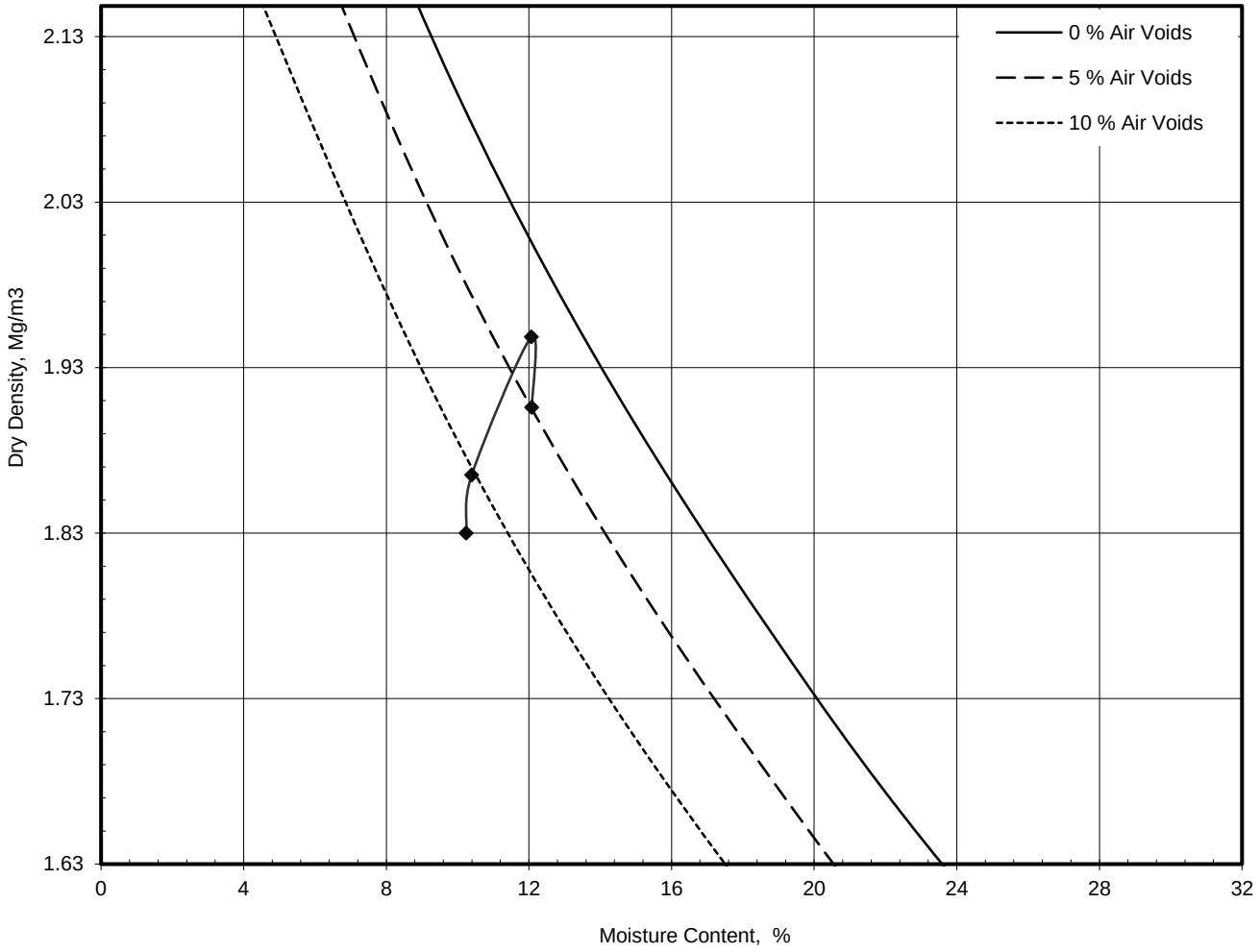
Maximum Dry Density	Mg/m³	**1.99**

Optimum Moisture Content	%	**11**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP220
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Greyish-brown very silty SAND and GRAVEL.			Depth	2.40 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051771
				Compaction Test Reference/No.	



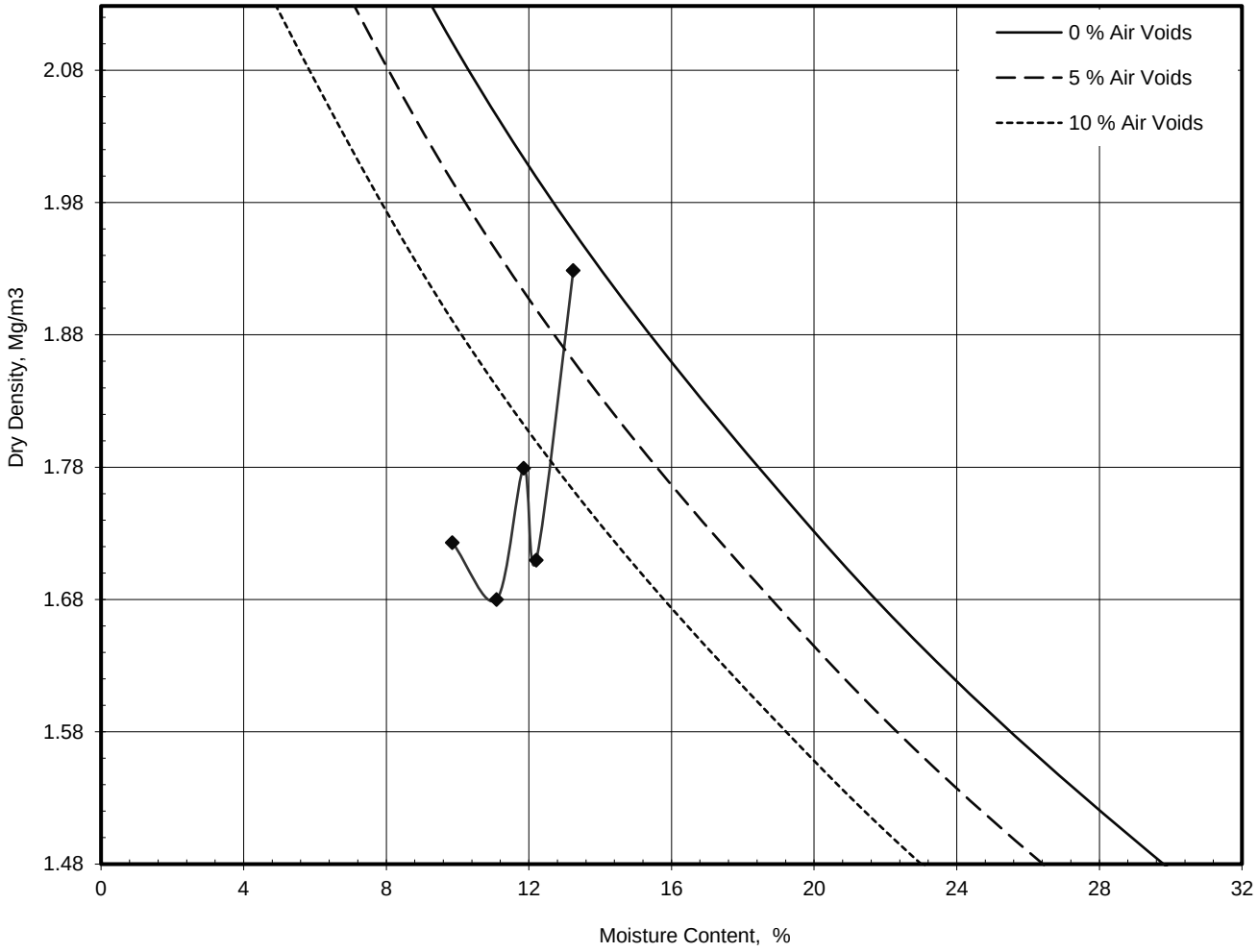
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	5
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.95**
Optimum Moisture Content	%	**12**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP222
Site Name	**Derrygreenagh Power**			Sample No	2
Soil Description	Greyish-black very silty very sandy fine GRAVEL.			Depth	2.70 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL1202306224
				Compaction Test Reference/No.	



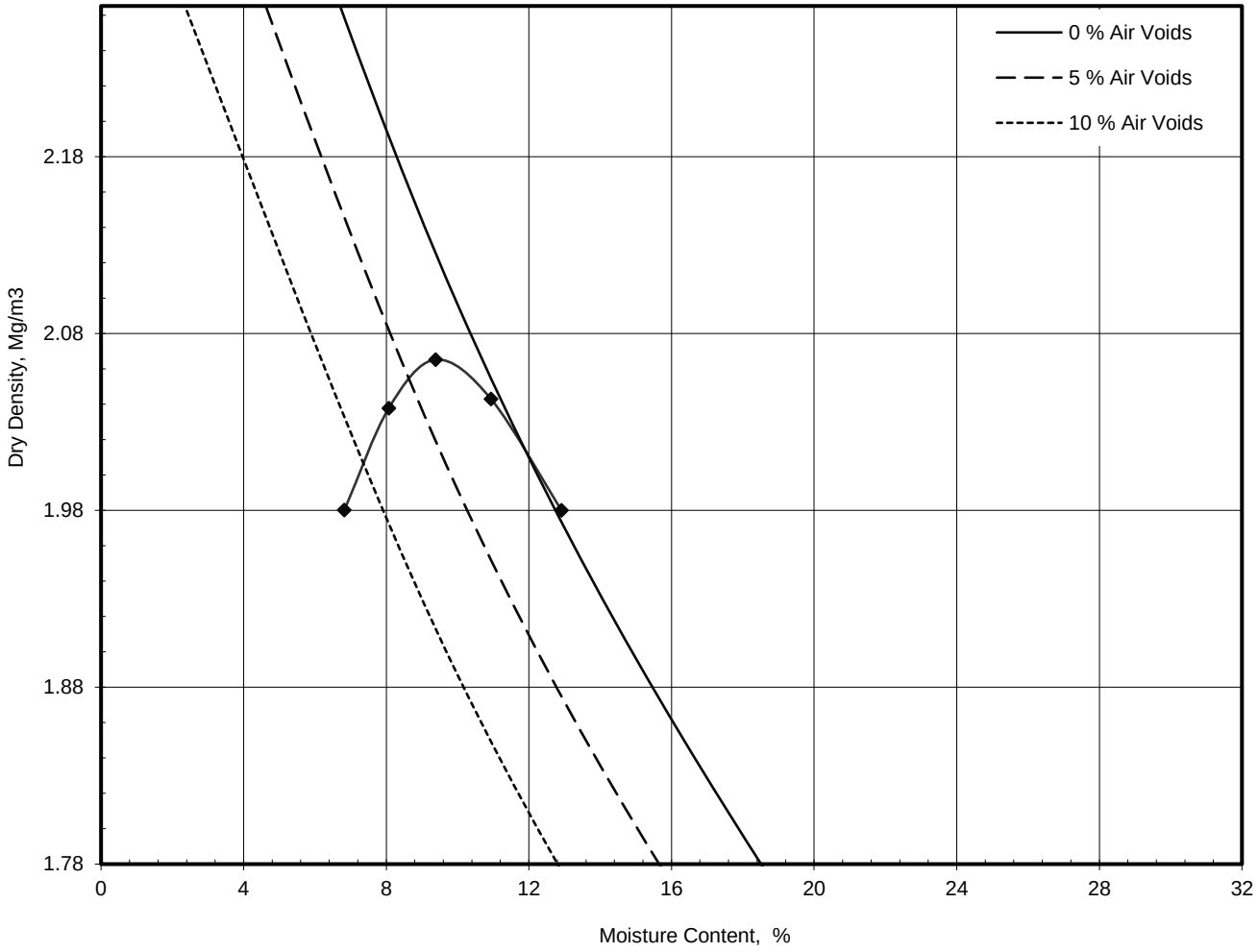
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	4
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.93**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TPC09
Site Name	Derrygreenagh Power			Sample No	6
Soil Description	Bluish-grey slightly sandy gravelly SILT.			Depth	2.70 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023081625
				Compaction Test Reference/No.	



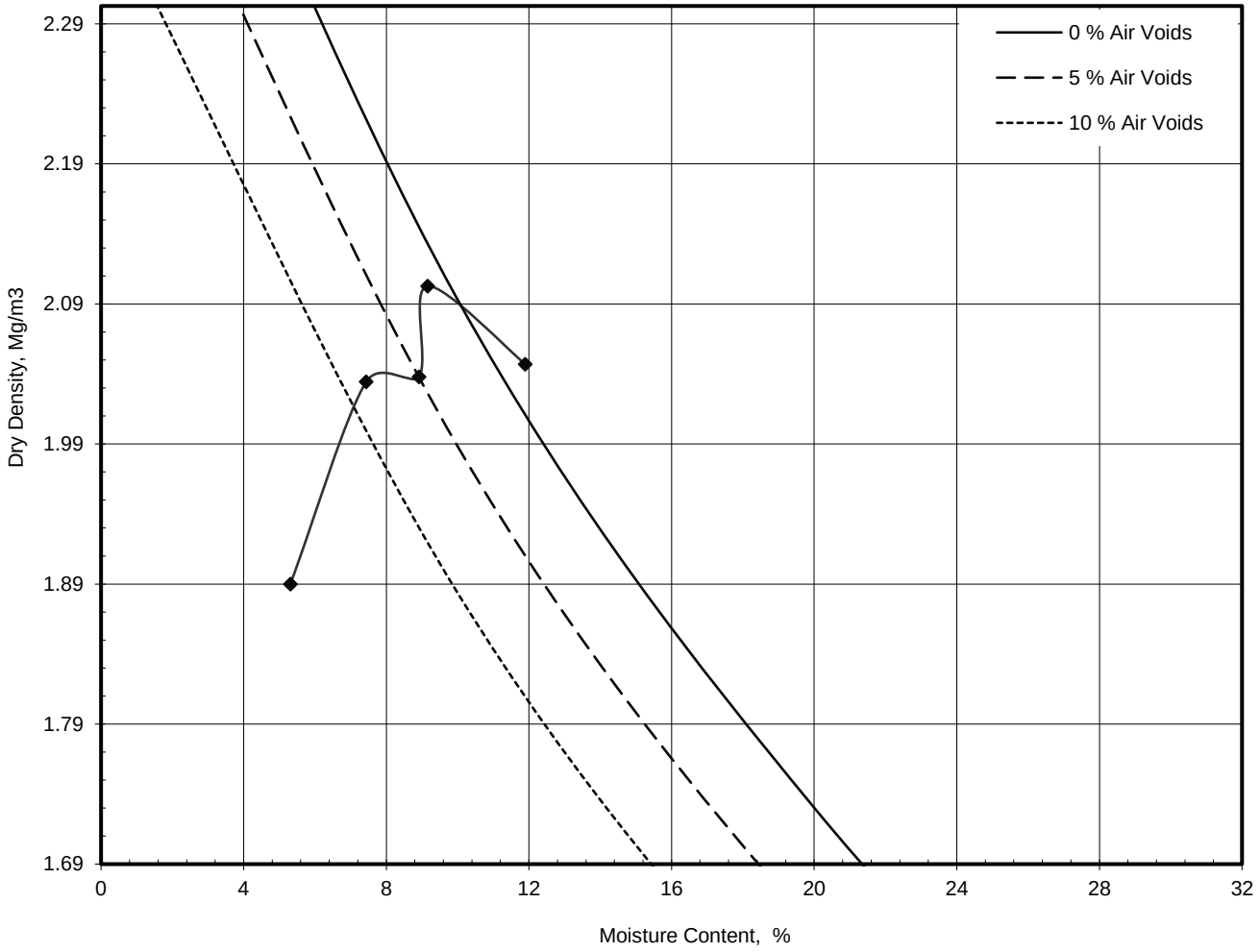
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	9
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.06**
Optimum Moisture Content	%	**9.4**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TPSS107
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Light grey very silty SAND and GRAVEL.			Depth	1.80 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023081680
				Compaction Test Reference/No.	



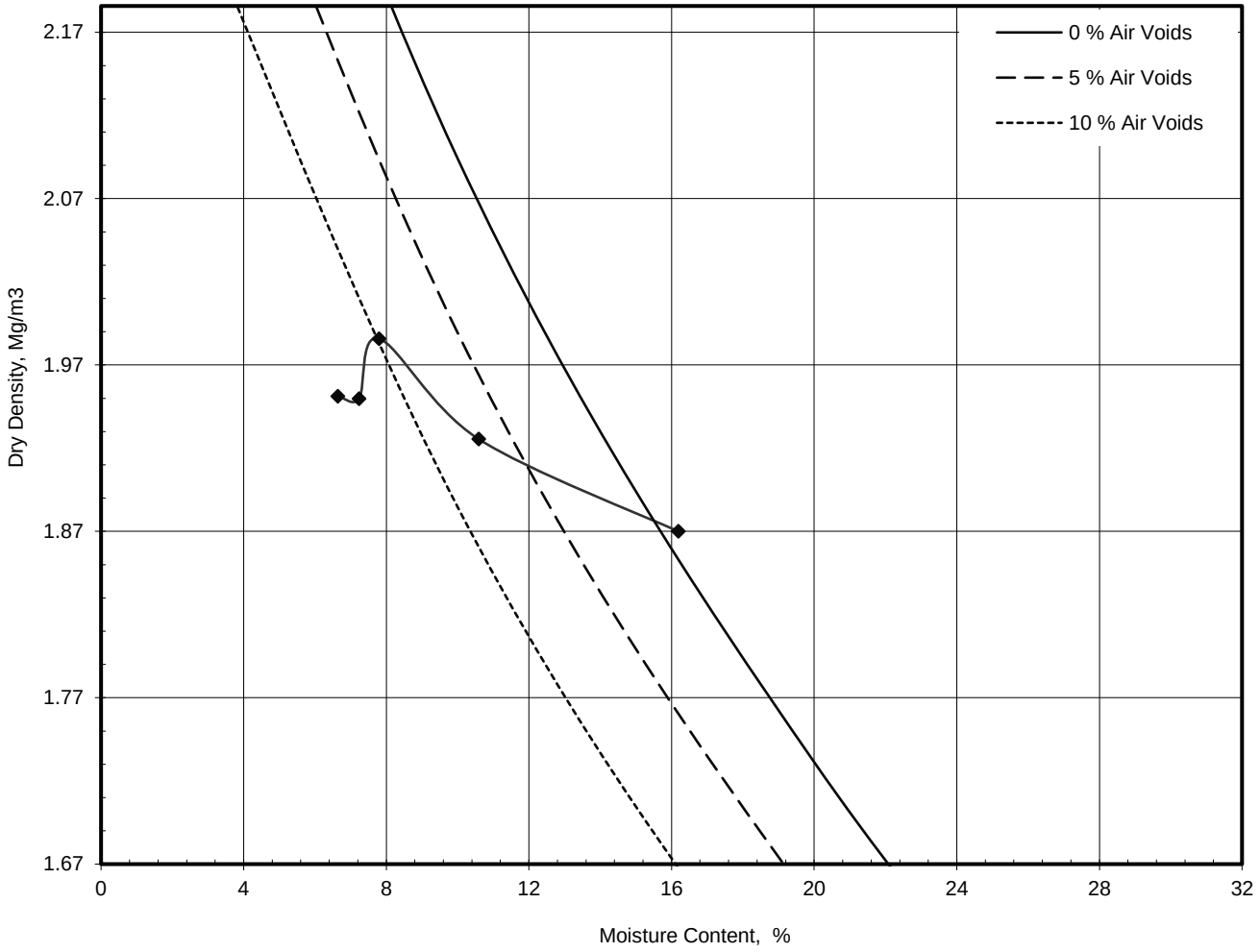
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	24
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.10**
Optimum Moisture Content	%	**8.9**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TPT01
Site Name	**Derrygreenagh Power**			Sample No	6
Soil Description	Dark grey slightly silty very gravelly coarse SAND.			Depth	3.40 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023060983
				Compaction Test Reference/No.	



Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	2
Particle Density - Assumed	Mg/m³	2.65

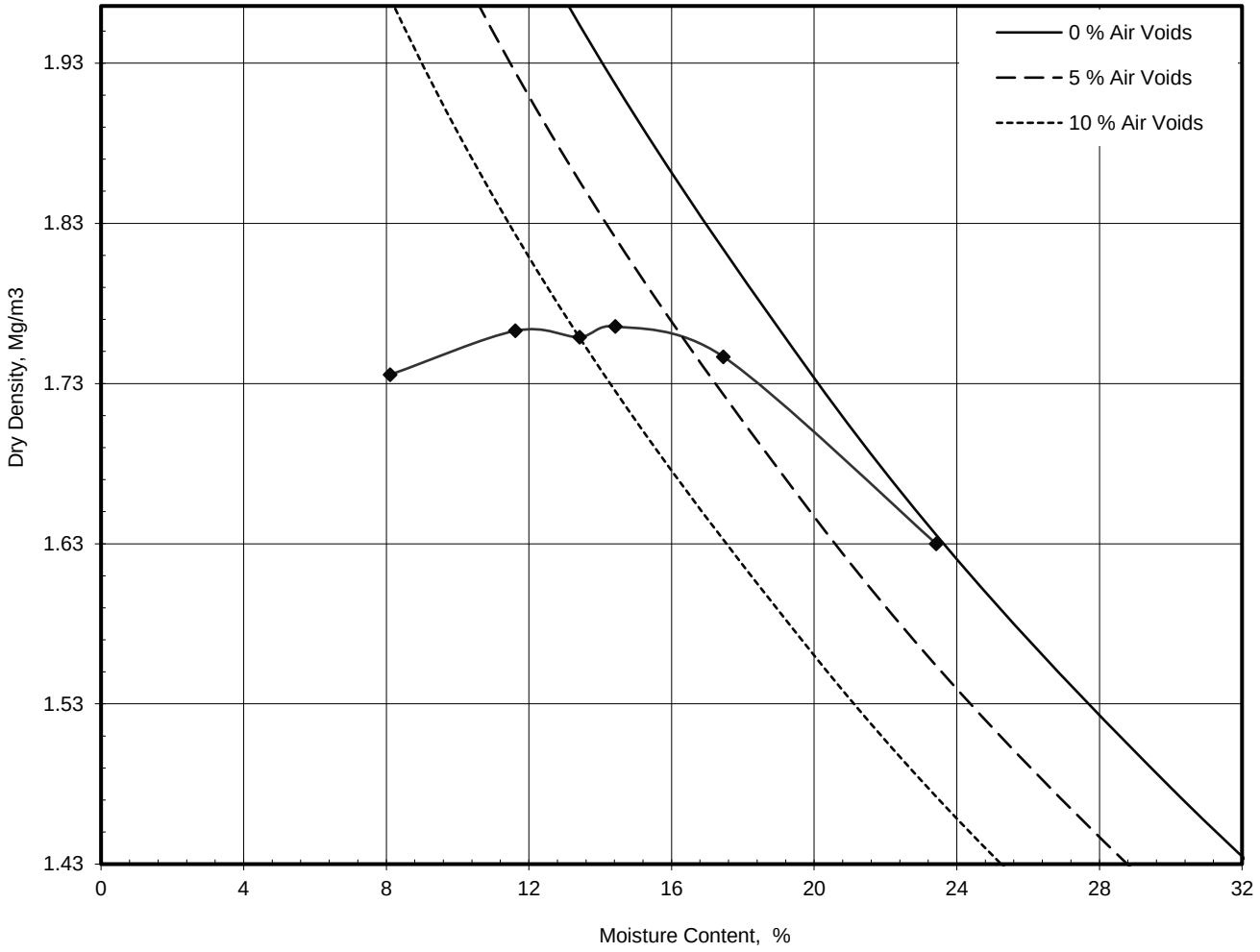
Maximum Dry Density	Mg/m³	**1.99**

Optimum Moisture Content	%	**7.8**

Operator	Checked	Approved	Remarks / Report Date:	**QC Form R4**
		DCD		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TPT03
Site Name	**Derrygreenagh Power**			Sample No	3
Soil Description	Dark grey silty very gravelly medium SAND.			Depth	1.50 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023060995
				Compaction Test Reference/No.	



Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	10
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.76**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	**QC Form R4**
		DCD		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Grey slightly black slightly sandy slightly gravelly CLAY/SILT
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		73.23
Bulk density (Mg/m3)		1.86
Particle density	(Assumed)	2.65

Initial conditions

Settlement Channel	1107
Moisture content (%)	37.06
Dry density (Mg/m3)	1.36
Initial Voids Ratio	0.9479
Deg of Saturation (%)	103.6
Swelling pressure (kPa)	n/a

Final conditions

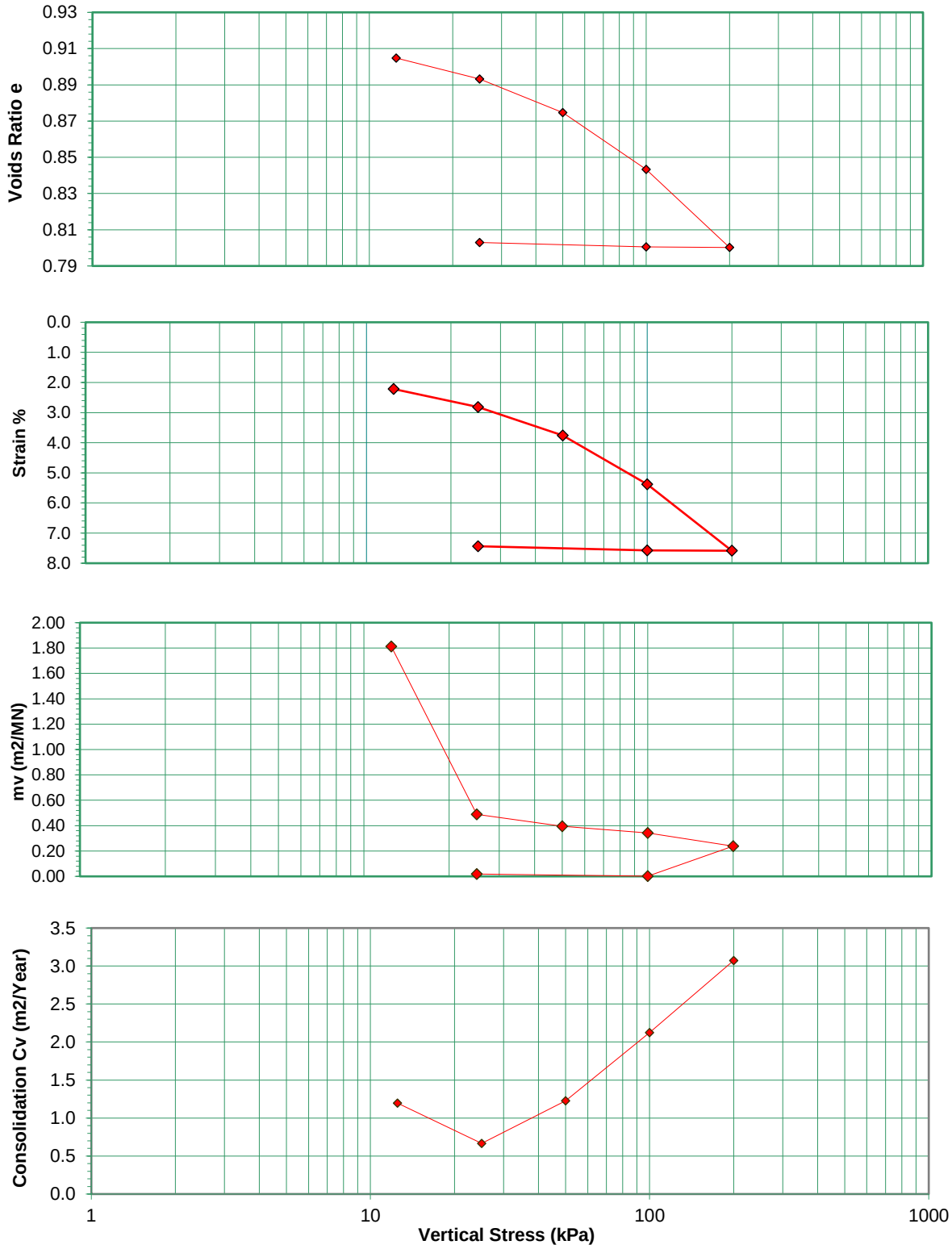
Moisture Content (%)	30.4
Dry Density (Mg/m3)	1.47
Final voids ratio	0.8030
Final degree of saturation (%)	100.4
Final settlement	1.488

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH101
		Sample No.	U5
		Depth m.	2.0-2.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH101 U5 2.0-2.45m

Oedometer Test

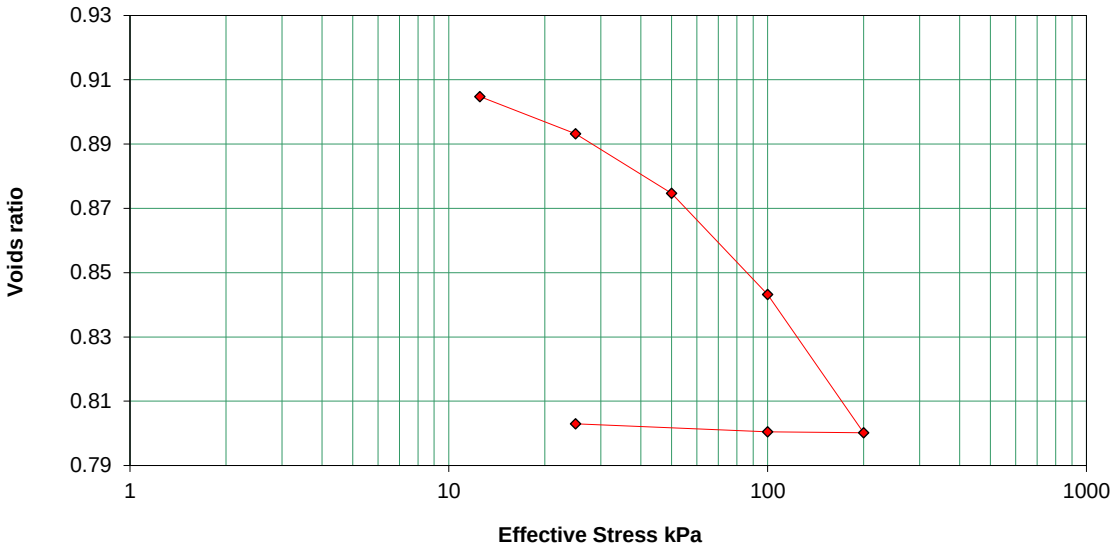
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Grey slightly black slightly sandy slightly gravelly CLAY/SILT

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		73.23
Bulk Density (mg/m3)		1.865
Particle Density	Assumed	2.65

Initial Conditions		Final Conditions	
Moisture content	37.1	30.4	%
Dry Density	1.360	1.470	Mg/m3
Initial Voids Ratio	0.9479	0.8030	
Degree of Saturation	103.60	100.43	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	2.215	0.9048	1.812	1.197	0.443
2	25	2.810	0.8932	0.490	0.666	0.562
3	50	3.760	0.8747	0.395	1.227	0.752
4	100	5.375	0.8432	0.341	2.125	1.075
5	200	7.585	0.8002	0.239	3.073	1.517
6	100	7.570	0.8005	0.002		1.514
7	25	7.440	0.8030	0.019		1.488

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH101
		Sample No.	U5
		Depth m.	2.0-2.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.96	1.99
Specimen Length	mm	205.00	Dry Density	Mg/m3	1.58	1.61
Specimen Diameter	mm	103.00	Moisture	%	24.44	23.51
Area	mm2	8332.29	Saturation	%	95.13	96.07
Volume	cc	1708.12	Sg(Assumed)	2.65		

Saturation Stage

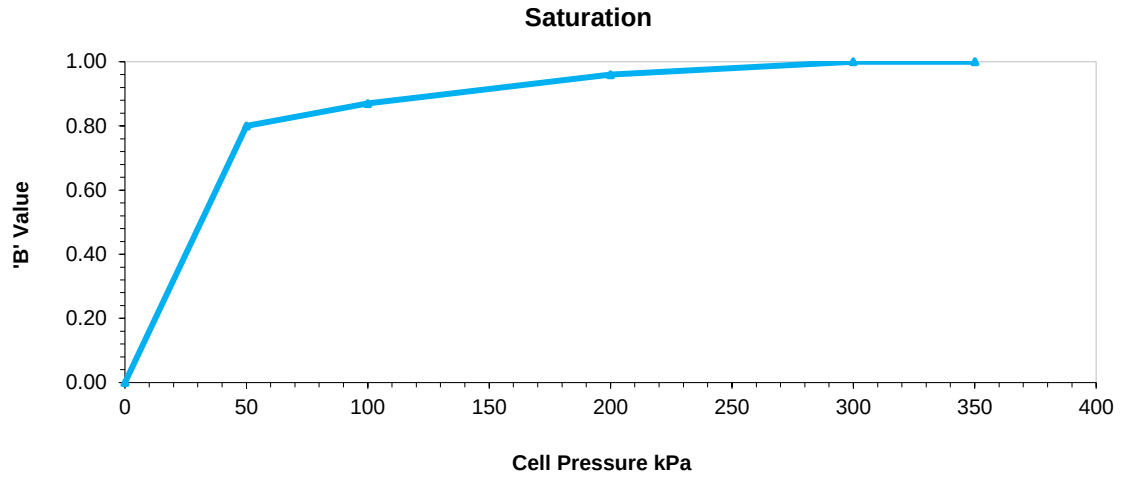
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.80
2	100	0.87
3	200	0.96
4	300	1.00
5	350	1.00

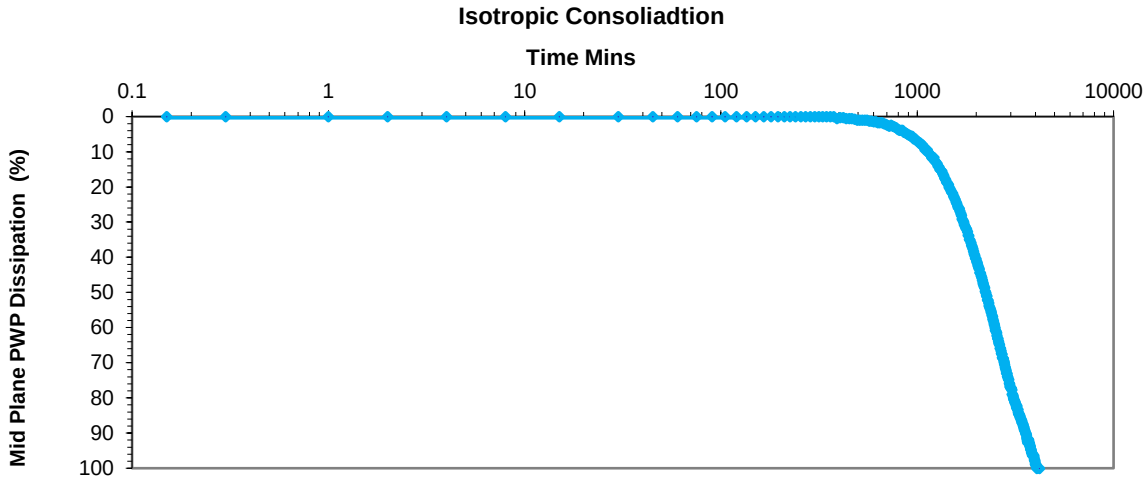
Isotropic Consolidation Stage

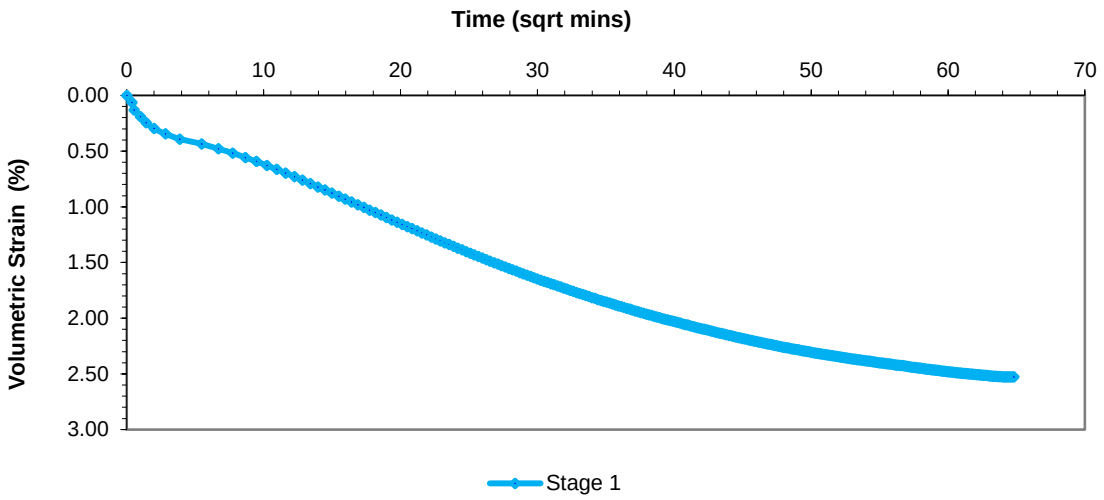
		Stage 1
Cell Pressure	kPa	350
Pore Pressure	kPa	346.4
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		2209.0
Coef. Of Consolidation Cv	m2/year	0.095
Coef. Of Compressibility Mv	m2/MN	0.545
Permeability k	m/sec	1.61E-11

	Stage 1
Deviator Stress (kPa)	110.8
External Axial Strain (%)	12.93
Shear Stress (kPa)	55.4
Peak Stress Ratio	4.33
Pore Water Pressure (kPa)	16.7
Radial Effective Stress (kPa)	33.3
Axial Effective Stress (kPa)	144.1
Effective angle of friction (Degrees)	38.7
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Grey slightly sandy slightly gravelly silty CLAY**
	Plastic Failure

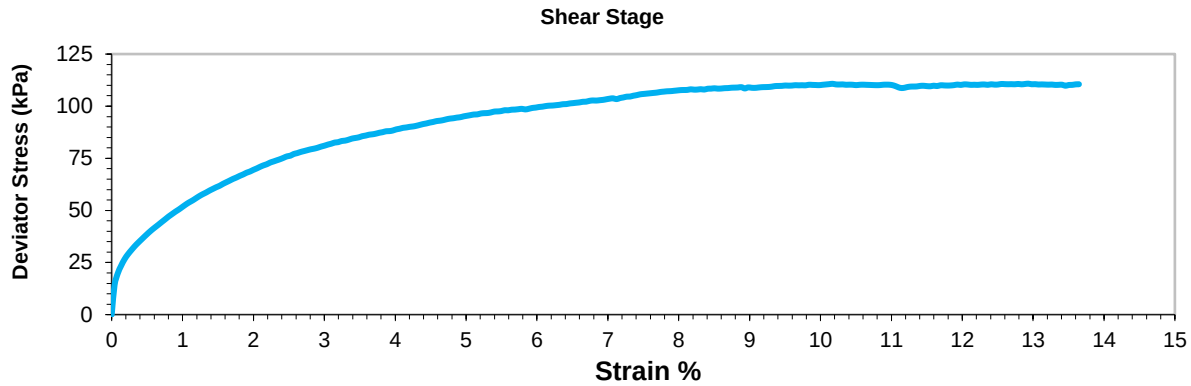
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH101
	Project: Derrygreenagh Power	Sample No.	U5
		Depth.	2.00-2.45m

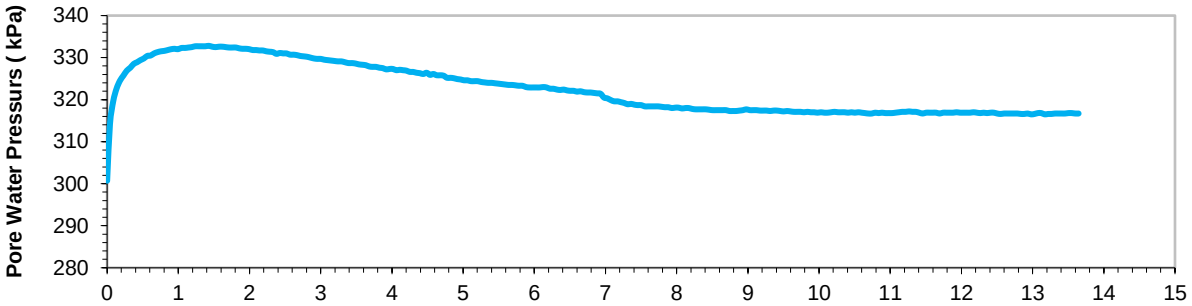


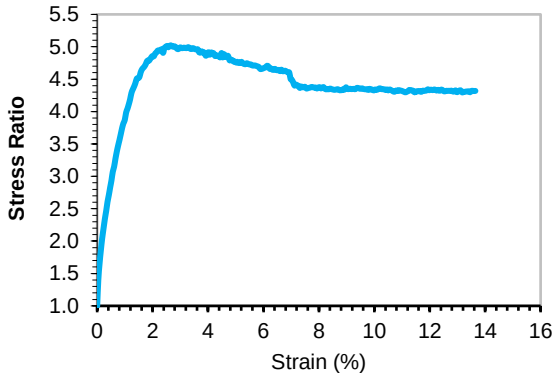


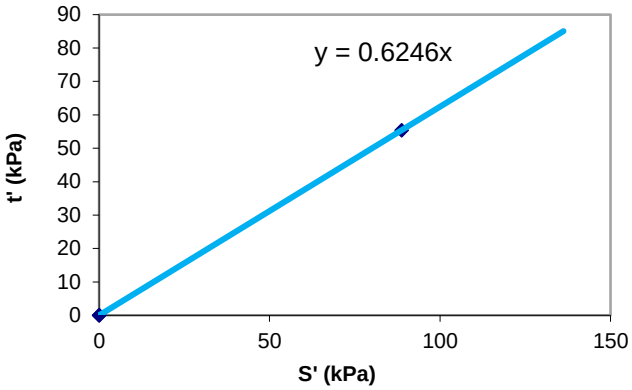


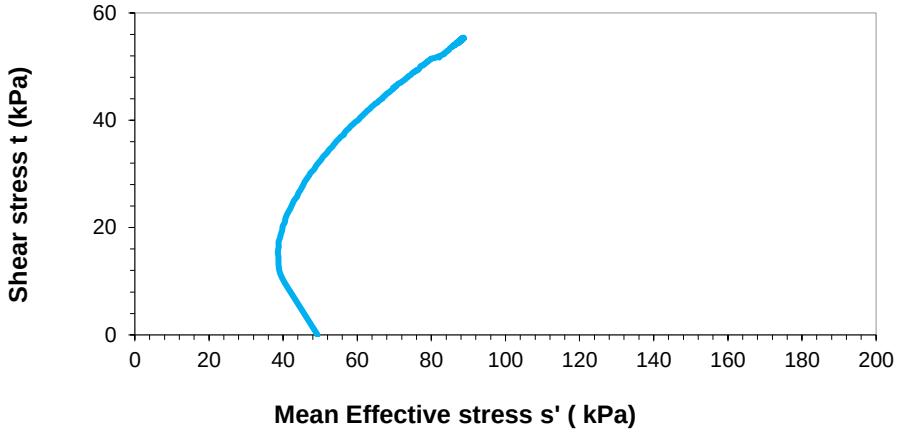
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH101
	Project: Derrygreenagh Power	Sample No. U5
		Depth. 2.00-2.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH101
	Project: Derrygreenagh Power	Sample No.	U5
		Depth.	2.00-2.45m

SPECIMEN AFTER TEST

Soil Description **Grey slightly sandy slightly gravelly silty CLAY**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH101
	Project: Derrygreenagh Power	Sample No.	U5
		Depth.	2.00-2.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown/black PEAT with some fine to medium roots
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		42.68
Bulk density (Mg/m3)		1.09
Particle density	(Assumed)	1.60

Initial conditions

Settlement Channel	1108
Moisture content (%)	130.08
Dry density (Mg/m3)	0.4723
Initial Voids Ratio	2.3876
Deg of Saturation (%)	87.2
Swelling pressure (kPa)	n/a

Final conditions

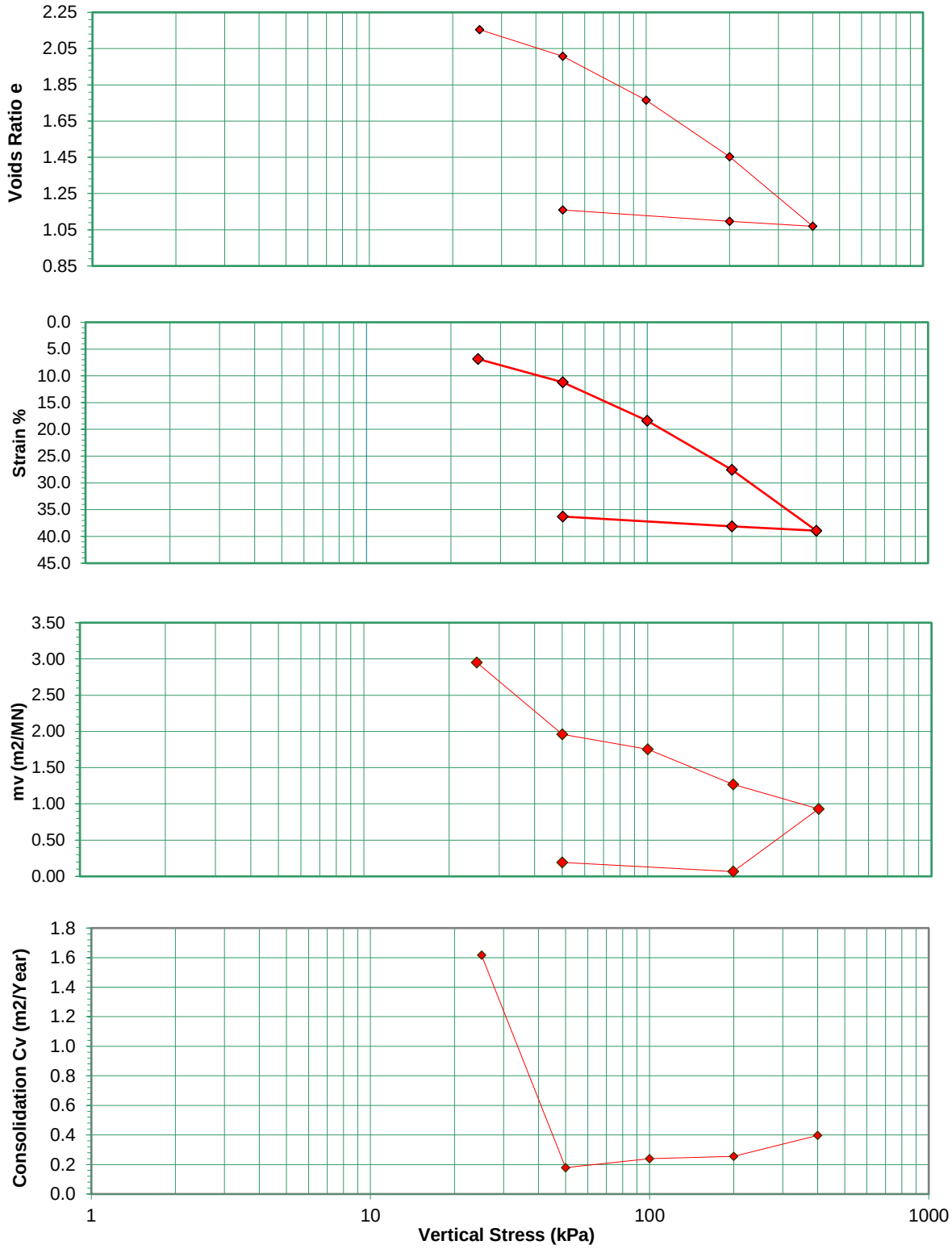
Moisture Content (%)	72.2
Dry Density (Mg/m3)	0.74
Final voids ratio	1.1589
Final degree of saturation (%)	99.7
Final settlement	7.254

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH102
		Sample No.	U9
		Depth m.	3.0-3.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH102 U9 3.0-3.45m

Oedometer Test

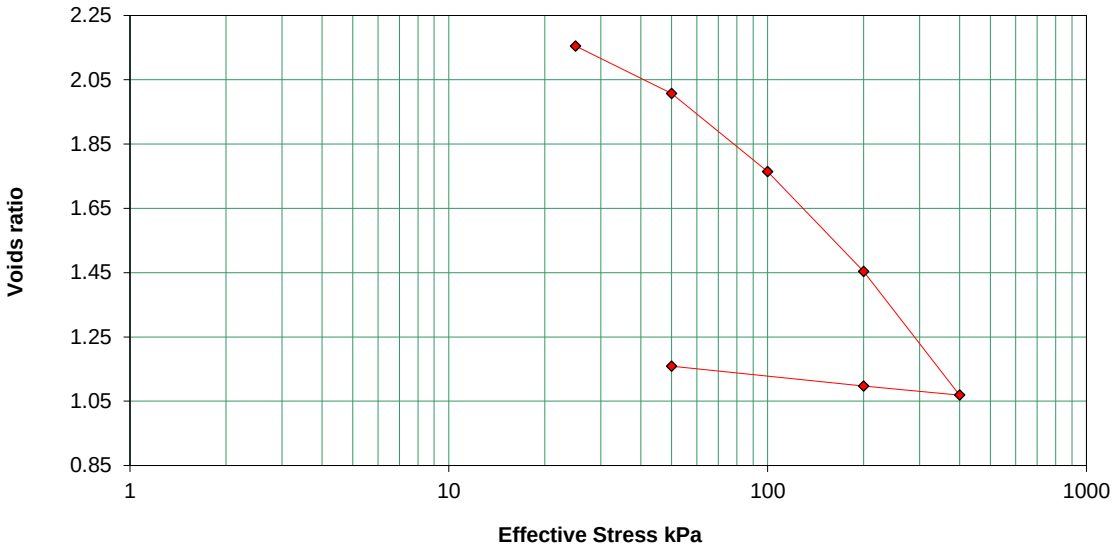
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown/black PEAT with some fine to medium roots

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		42.68
Bulk Density (mg/m3)		1.087
Particle Density	Assumed	1.60

Initial Conditions		Final Conditions	
Moisture content	130.1	72.2	%
Dry Density	0.472	0.741	Mg/m3
Initial Voids Ratio	2.3876	1.1589	
Degree of Saturation	87.17	99.73	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	25	6.870	2.1549	2.951	1.616	1.374
2	50	11.220	2.0075	1.960	0.179	2.244
3	100	18.380	1.7650	1.754	0.239	3.676
4	200	27.575	1.4535	1.270	0.255	5.515
5	400	38.925	1.0690	0.929	0.397	7.785
6	200	38.100	1.0969	0.067		7.620
7	50	36.270	1.1589	0.191		7.254

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH102
		Sample No.	U9
		Depth m.	3.0-3.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.07	1.10
Specimen Length	mm	202.00	Dry Density	Mg/m3	0.42	0.44
Specimen Diameter	mm	102.50	Moisture	%	154.06	147.85
Area	mm2	8251.59	Saturation	%	87.93	90.51
Volume	cc	1666.82	Sg(Assumed)	1.60		

Saturation Stage

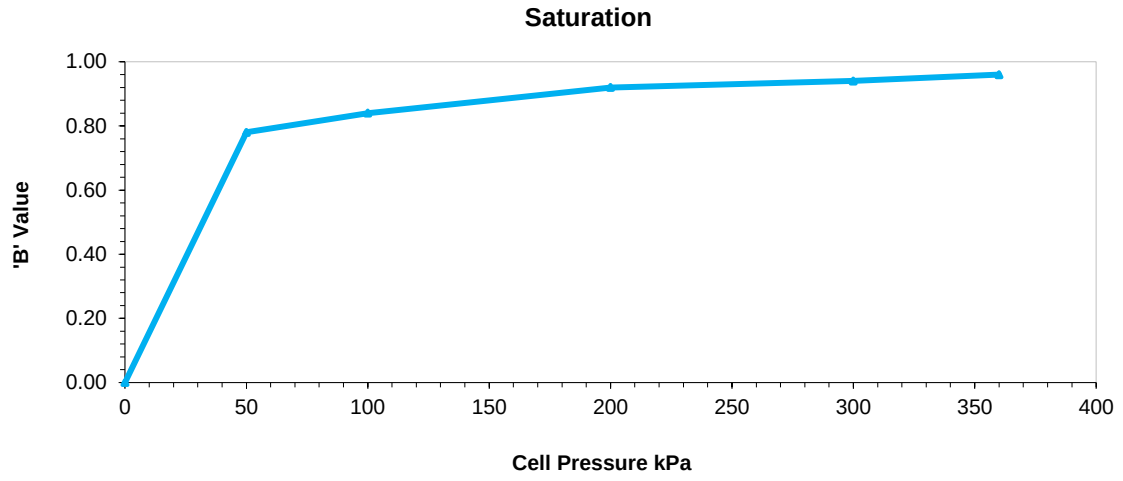
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.78
2	100	0.84
3	200	0.92
4	300	0.94
5	360	0.96

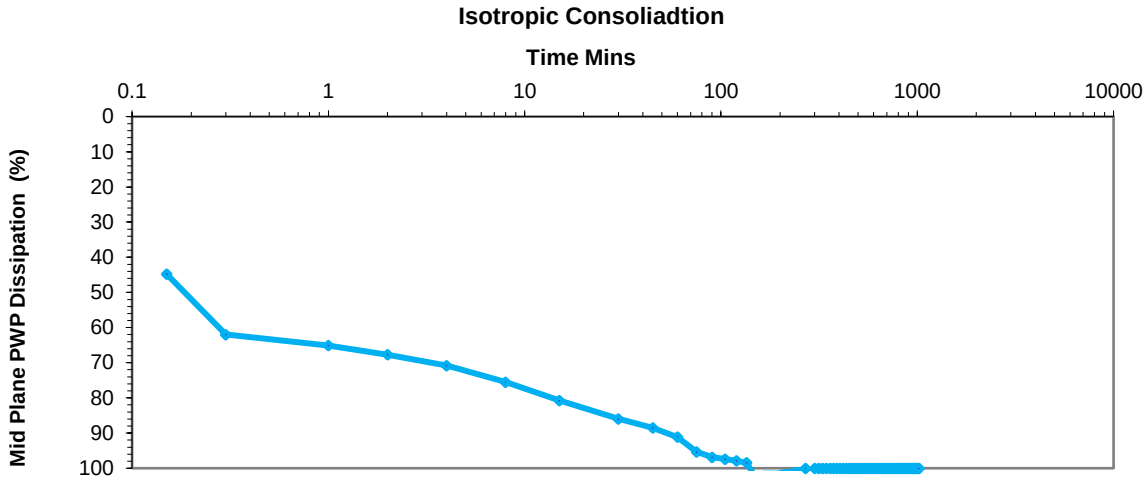
Isotropic Consolidation Stage

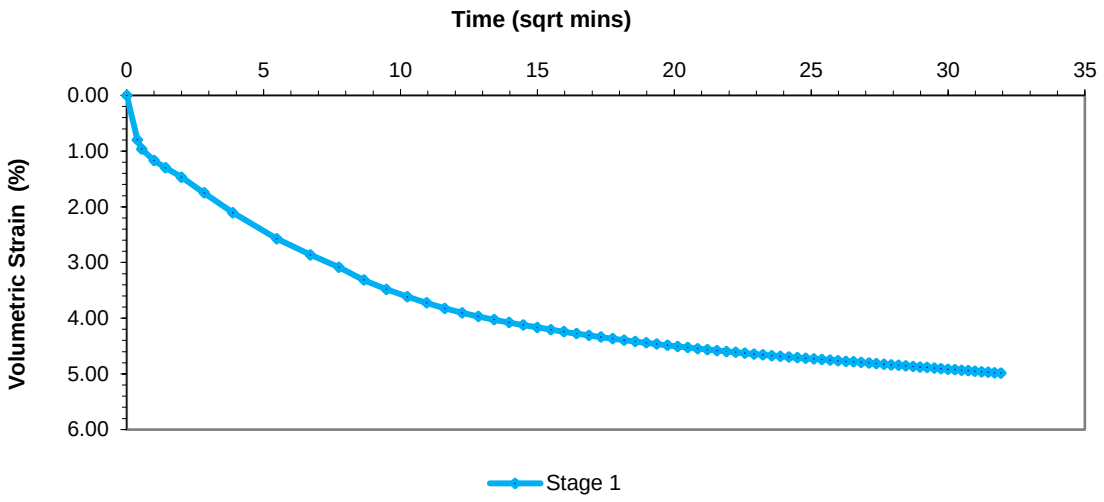
		Stage 1
Cell Pressure	kPa	360
Pore Pressure	kPa	319.1
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		187.7
Coef. Of Consolidation Cv	m2/year	1.119
Coef. Of Compressibility Mv	m2/MN	2.076
Permeability k	m/sec	7.20E-10

	Stage 1
Deviator Stress (kPa)	61.1
External Axial Strain (%)	10.57
Shear Stress (kPa)	30.6
Peak Stress Ratio	4.18
Pore Water Pressure (kPa)	40.8
Radial Effective Stress (kPa)	19.2
Axial Effective Stress (kPa)	80.3
Effective angle of friction (Degrees)	37.9
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown/black PEAT with fine to medium roots**
	Plastic Failure

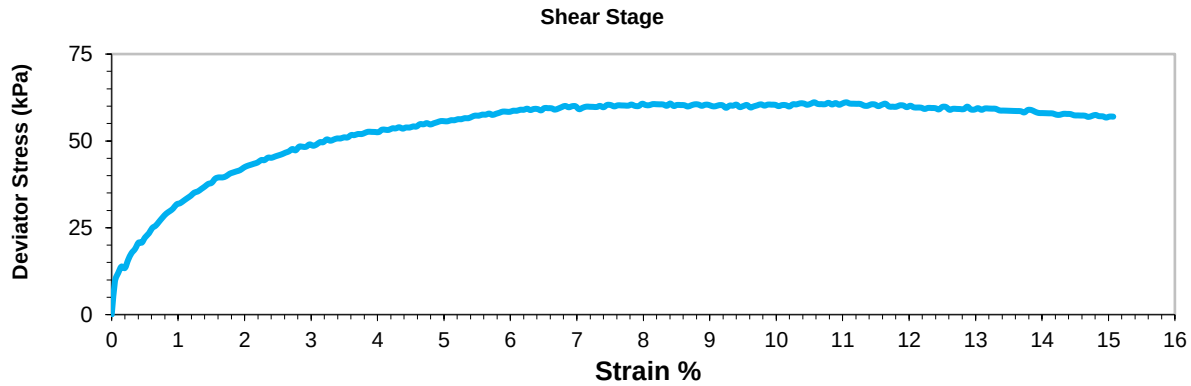
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH102
	Project: Derrygreenagh Power	Sample No.	U9
		Depth.	3.0-3.45m

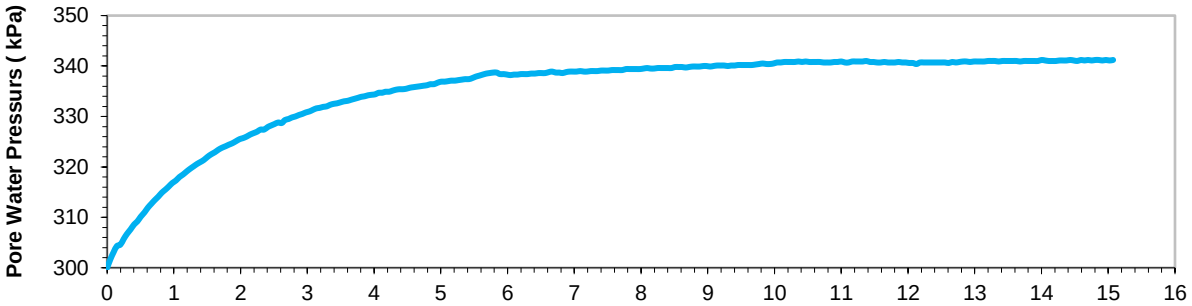


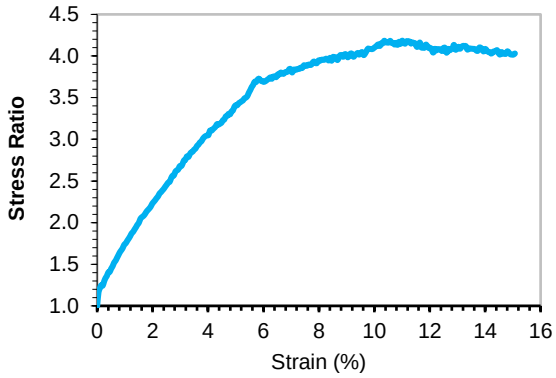


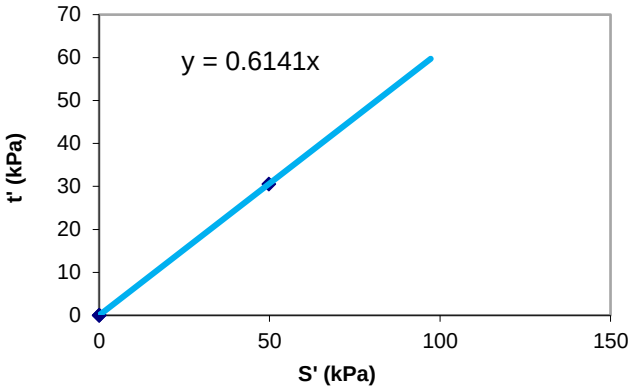


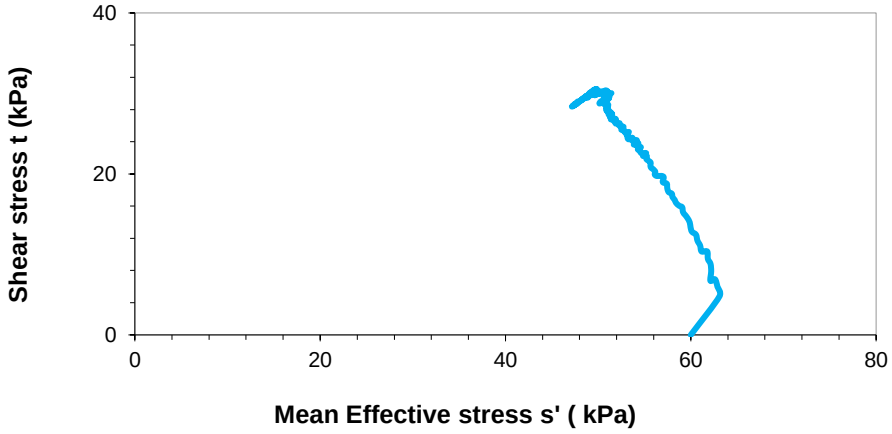
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH102
	Project: Derrygreenagh Power	Sample No. U9
		Depth. 3.0-3.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH102
	Project: Derrygreenagh Power	Sample No.	U9
		Depth.	3.0-3.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown/black PEAT with fine to medium roots**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH102
	Project: Derrygreenagh Power	Sample No.	U9
		Depth.	3.0-3.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown black slightly fiberous PEAT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		38.55
Bulk density (Mg/m3)		0.9815
Particle density	(Assumed)	1.50

Initial conditions

Settlement Channel	1109
Moisture content (%)	536.14
Dry density (Mg/m3)	0.1543
Initial Voids Ratio	8.7215
Deg of Saturation (%)	92.2
Swelling pressure (kPa)	n/a

Final conditions

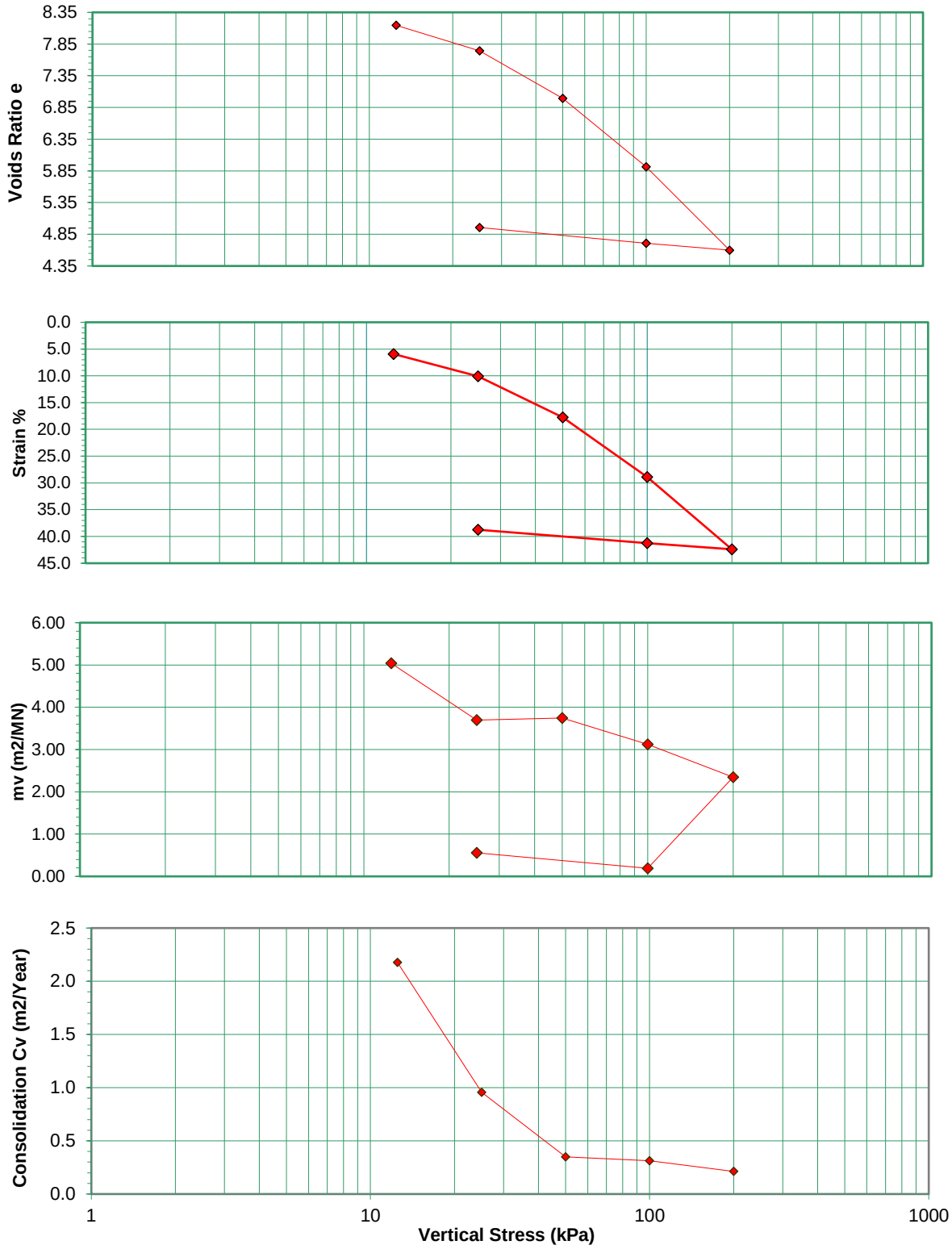
Moisture Content (%)	321.6
Dry Density (Mg/m3)	0.25
Final voids ratio	4.9564
Final degree of saturation (%)	97.3
Final settlement	7.746

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH104
		Sample No.	U3
		Depth m.	1.0-1.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH104 U3 1.0-1.45m

Oedometer Test

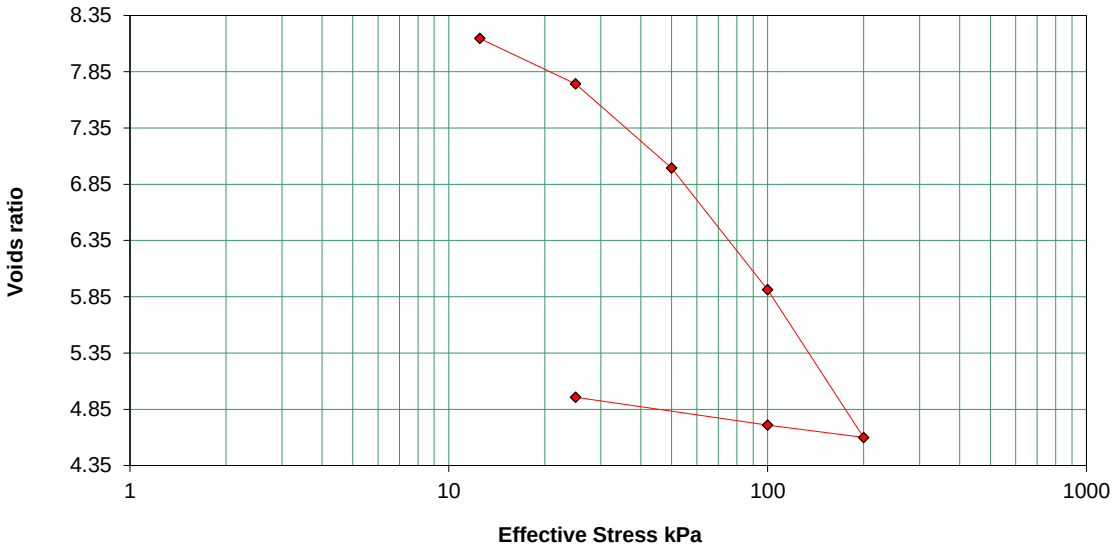
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown black slightly fiberous PEAT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		38.55
Bulk Density (mg/m3)		0.982
Particle Density	Assumed	1.50

Initial Conditions		Final Conditions	
Moisture content	536.1	321.6	%
Dry Density	0.154	0.252	Mg/m3
Initial Voids Ratio	8.7215	4.9564	
Degree of Saturation	92.21	97.33	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	5.925	8.1455	5.039	2.176	1.185
2	25	10.080	7.7416	3.697	0.957	2.016
3	50	17.780	6.9930	3.746	0.349	3.556
4	100	28.880	5.9140	3.121	0.313	5.776
5	200	42.400	4.5996	2.347	0.212	8.480
6	100	41.275	4.7090	0.192		8.255
7	25	38.730	4.9564	0.554		7.746

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH104
		Sample No.	U3
		Depth m.	1.0-1.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	0.94	0.95
Specimen Length	mm	200.00	Dry Density	Mg/m3	0.15	0.15
Specimen Diameter	mm	101.50	Moisture	%	518.24	523.06
Area	mm2	8091.37	Saturation	%	87.66	89.20
Volume	cc	1618.27	Sg(Assumed)	1.50		

Saturation Stage

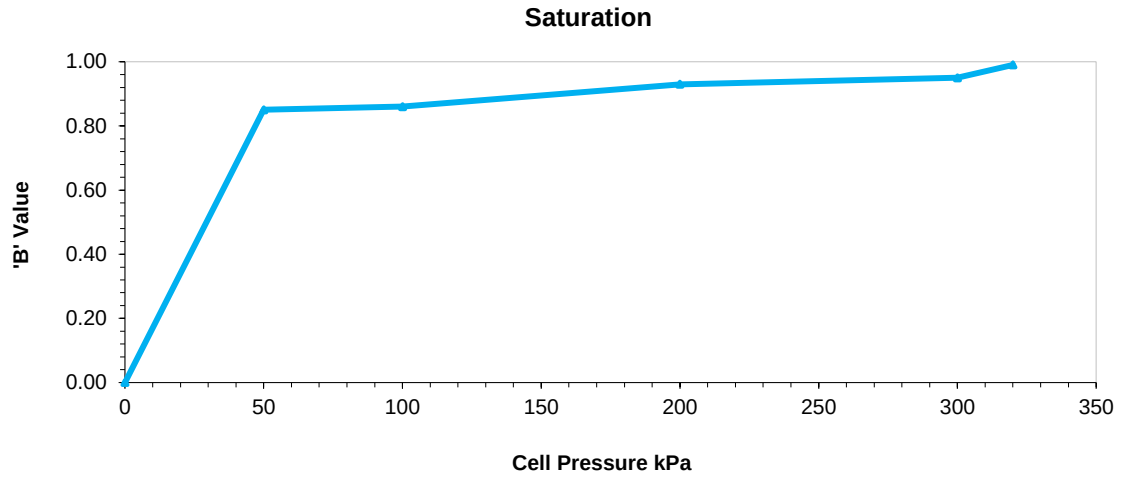
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.85
2	100	0.86
3	200	0.93
4	300	0.95
5	320	0.99

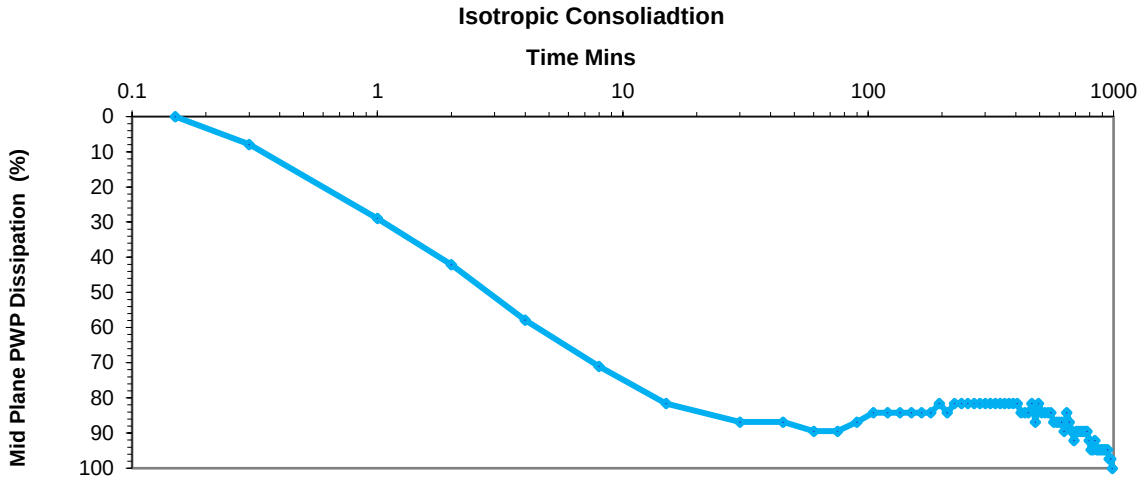
Isotropic Consolidation Stage

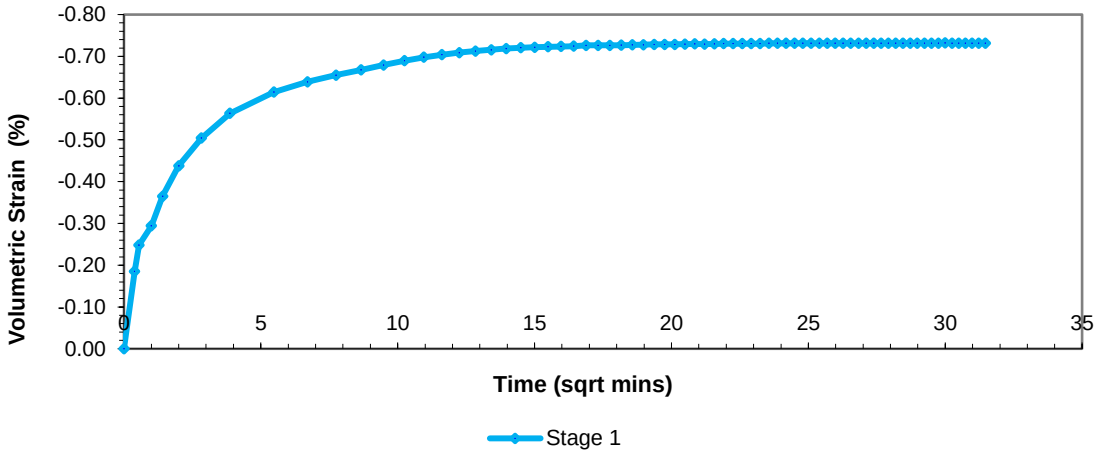
		Stage 1
Cell Pressure	kPa	322
Pore Pressure	kPa	292.5
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		5.3
Coef. Of Consolidation Cv	m2/year	39.698
Coef. Of Compressibility Mv	m2/MN	0.976
Permeability k	m/sec	1.20E-08

	Stage 1
Deviator Stress (kPa)	33.1
External Axial Strain (%)	12.08
Shear Stress (kPa)	16.5
Peak Stress Ratio	6.25
Pore Water Pressure (kPa)	15.7
Radial Effective Stress (kPa)	6.3
Axial Effective Stress (kPa)	39.4
Effective angle of friction (Degrees)	46.4
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown/black slightly fiberous PEAT.**
	Plastic Failure

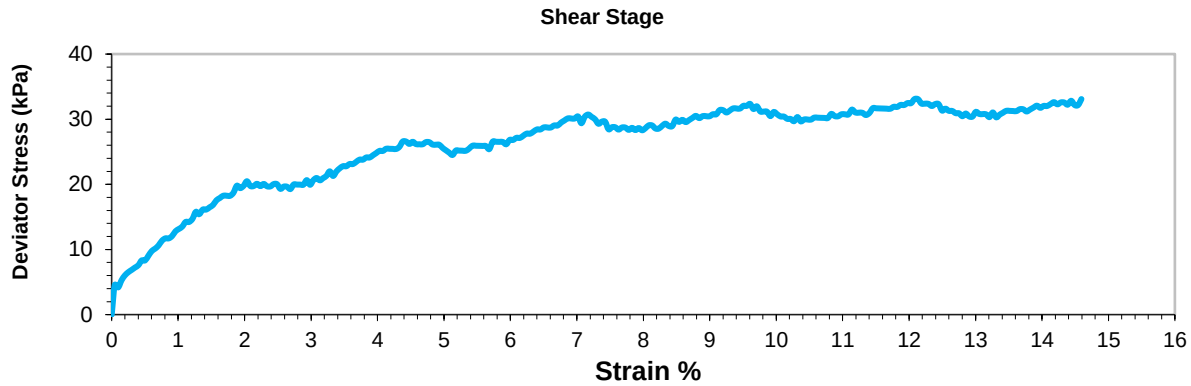
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH104
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

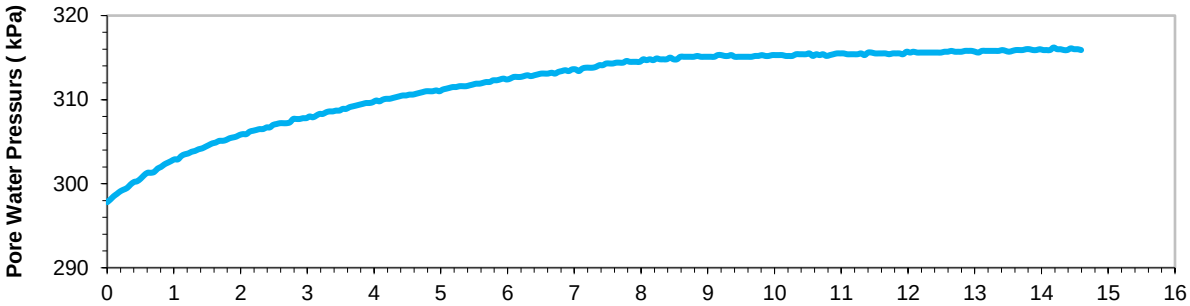


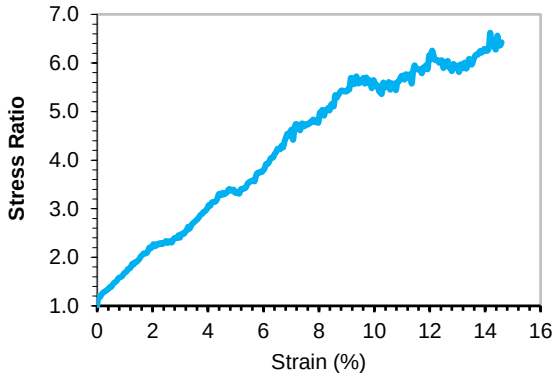


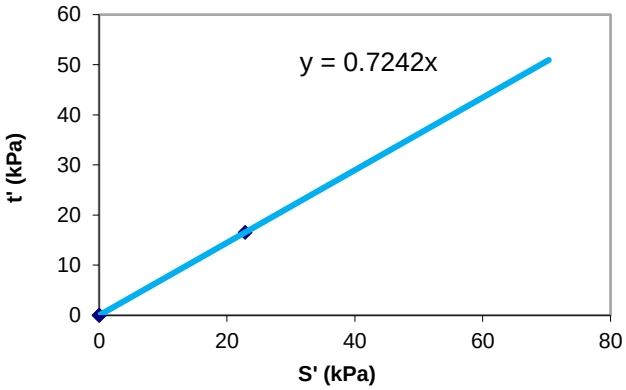


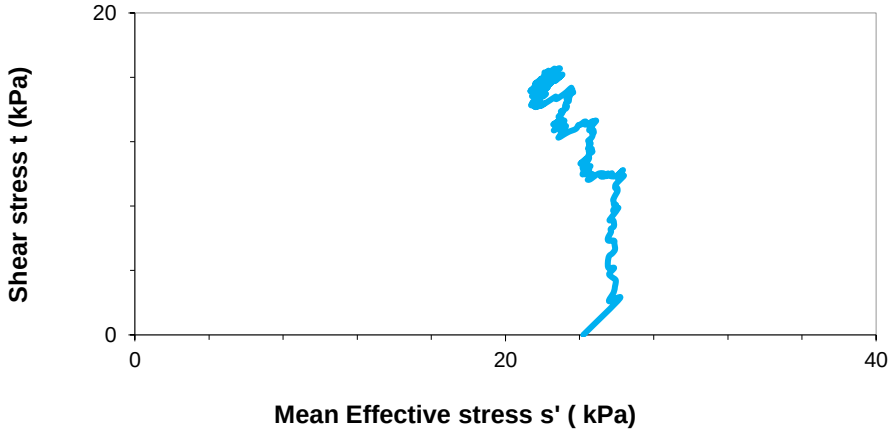
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH104
	Project: Derrygreenagh Power	Sample No. U3
		Depth. 1.00-1.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH104
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown/black slightly fiberous PEAT.**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH104
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Grey/brown orange slightly sandy slightly gravelly CLAY/ SILT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		84.92
Bulk density (Mg/m3)		2.16
Particle density	(Assumed)	2.70

Initial conditions

Settlement Channel	1110
Moisture content (%)	18.27
Dry density (Mg/m3)	1.83
Initial Voids Ratio	0.4769
Deg of Saturation (%)	103.5
Swelling pressure (kPa)	n/a

Final conditions

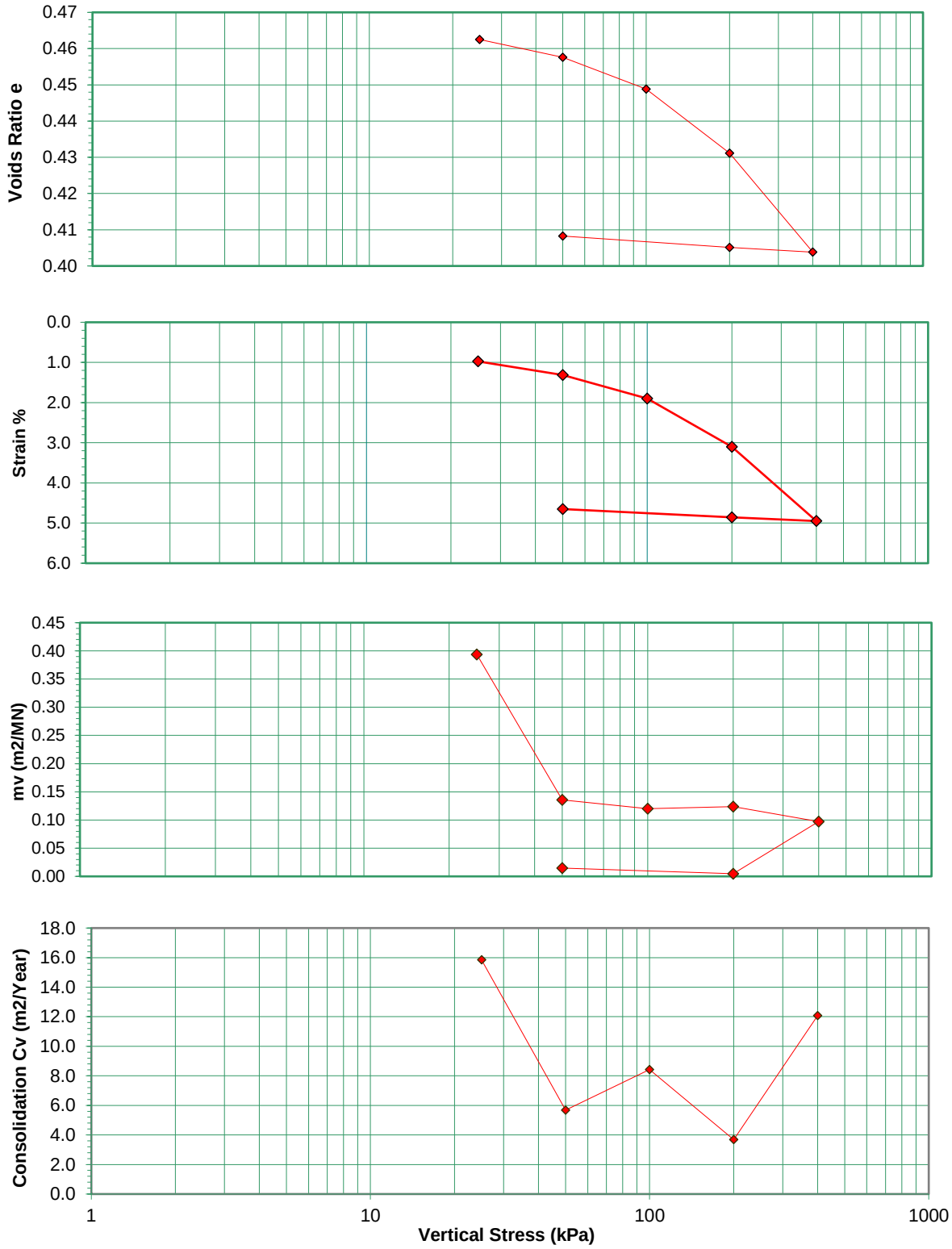
Moisture Content (%)	15.0
Dry Density (Mg/m3)	1.92
Final voids ratio	0.4082
Final degree of saturation (%)	99.1
Final settlement	0.93

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH105
		Sample No.	U9
		Depth m.	3.0-3.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH105 U9 3.0-3.45m

Oedometer Test

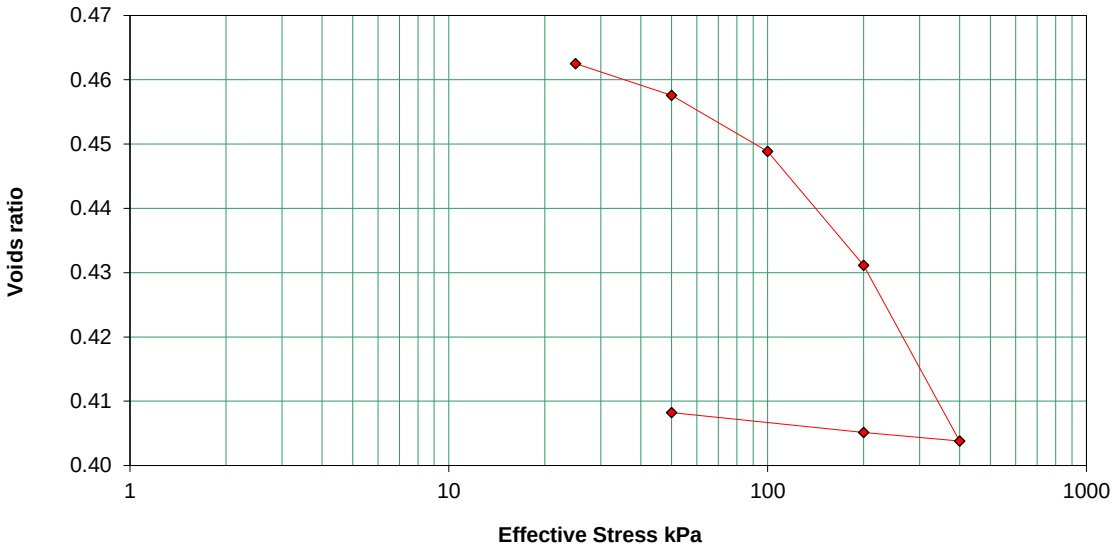
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Grey/brown orange slightly sandy slightly gravelly CLAY/ SILT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		84.92
Bulk Density (mg/m3)		2.162
Particle Density	Assumed	2.70

Initial Conditions		Final Conditions	
Moisture content	18.3	15.0	%
Dry Density	1.828	1.917	Mg/m3
Initial Voids Ratio	0.4769	0.4082	
Degree of Saturation	103.45	99.11	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	25	0.975	0.4625	0.394	15.844	0.195
2	50	1.310	0.4576	0.136	5.674	0.262
3	100	1.900	0.4489	0.120	8.426	0.380
4	200	3.100	0.4311	0.124	3.680	0.620
5	400	4.950	0.4038	0.097	12.081	0.990
6	200	4.860	0.4051	0.005		0.972
7	50	4.650	0.4082	0.015		0.930

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH105
		Sample No.	U9
		Depth m.	3.0-3.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	2.07	2.08
Specimen Length	mm	199.00	Dry Density	Mg/m3	1.75	1.76
Specimen Diameter	mm	100.50	Moisture	%	18.10	18.27
Area	mm2	7932.72	Saturation	%	93.73	95.76
Volume	cc	1578.61	Sg(Assumed)	2.65		

Saturation Stage

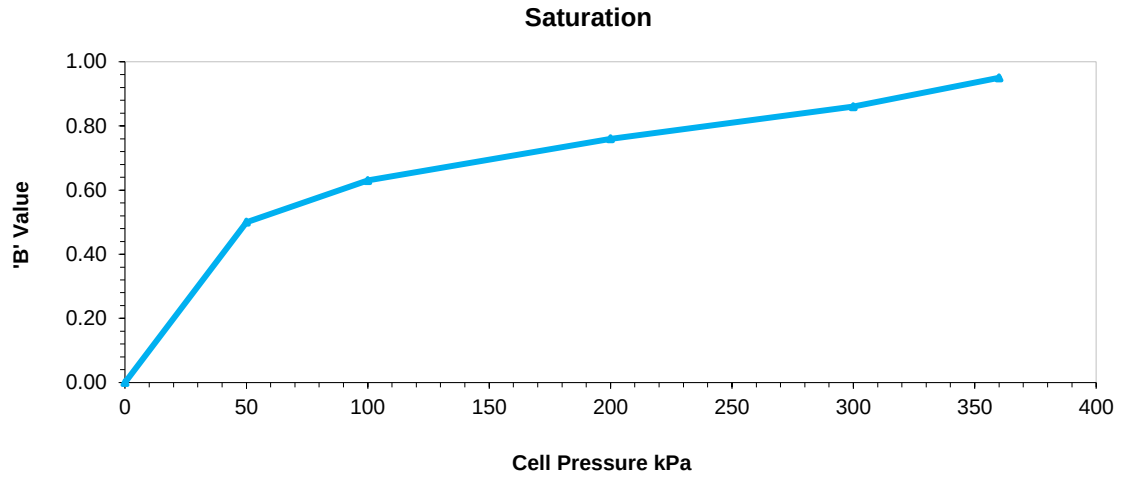
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.50
2	100	0.63
3	200	0.76
4	300	0.86
5	360	0.95

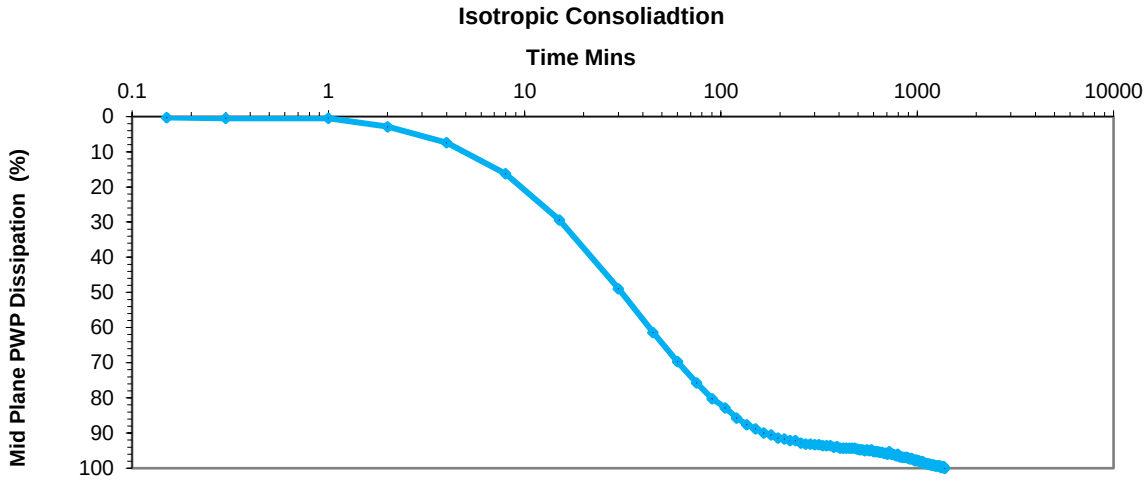
Isotropic Consolidation Stage

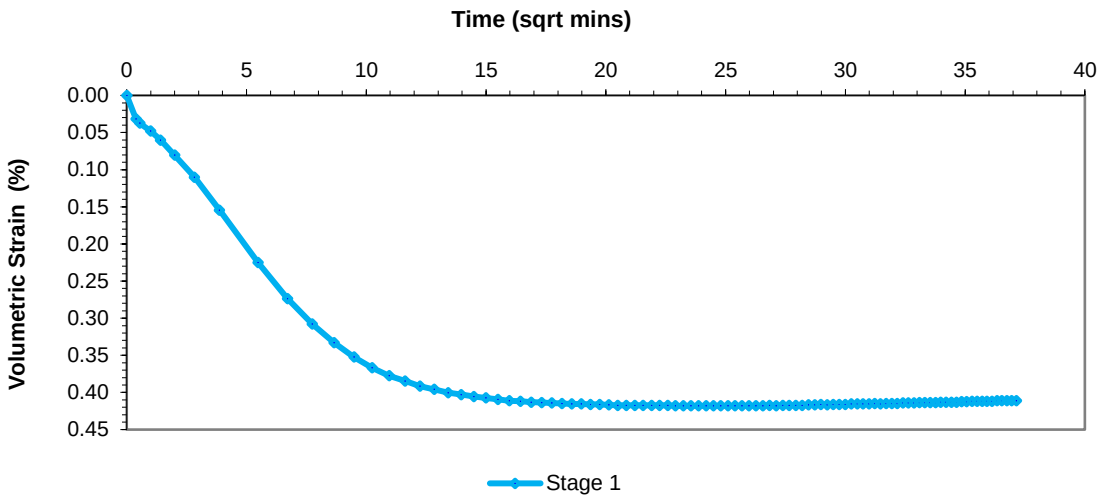
		Stage 1
Cell Pressure	kPa	360
Pore Pressure	kPa	343.8
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		114.5
Coef. Of Consolidation Cv	m2/year	1.834
Coef. Of Compressibility Mv	m2/MN	0.094
Permeability k	m/sec	5.34E-11

	Stage 1
Deviator Stress (kPa)	388.2
External Axial Strain (%)	19.93
Shear Stress (kPa)	194.1
Peak Stress Ratio	4.24
Pore Water Pressure (kPa)	-62.7
Radial Effective Stress (kPa)	122.7
Axial Effective Stress (kPa)	510.9
Effective angle of friction (Degrees)	37.8
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Brown/grey slightly sandy slightly gravellu silty CLAY. Plastic Failure**

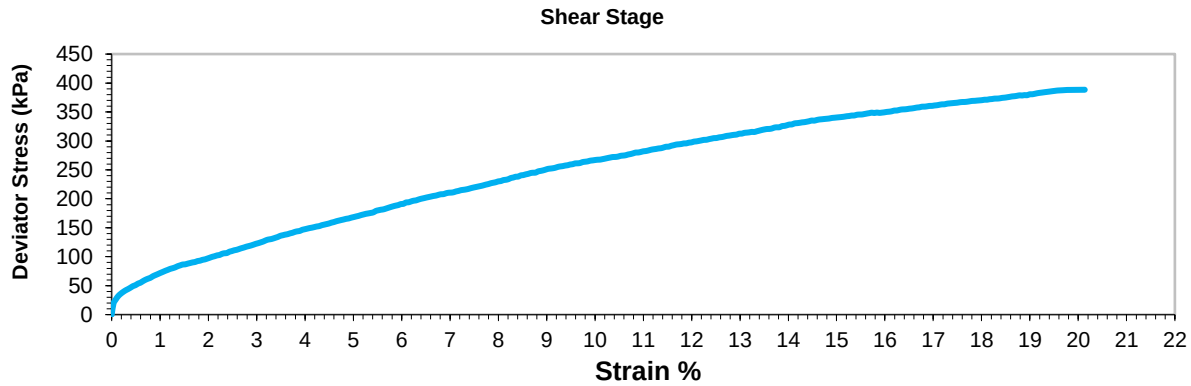
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH105
	Project: Derrygreenagh Power	Sample No.	U9
		Depth.	3.00-3.45m

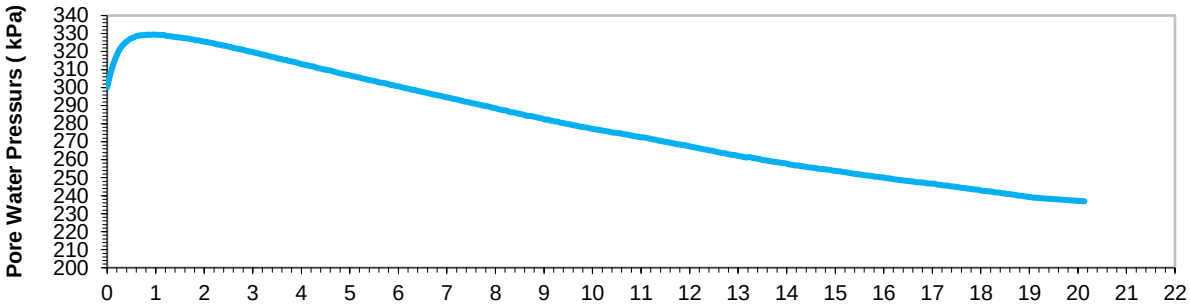


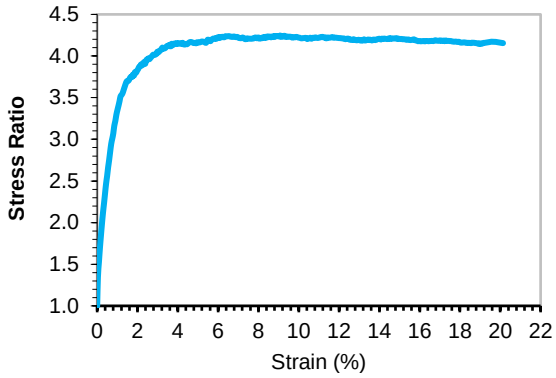


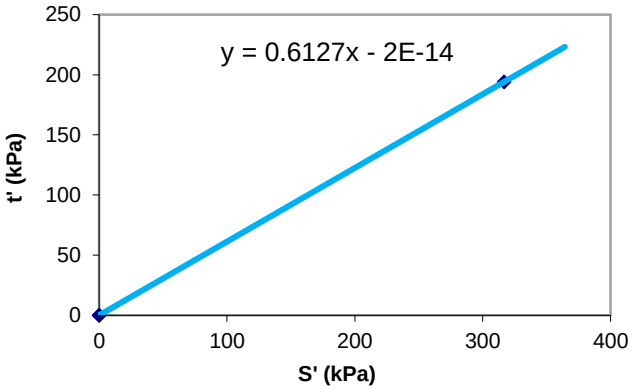


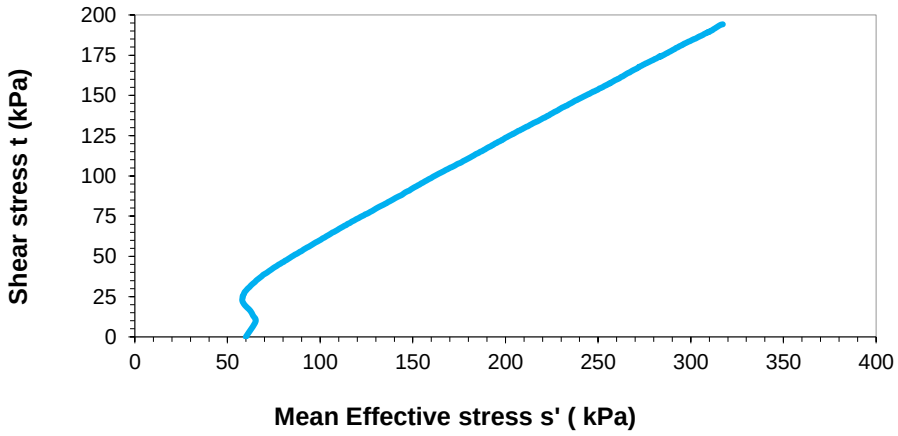
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH105
	Project: Derrygreenagh Power	Sample No. U9
		Depth. 3.00-3.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH105
	Project: Derrygreenagh Power	Sample No.	U9
		Depth.	3.00-3.45m

SPECIMEN AFTER TEST

Soil Description **Brown/grey slightly sandy slightly gravellu silty CLAY.**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH105
	Project: Derrygreenagh Power	Sample No.	U9
		Depth.	3.00-3.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown black slightly fiberous PEAT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		41.61
Bulk density (Mg/m3)		1.06
Particle density	(Assumed)	1.50

Initial conditions

Settlement Channel	SB1
Moisture content (%)	770.50
Dry density (Mg/m3)	0.122
Initial Voids Ratio	11.3248
Deg of Saturation (%)	102.1
Swelling pressure (kPa)	n/a

Final conditions

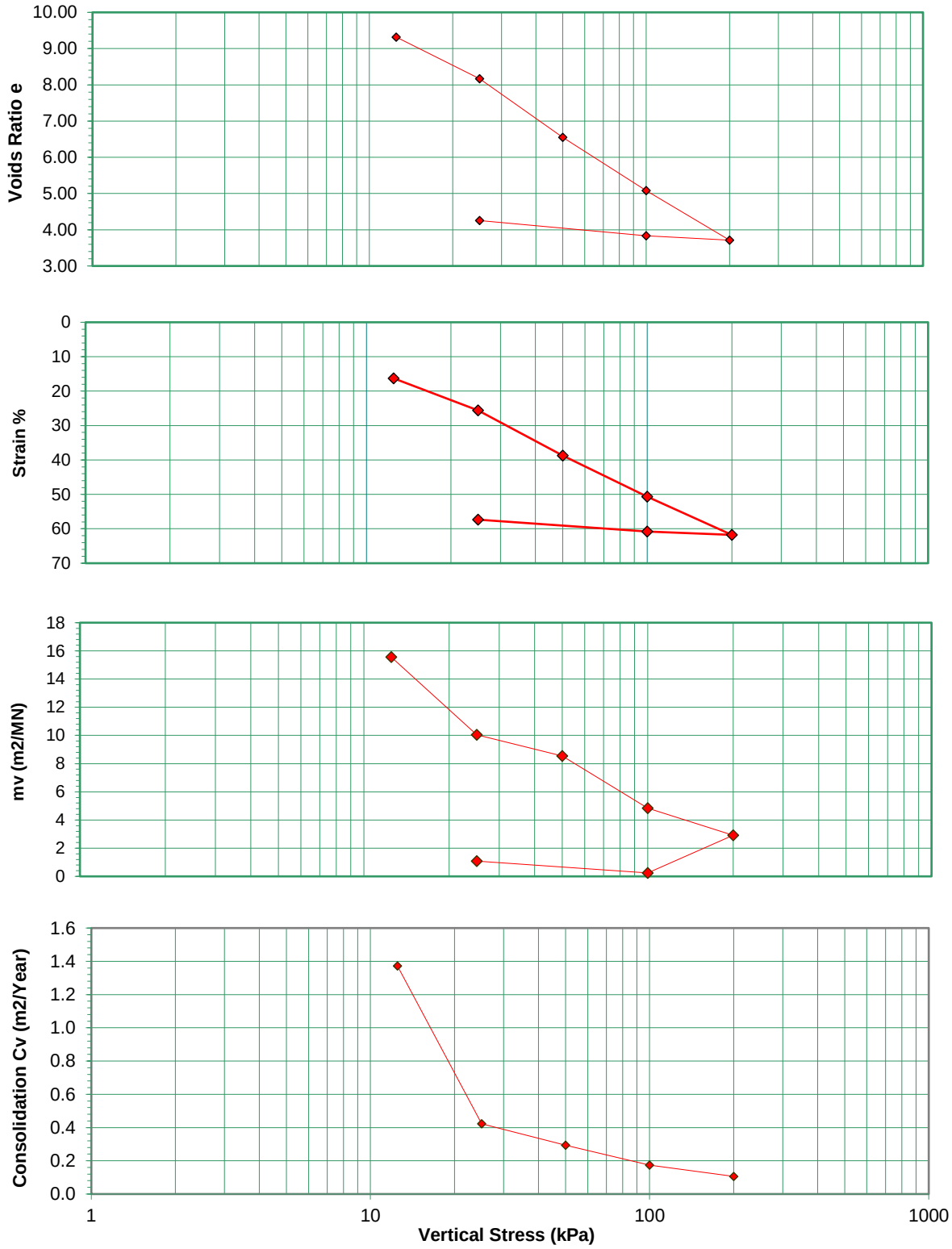
Moisture Content (%)	284.9
Dry Density (Mg/m3)	0.29
Final voids ratio	4.2565
Final degree of saturation (%)	100.4
Final settlement	11.47

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH109 U6 2.0-2.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH109 U6 2.0-2.45m

Oedometer Test

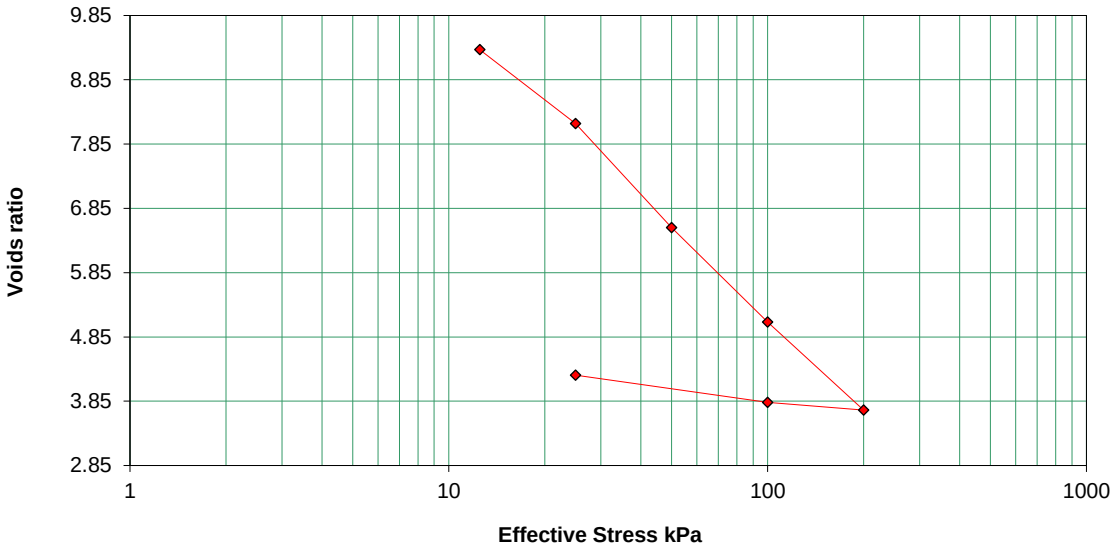
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown black slightly fiberous PEAT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		41.61
Bulk Density (mg/m3)		1.059
Particle Density	Assumed	1.50

Initial Conditions		**Final Conditions**	
Moisture content	770.5	284.9	%
Dry Density	0.122	0.285	Mg/m3
Initial Voids Ratio	11.3248	4.2565	
Degree of Saturation	102.06	100.41	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	16.280	9.3183	15.557	1.371	3.256
2	25	25.620	8.1672	10.046	0.423	5.124
3	50	38.720	6.5526	8.551	0.293	7.744
4	100	50.650	5.0823	4.835	0.175	10.130
5	200	61.765	3.7124	2.907	0.106	12.353
6	100	60.805	3.8307	0.245		12.161
7	25	57.350	4.2565	1.080		11.470

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH109
		Sample No.	U6
		Depth m.	2.0-2.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	0.99	1.00
Specimen Length	mm	202.50	Dry Density	Mg/m3	0.12	0.15
Specimen Diameter	mm	102.00	Moisture	%	702.57	570.46
Area	mm2	8171.28	Saturation	%	94.32	94.58
Volume	cc	1654.68	Sg(Assumed)	1.50		

Saturation Stage

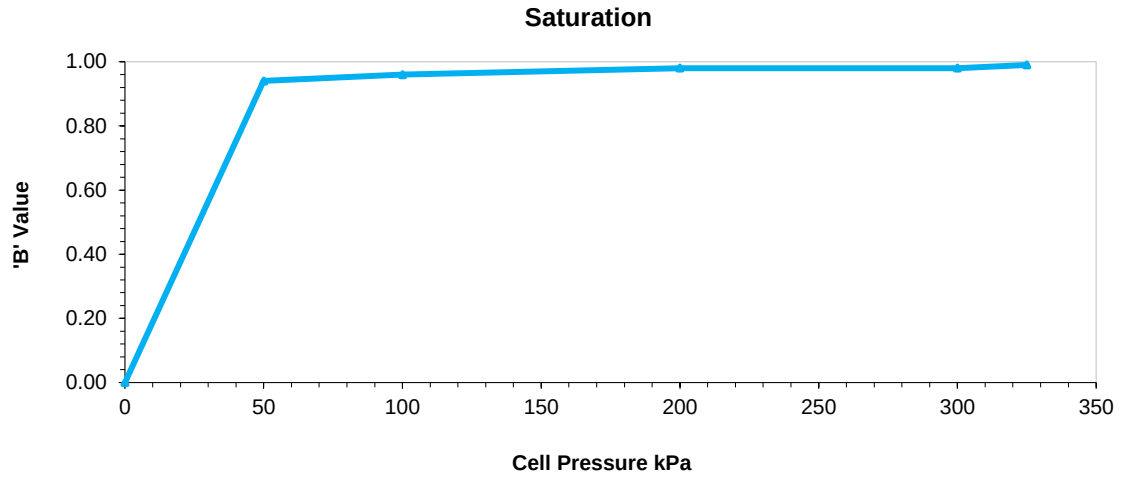
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.94
2	100	0.96
3	200	0.98
4	300	0.98
5	325	0.99

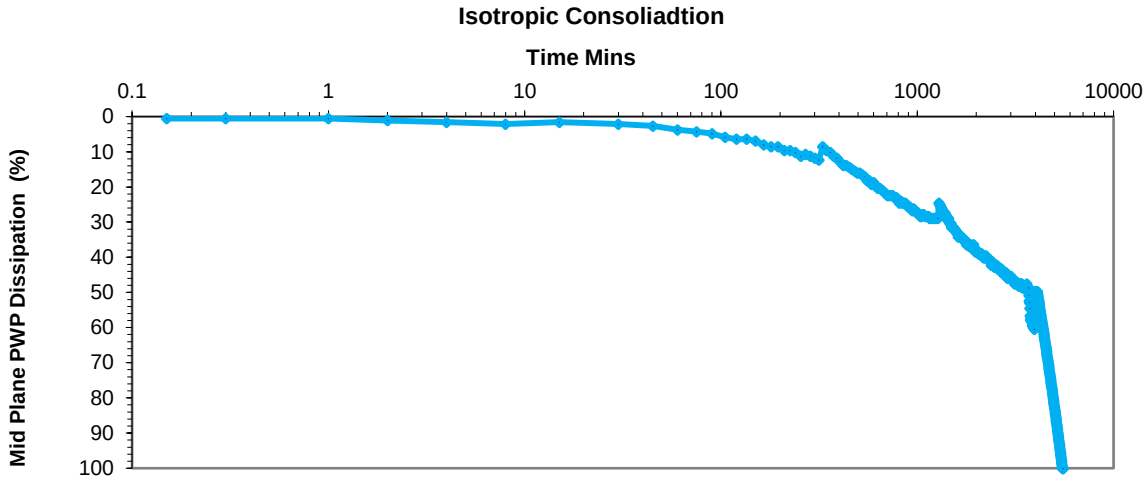
Isotropic Consolidation Stage

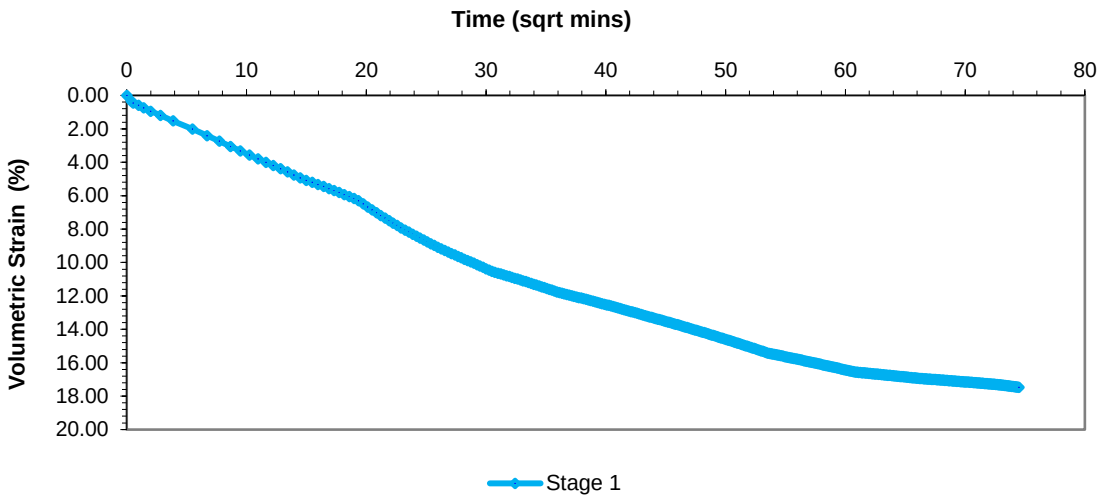
		Stage 1
Cell Pressure	kPa	325
Pore Pressure	kPa	318.8
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		2550.3
Coef. Of Consolidation Cv	m2/year	0.082
Coef. Of Compressibility Mv	m2/MN	9.291
Permeability k	m/sec	2.37E-10

	Stage 1
Deviator Stress (kPa)	20.3
External Axial Strain (%)	14.29
Shear Stress (kPa)	10.2
Peak Stress Ratio	4.18
Pore Water Pressure (kPa)	18.6
Radial Effective Stress (kPa)	6.4
Axial Effective Stress (kPa)	26.7
Effective angle of friction (Degrees)	37.9
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown /black slightly fiberous PEAT**
	Plastic Failure

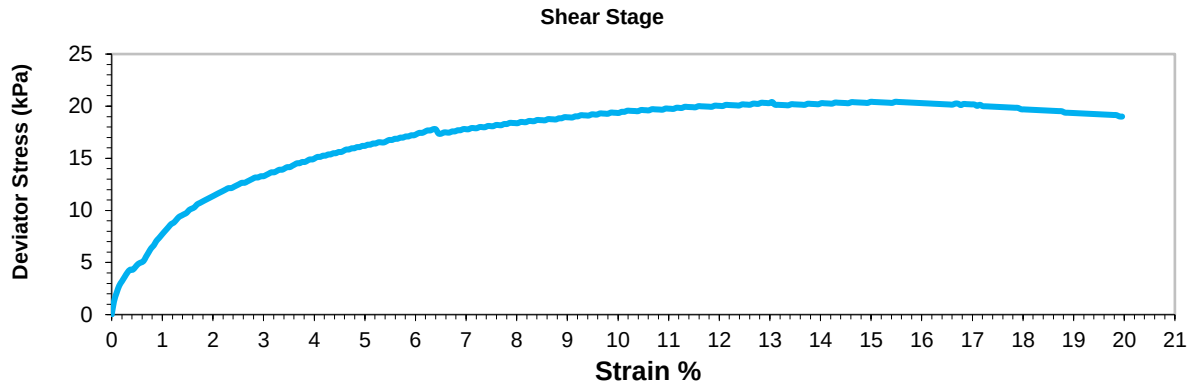
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH109
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

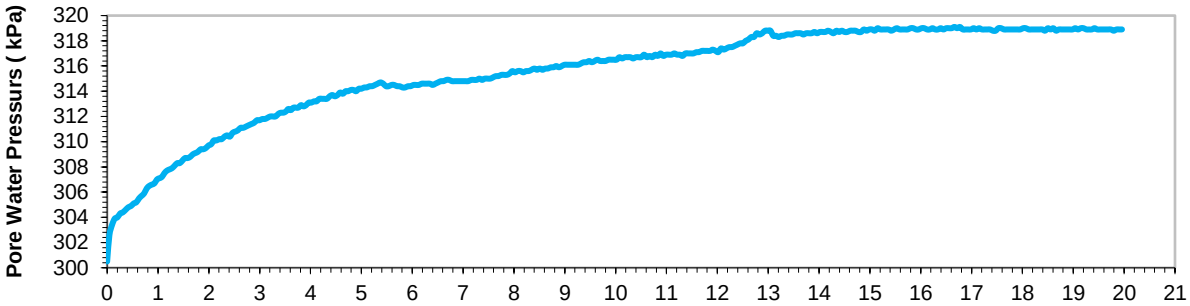


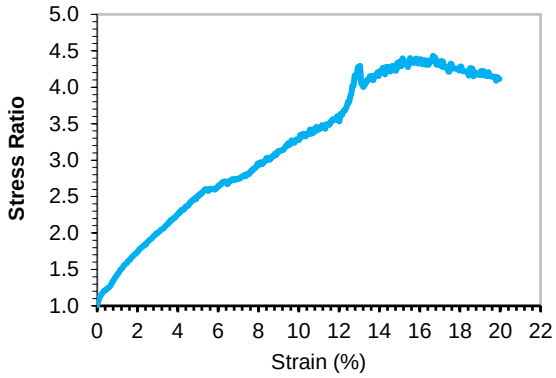


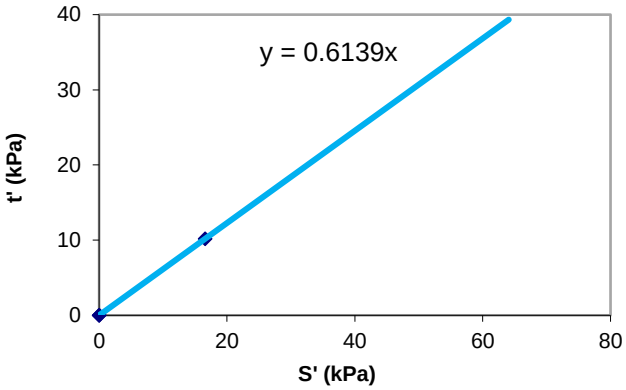


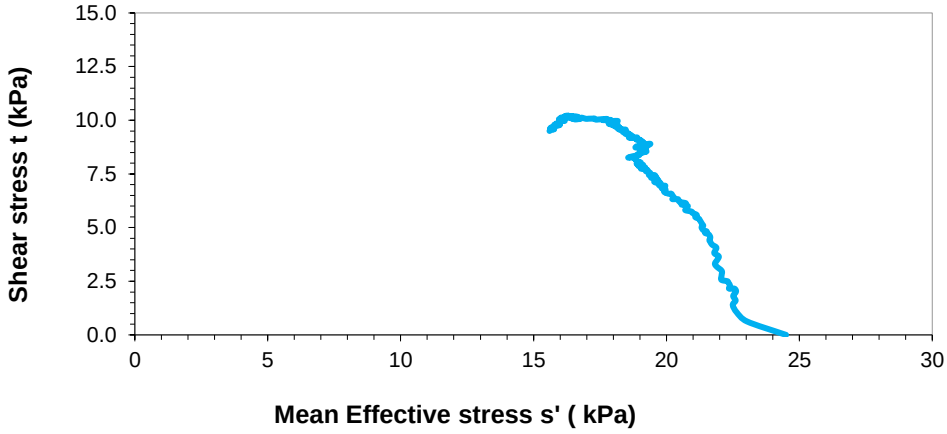
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH109
	Project: Derrygreenagh Power	Sample No. U6
		Depth. 2.00-2.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH109
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown /black slightly fiberous PEAT**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH109
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Light brown slightly sandy gravelly clayey SILT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		87.73
Bulk density (Mg/m3)		2.23
Particle density	(Assumed)	2.70

Initial conditions

Settlement Channel	1108
Moisture content (%)	10.35
Dry density (Mg/m3)	2.02
Initial Voids Ratio	0.3339
Deg of Saturation (%)	83.7
Swelling pressure (kPa)	n/a

Final conditions

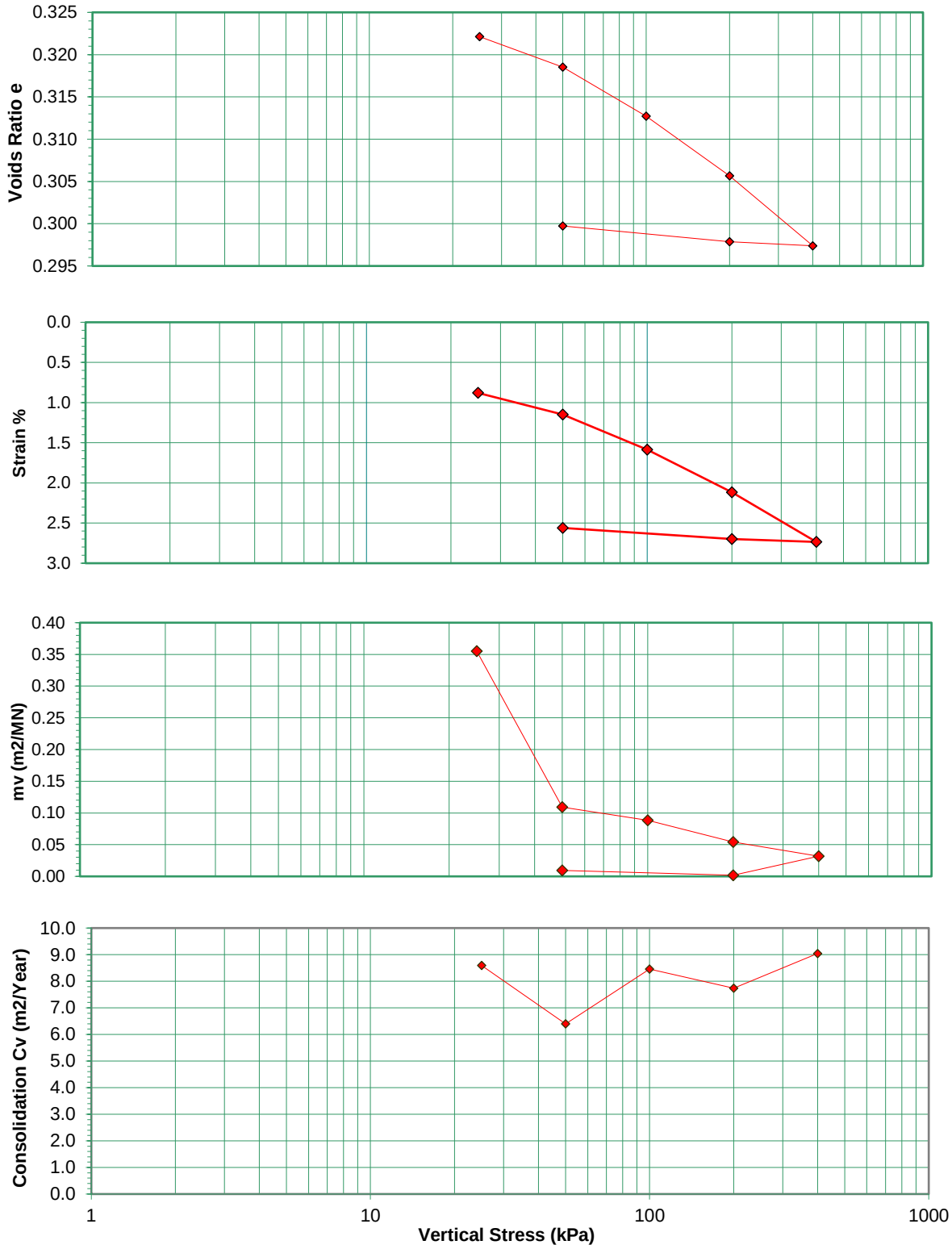
Moisture Content (%)	10.7
Dry Density (Mg/m3)	2.08
Final voids ratio	0.2997
Final degree of saturation (%)	96.3
Final settlement	0.512

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH113 U6 2.00-2.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH113 U6 2.00-2.45m

Oedometer Test

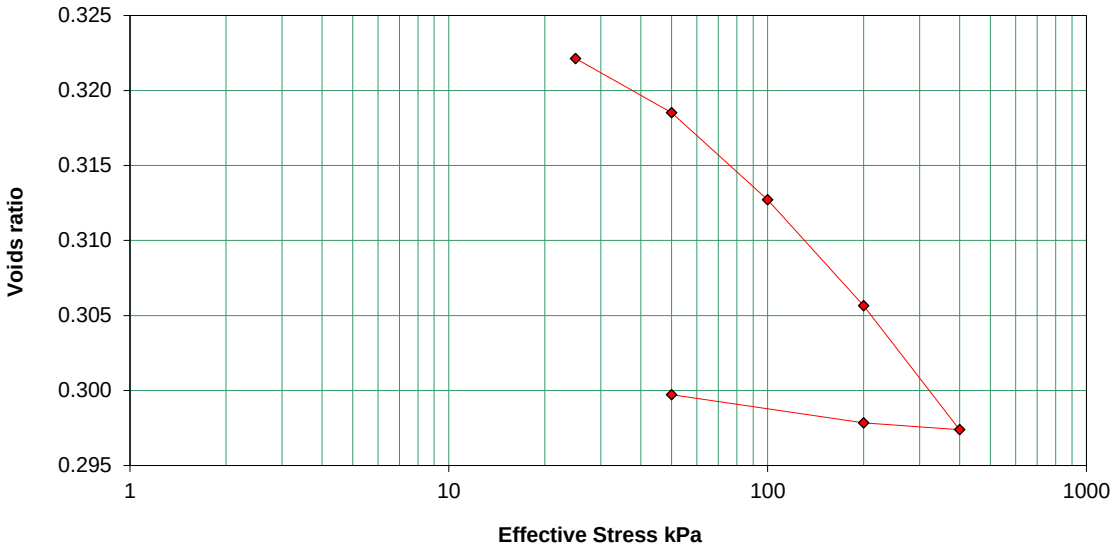
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Light brown slightly sandy gravelly clayey SILT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		87.73
Bulk Density (mg/m3)		2.234
Particle Density	Assumed	2.70

Initial Conditions		Final Conditions	
Moisture content	10.4	10.7	%
Dry Density	2.024	2.077	Mg/m3
Initial Voids Ratio	0.3339	0.2997	
Degree of Saturation	83.72	96.32	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	25	0.880	0.3221	0.355	N/A	0.176
2	50	1.150	0.3185	0.109	6.397	0.230
3	100	1.585	0.3127	0.088	8.462	0.317
4	200	2.115	0.3057	0.054	7.738	0.423
5	400	2.735	0.2974	0.032	9.044	0.547
6	200	2.700	0.2979	0.002		0.540
7	50	2.560	0.2997	0.010		0.512

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH113
		Sample No.	U6
		Depth m.	2.00-2.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	2.26	2.27
Specimen Length	mm	201.00	Dry Density	Mg/m3	2.04	2.05
Specimen Diameter	mm	100.50	Moisture	%	10.67	10.81
Area	mm2	7932.72	Saturation	%	94.86	97.76
Volume	cc	1594.48	Sg(Assumed)	2.65		

Saturation Stage

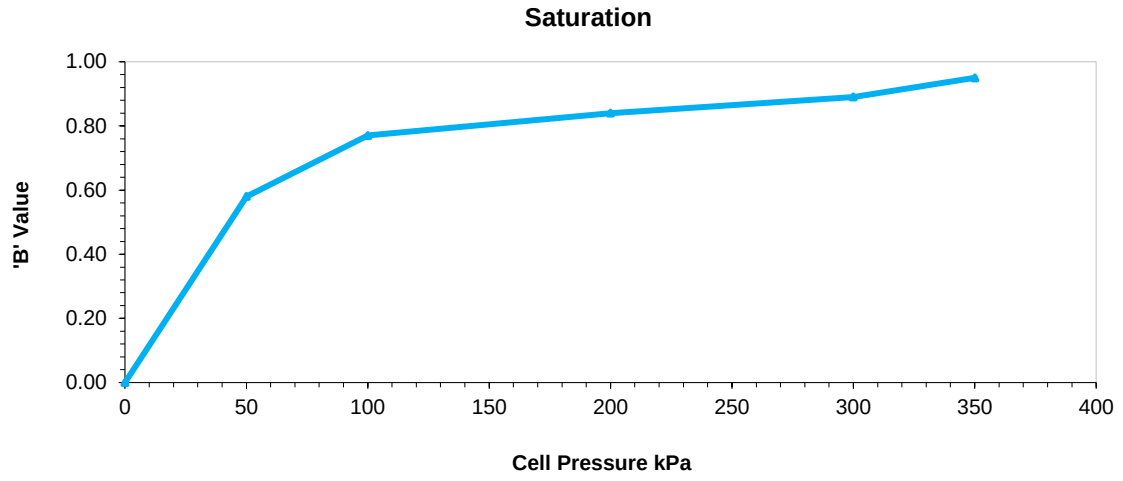
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.58
2	100	0.77
3	200	0.84
4	300	0.89
5	350	0.95

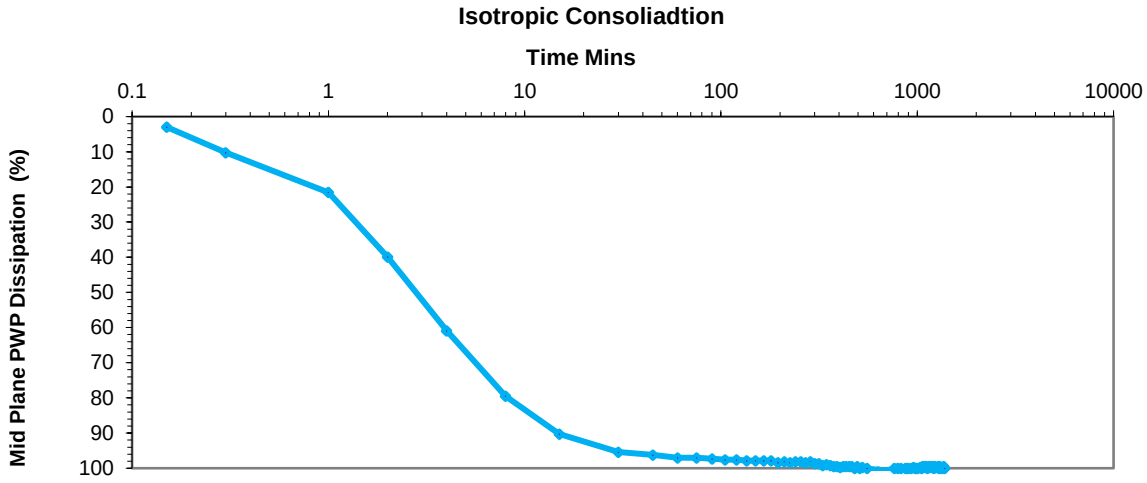
Isotropic Consolidation Stage

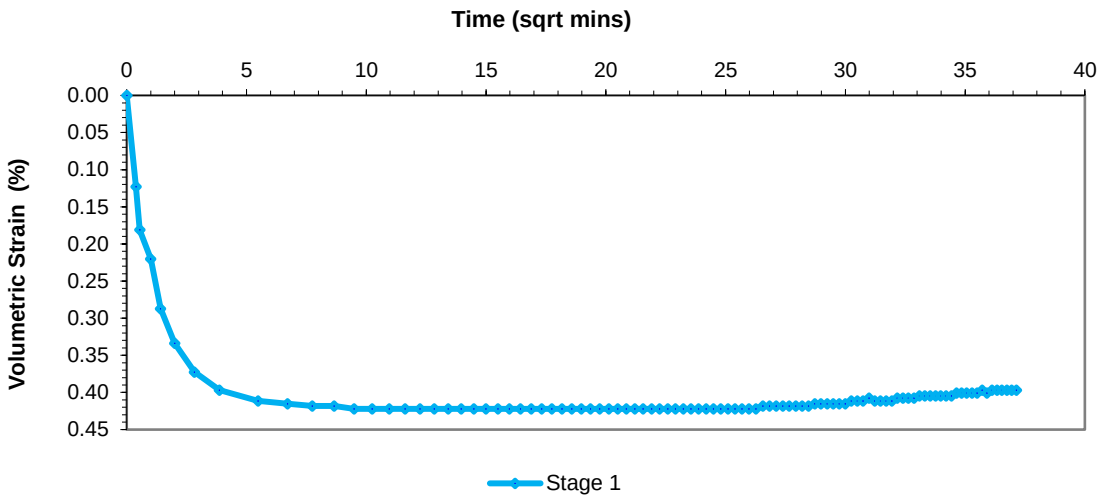
		Stage 1
Cell Pressure	kPa	350
Pore Pressure	kPa	333.6
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		7.8
Coef. Of Consolidation Cv	m2/year	26.786
Coef. Of Compressibility Mv	m2/MN	0.118
Permeability k	m/sec	9.81E-10

	Stage 1
Deviator Stress (kPa)	325.8
External Axial Strain (%)	20.08
Shear Stress (kPa)	162.9
Peak Stress Ratio	4.44
Pore Water Pressure (kPa)	-44.7
Radial Effective Stress (kPa)	94.7
Axial Effective Stress (kPa)	420.5
Effective angle of friction (Degrees)	39.2
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Light brown slightly sandy gravelly clayey SILT. Plastic Failure**

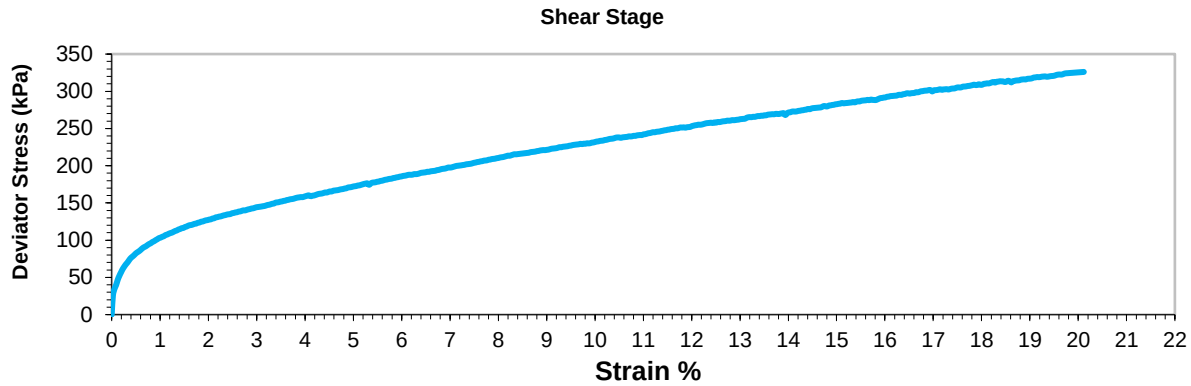
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH113
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

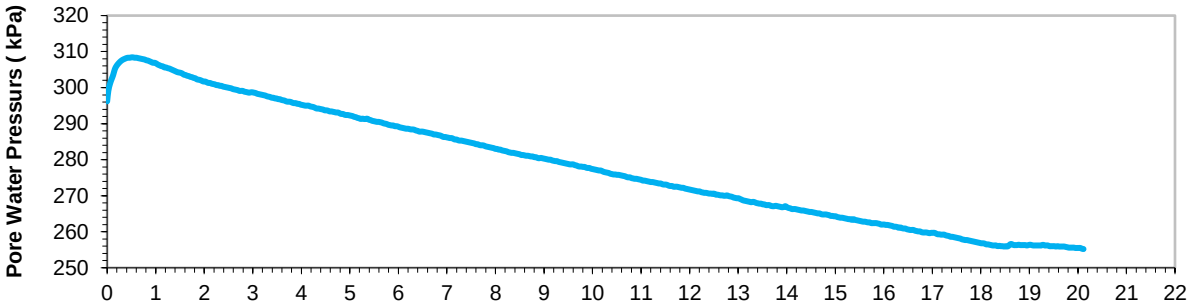


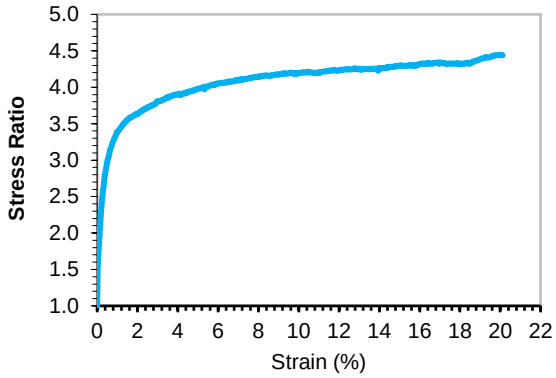


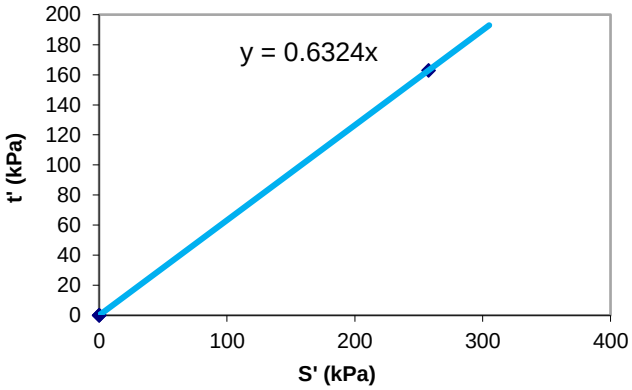


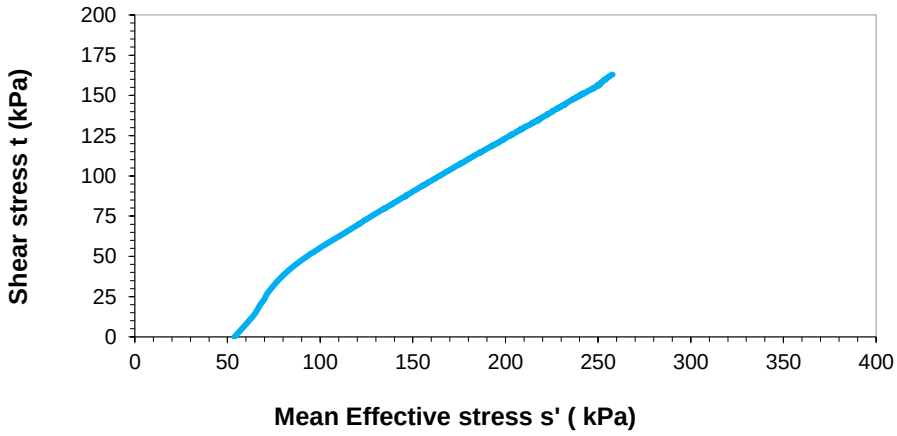
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH113
	Project: Derrygreenagh Power	Sample No. U6
		Depth. 2.00-2.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH113
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

SPECIMEN AFTER TEST

Soil Description **Light brown slightly sandy gravelly clayey SILT.**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH113
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.05	1.06
Specimen Length	mm	204.50	Dry Density	Mg/m3	0.14	0.16
Specimen Diameter	mm	102.50	Moisture	%	630.44	558.71
Area	mm2	8251.59	Saturation	%	100.55	100.62
Volume	cc	1687.45	Sg(Assumed)	1.50		

Saturation Stage

Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.88
2	100	0.98
3	200	0.98
4	300	0.98
5	315	0.98

Isotropic Consolidation Stage

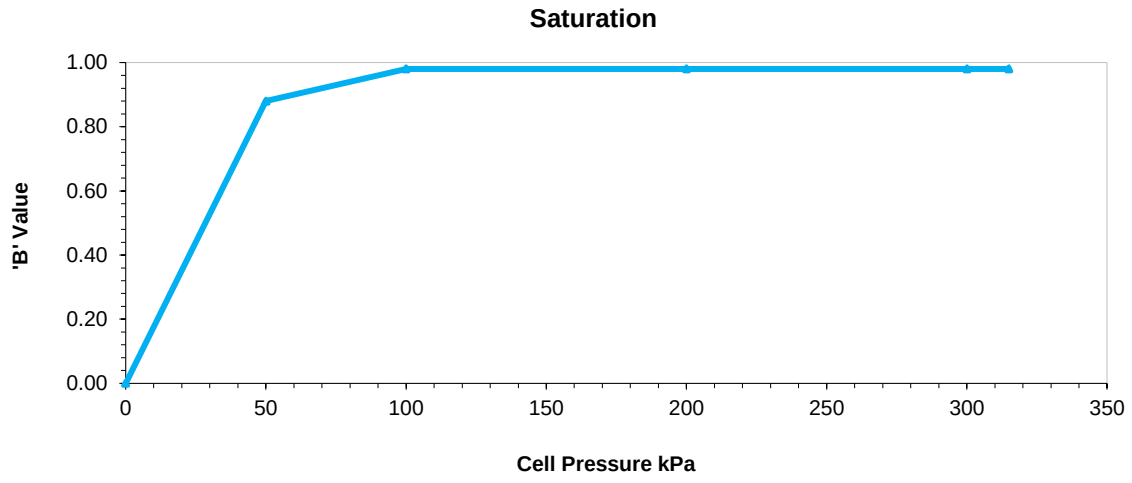
		Stage 1
Cell Pressure	kPa	315
Pore Pressure	kPa	309.9
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		1075.8
Coef. Of Consolidation Cv	m2/year	0.195
Coef. Of Compressibility Mv	m2/MN	10.444
Permeability k	m/sec	6.32E-10

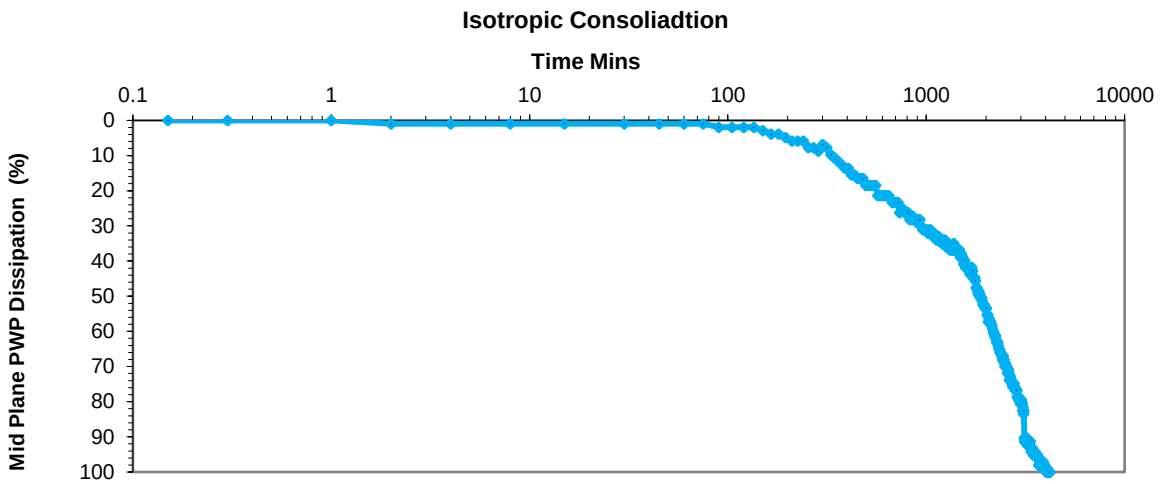
	Stage 1
Deviator Stress (kPa)	39.2
External Axial Strain (%)	22.64
Shear Stress (kPa)	19.6
Peak Stress Ratio	3.63
Pore Water Pressure (kPa)	0.1
Radial Effective Stress (kPa)	14.9
Axial Effective Stress (kPa)	54.1
Effective angle of friction (Degrees)	34.6°
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0040

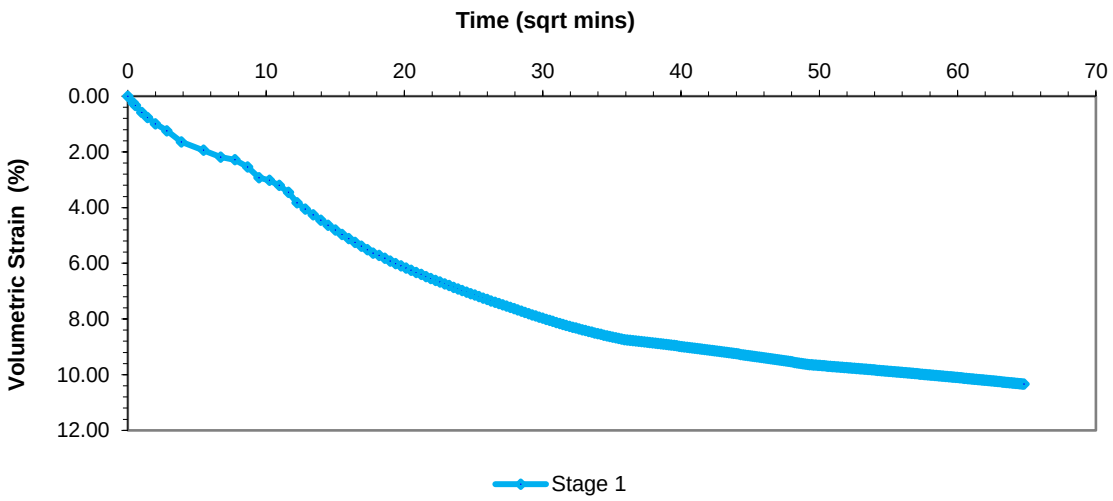
Sample Description **Dark brown/black slightly firberous PEAT, with some completely decompoded wood fragments**

Plastic Failure

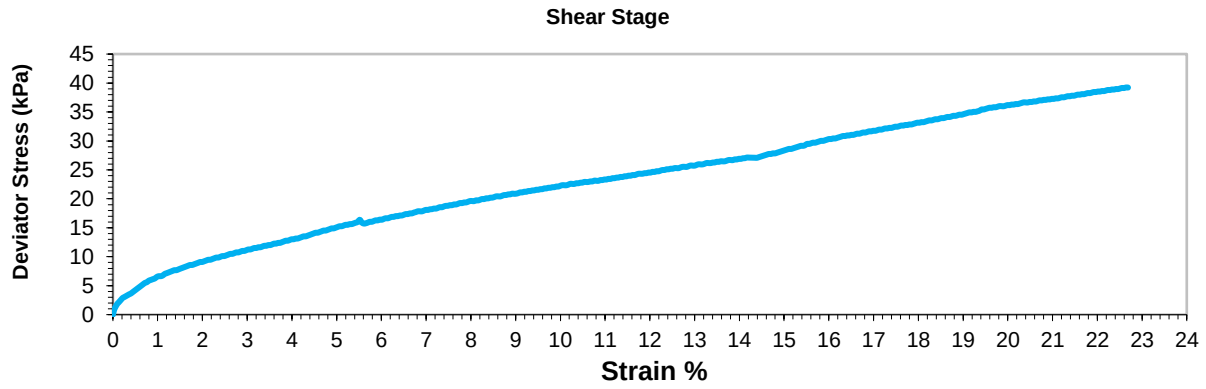
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH116
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

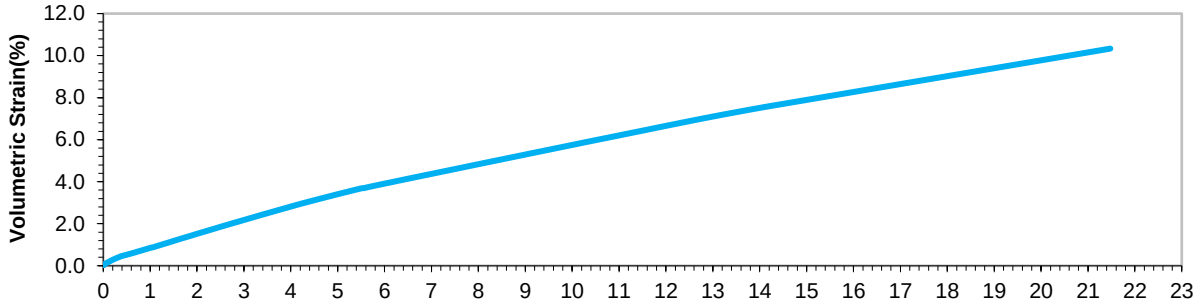


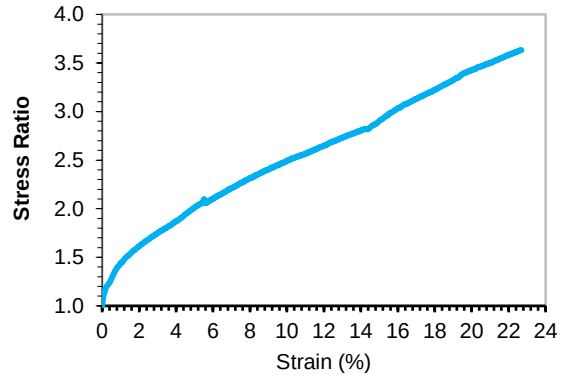


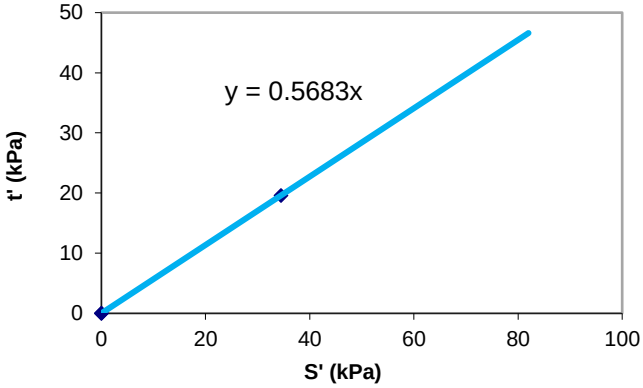


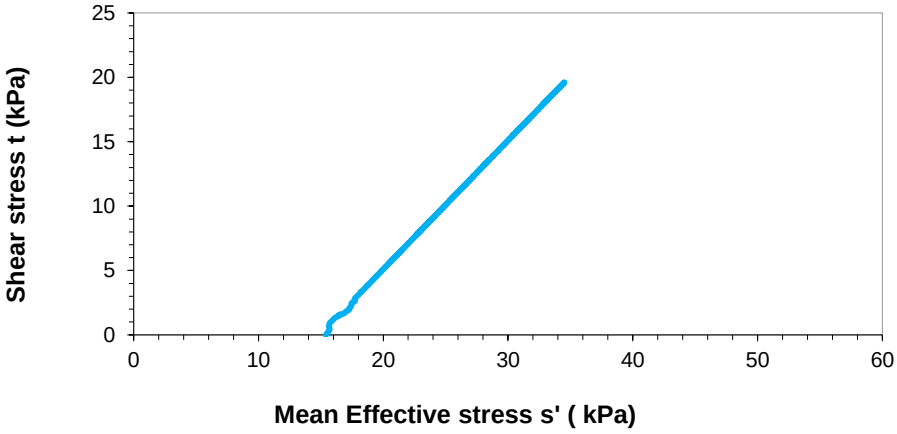
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH116
	Project: Derrygreenagh Power	Sample No. U3
		Depth. 1.00-1.45m











NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH116
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown/black slightly firberous PEAT, with some completely decompoded wood fragments**

NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH116
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.97	2.00
Specimen Length	mm	199.00	Dry Density	Mg/m3	1.56	1.62
Specimen Diameter	mm	102.50	Moisture	%	26.01	23.43
Area	mm2	8251.59	Saturation	%	98.57	97.93
Volume	cc	1642.07	Sg(Assumed)	2.65		

Saturation Stage

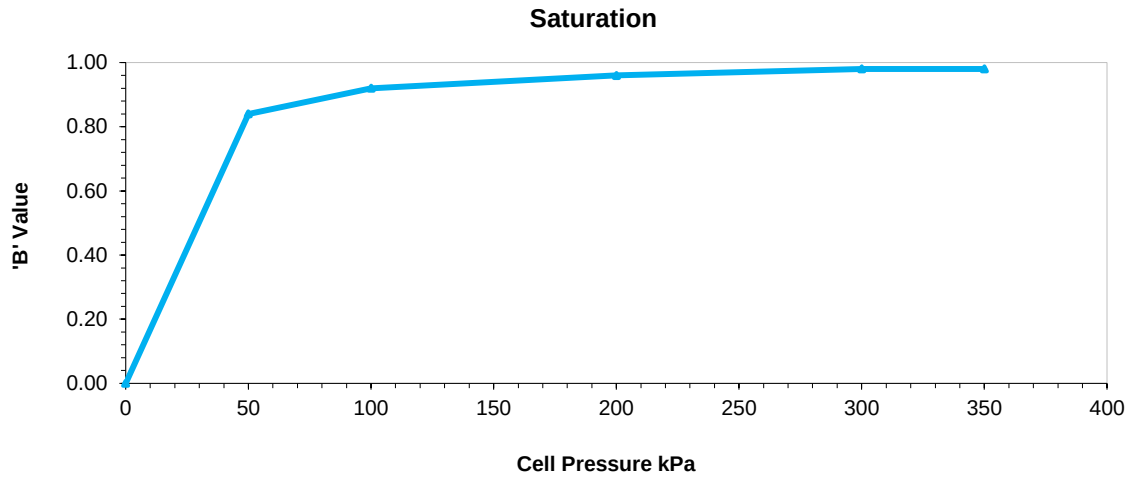
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.84
2	100	0.92
3	200	0.96
4	300	0.98
5	350	0.98

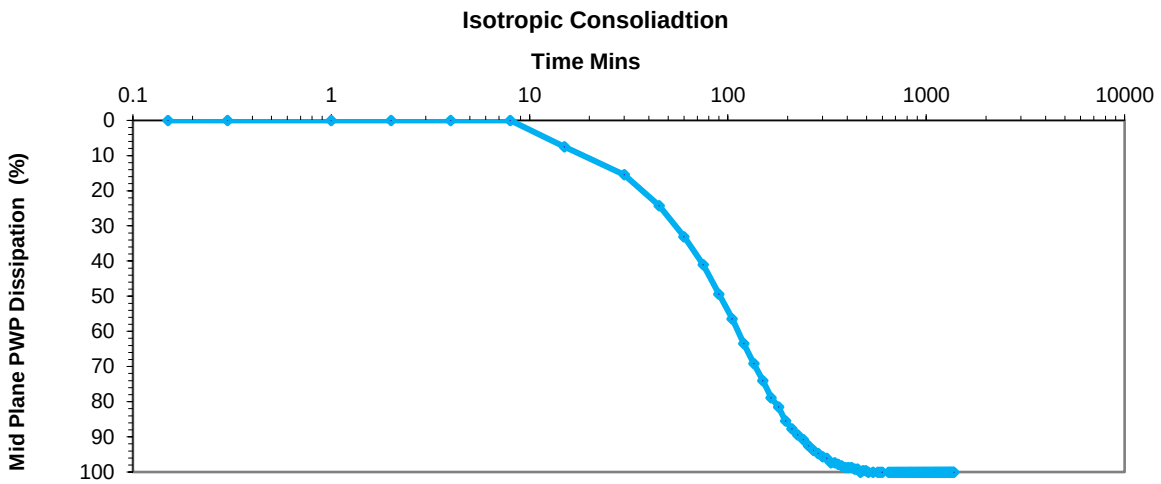
Isotropic Consolidation Stage

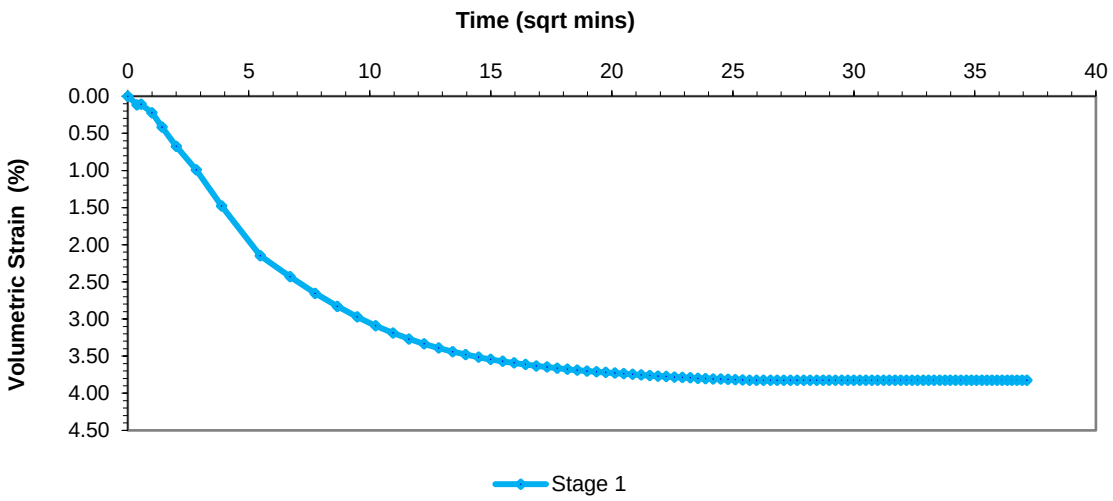
		Stage 1
Cell Pressure	kPa	325
Pore Pressure	kPa	317.7
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		96.0
Coef. Of Consolidation Cv	m2/year	2.187
Coef. Of Compressibility Mv	m2/MN	2.161
Permeability k	m/sec	1.47E-09

	Stage 1
Deviator Stress (kPa)	86.7
External Axial Strain (%)	11.47
Shear Stress (kPa)	43.4
Peak Stress Ratio	4.03
Pore Water Pressure (kPa)	-3.6
Radial Effective Stress (kPa)	28.6
Axial Effective Stress (kPa)	115.3
Effective angle of friction (Degrees)	37.2
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0040
Sample Description	**Dark brown/grey and black slightly organic slightly sandy silty CLAY. Plastic Failure**

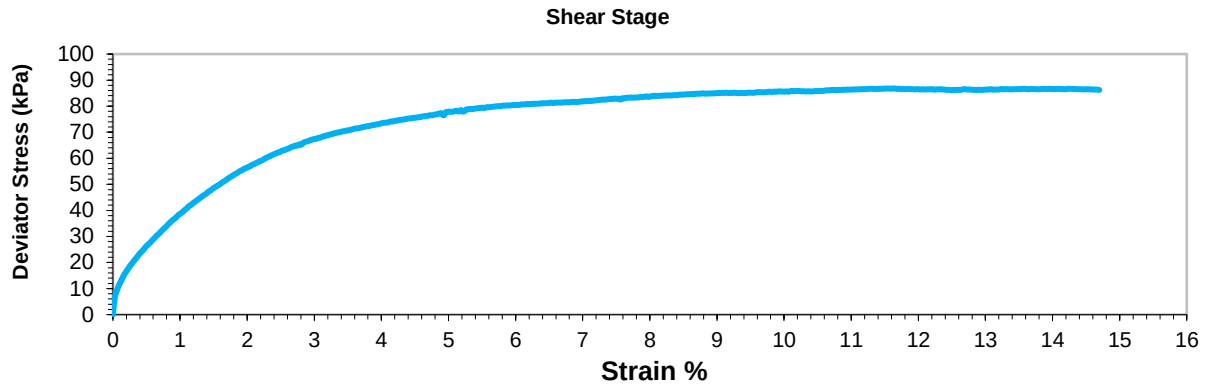
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH117
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

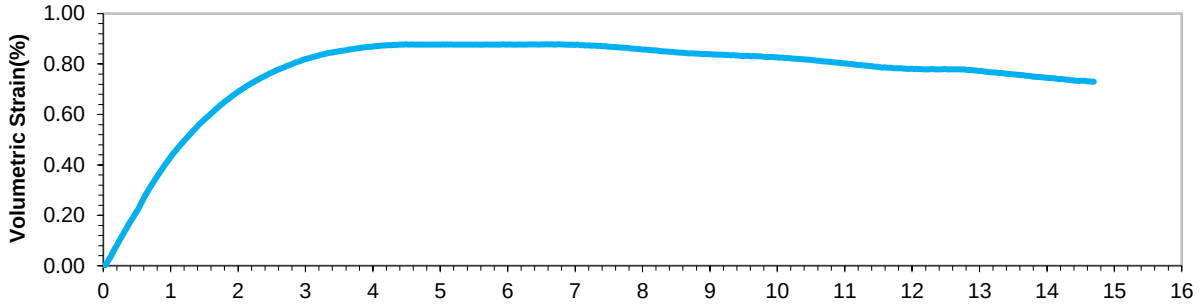


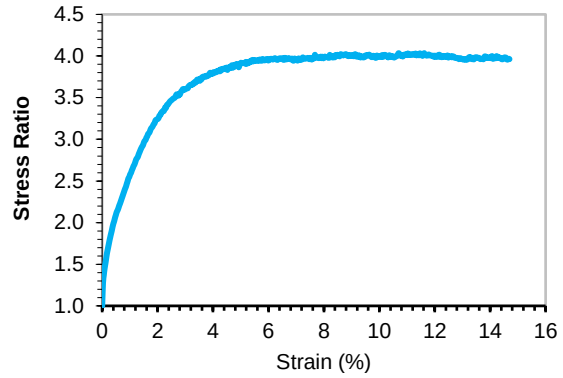


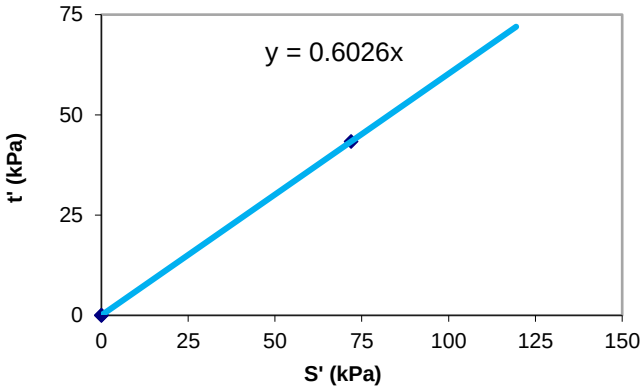


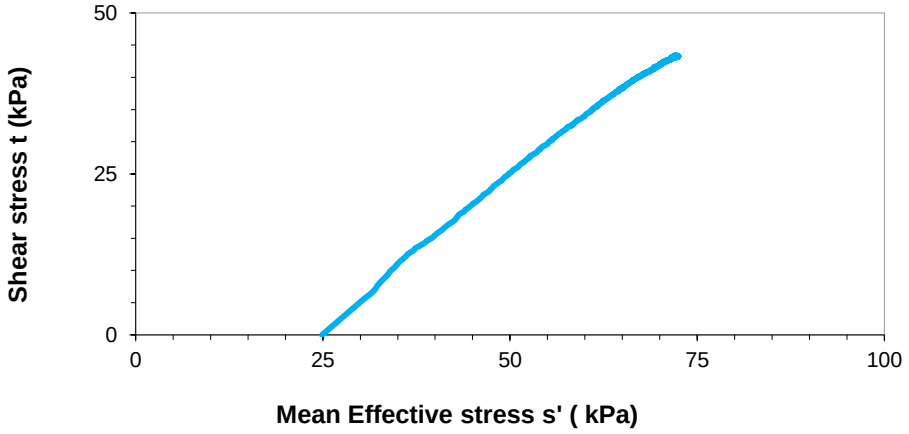
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH117
	Project: Derrygreenagh Power	Sample No. U3
		Depth. 1.00-1.45m











NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No. BH117
	Project:	Sample No. U3
	Derrygreenagh Power	Depth. 1.00-1.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown/grey and black slightly organic slightly sandy silty CLAY.**

NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH117
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown black slightly fiberous PEAT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		41.22
Bulk density (Mg/m3)		1.05
Particle density	(Assumed)	1.50

Initial conditions

Settlement Channel	1107
Moisture content (%)	685.14
Dry density (Mg/m3)	0.134
Initial Voids Ratio	10.2214
Deg of Saturation (%)	100.5
Swelling pressure (kPa)	n/a

Final conditions

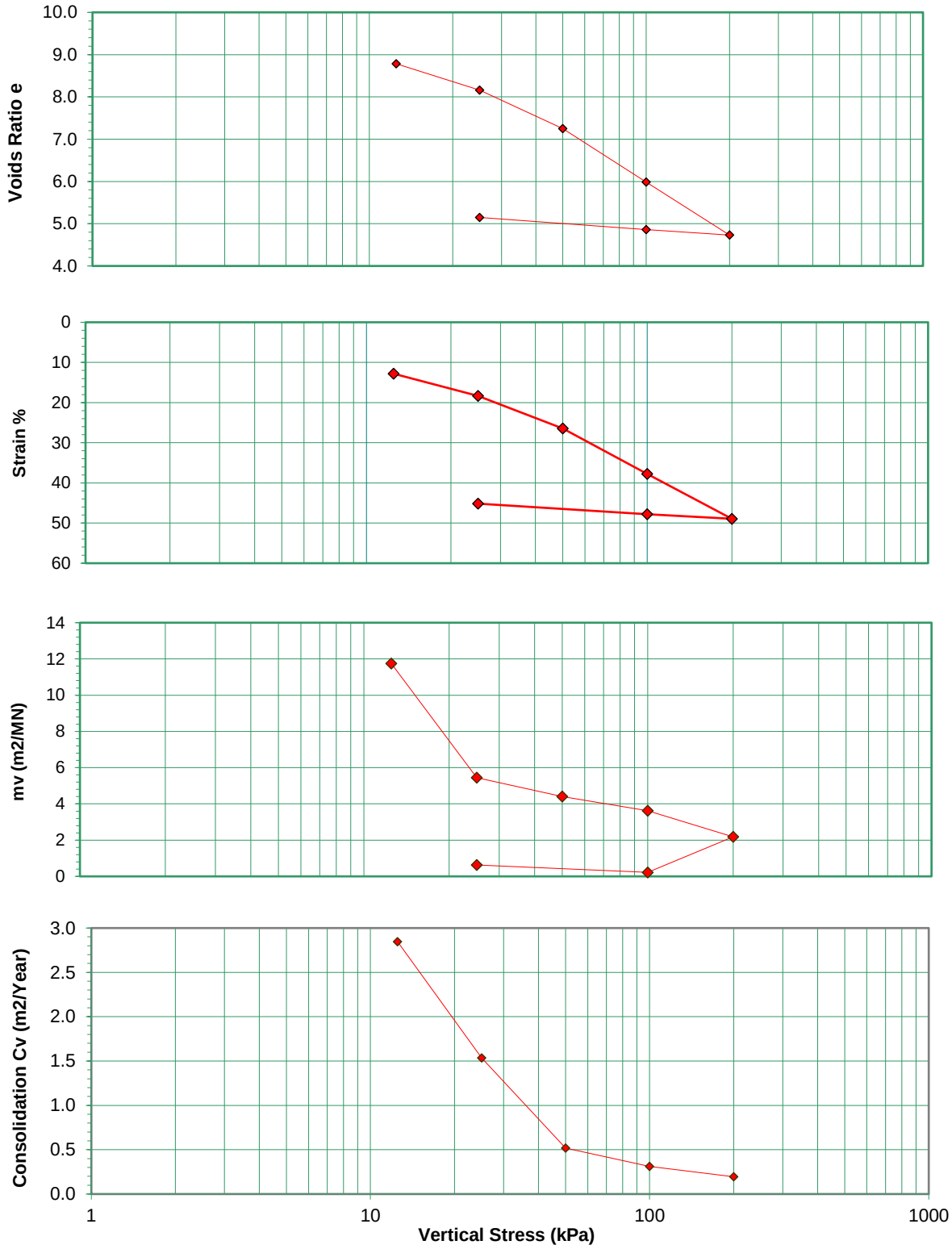
Moisture Content (%)	333.1
Dry Density (Mg/m3)	0.24
Final voids ratio	5.150
Final degree of saturation (%)	97.0
Final settlement	9.038

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHPW301
		Sample No.	U6
		Depth m.	2.00-2.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BHPW301 U6 2.00-2.45m

Oedometer Test

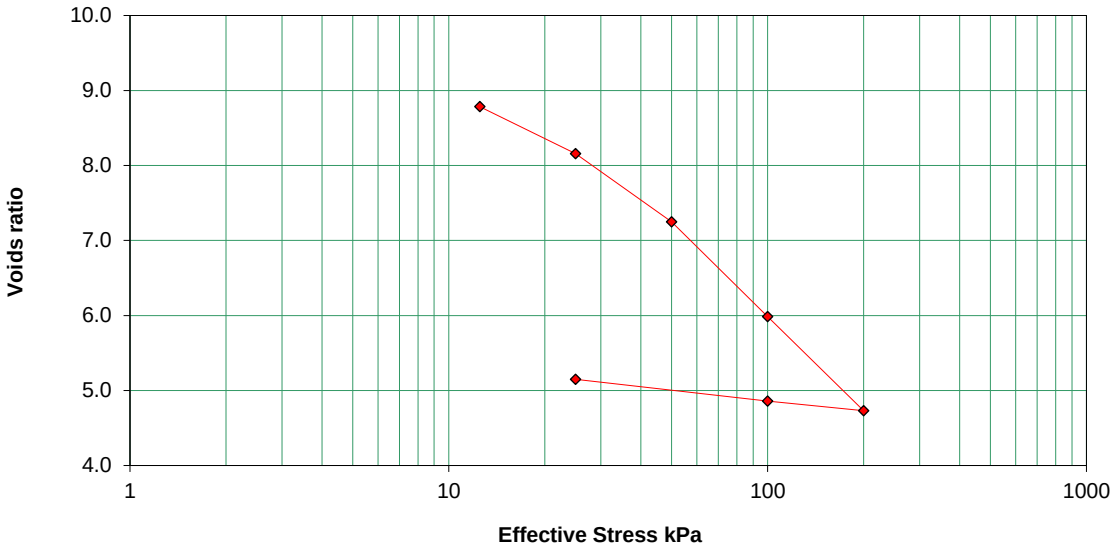
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown black slightly fiberous PEAT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		41.22
Bulk Density (mg/m3)		1.050
Particle Density	Assumed	1.50

Initial Conditions		Final Conditions	
Moisture content	685.1	333.1	%
Dry Density	0.134	0.244	Mg/m3
Initial Voids Ratio	10.2214	5.1505	
Degree of Saturation	100.55	97.02	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	12.805	8.7845	11.748	2.847	2.561
2	25	18.370	8.1601	5.454	1.535	3.674
3	50	26.475	7.2506	4.409	0.519	5.295
4	100	37.750	5.9853	3.622	0.312	7.550
5	200	48.930	4.7308	2.189	0.195	9.786
6	100	47.770	4.8610	0.222		9.554
7	25	45.190	5.1505	0.628		9.038

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHPW301
		Sample No.	U6
		Depth m.	2.00-2.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.00	1.06
Specimen Length	mm	202.50	Dry Density	Mg/m3	0.13	0.16
Specimen Diameter	mm	102.50	Moisture	%	659.74	567.95
Area	mm2	8251.59	Saturation	%	94.69	100.58
Volume	cc	1670.95	Sg(Assumed)	1.50		

Saturation Stage

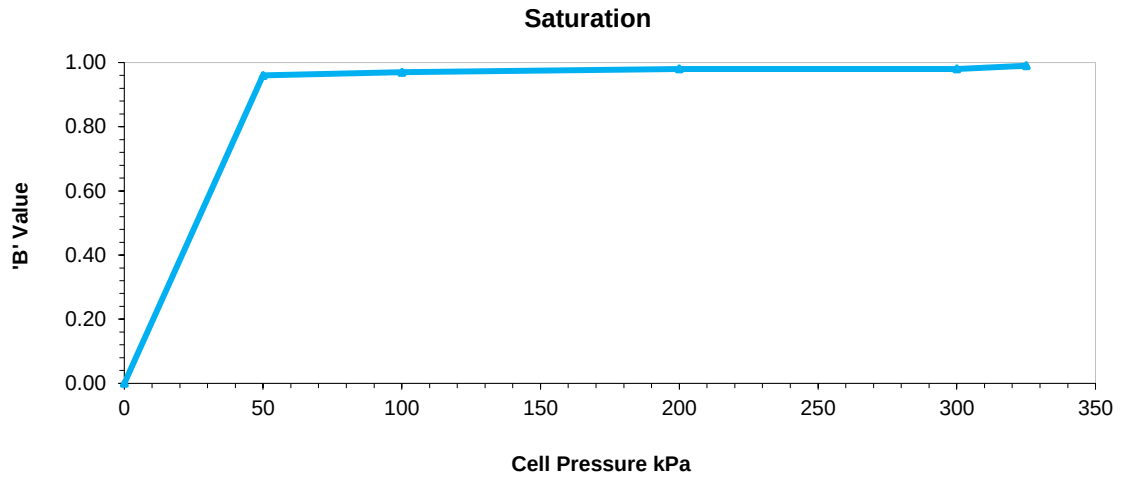
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.96
2	100	0.97
3	200	0.98
4	300	0.98
5	325	0.99

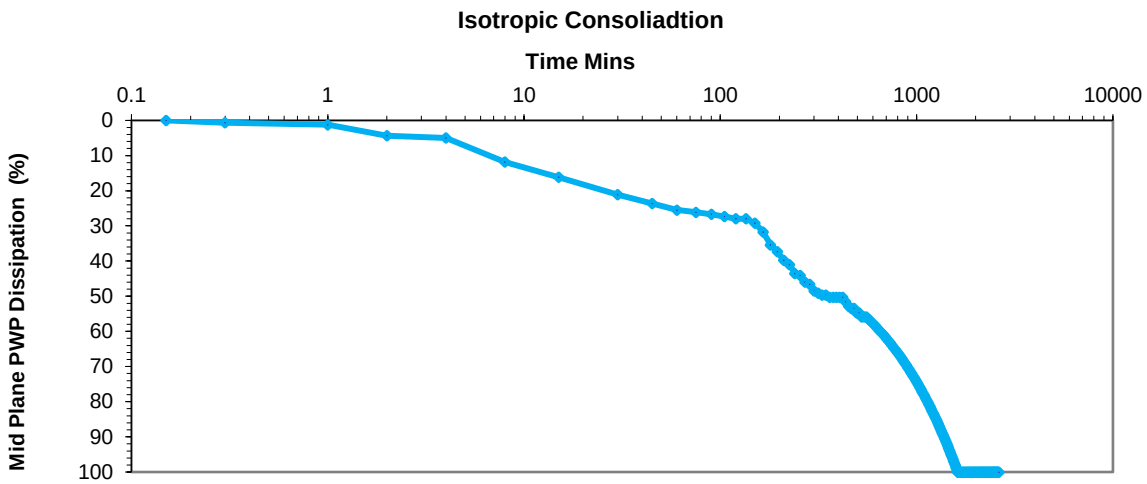
Isotropic Consolidation Stage

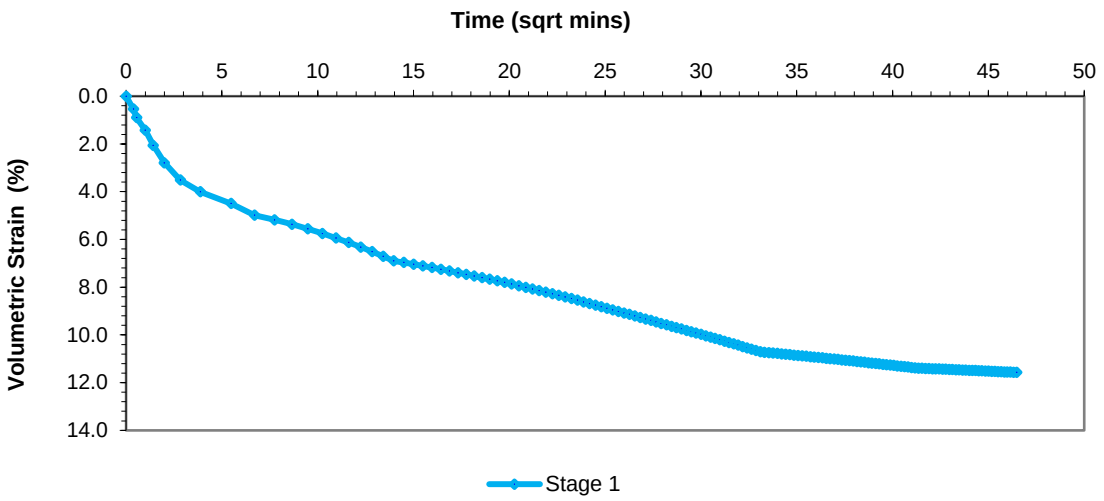
		Stage 1
Cell Pressure	kPa	325
Pore Pressure	kPa	316.2
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		552.3
Coef. Of Consolidation Cv	m2/year	0.380
Coef. Of Compressibility Mv	m2/MN	7.144
Permeability k	m/sec	8.42E-10

	Stage 1
Deviator Stress (kPa)	29.3
External Axial Strain (%)	16.63
Shear Stress (kPa)	14.7
Peak Stress Ratio	5.38
Pore Water Pressure (kPa)	18.3
Radial Effective Stress (kPa)	6.7
Axial Effective Stress (kPa)	36.0
Effective angle of friction (Degrees)	43.3°
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown /black slightly fiberous PEAT, with decomposed wood. Plastic Failure**

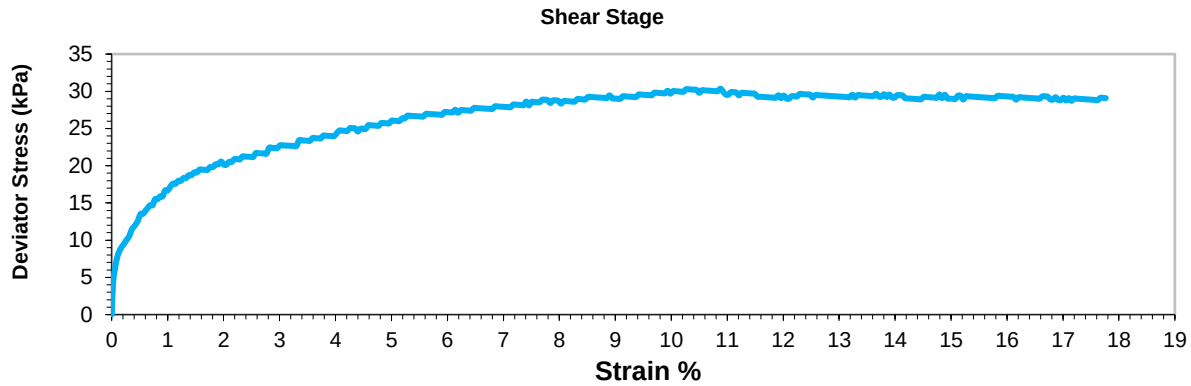
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHPW301
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

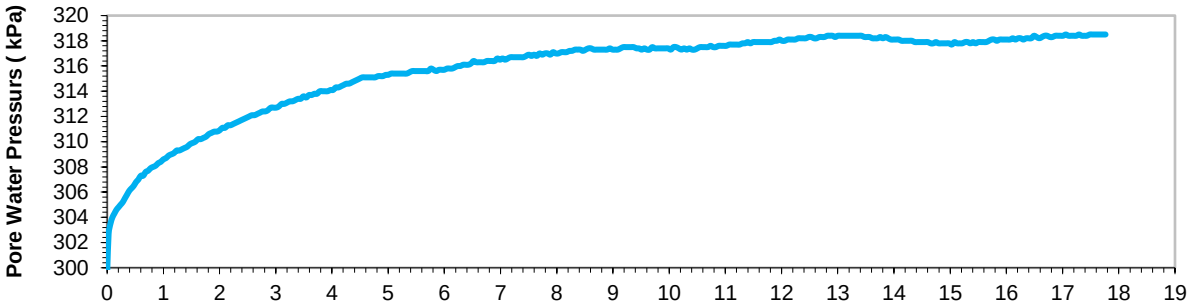


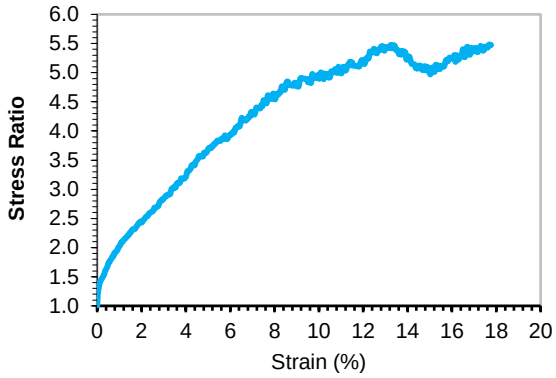


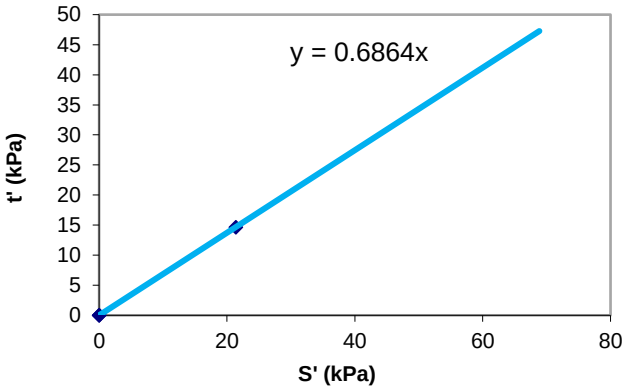


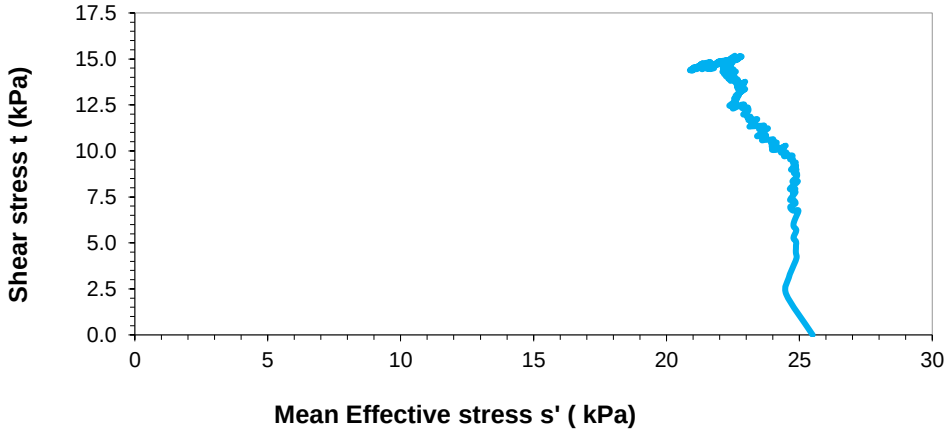
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BHPW301
	Project: Derrygreenagh Power	Sample No. U6
		Depth. 2.00-2.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHPW301
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown /black slightly fiberous PEAT, with decomposed wood.**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHPW301
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown black slightly fiberous PEAT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		41.9
Bulk density (Mg/m3)		1.07
Particle density	(Assumed)	1.50

Initial conditions

Settlement Channel	1108
Moisture content (%)	498.57
Dry density (Mg/m3)	0.178
Initial Voids Ratio	7.4161
Deg of Saturation (%)	100.8
Swelling pressure (kPa)	n/a

Final conditions

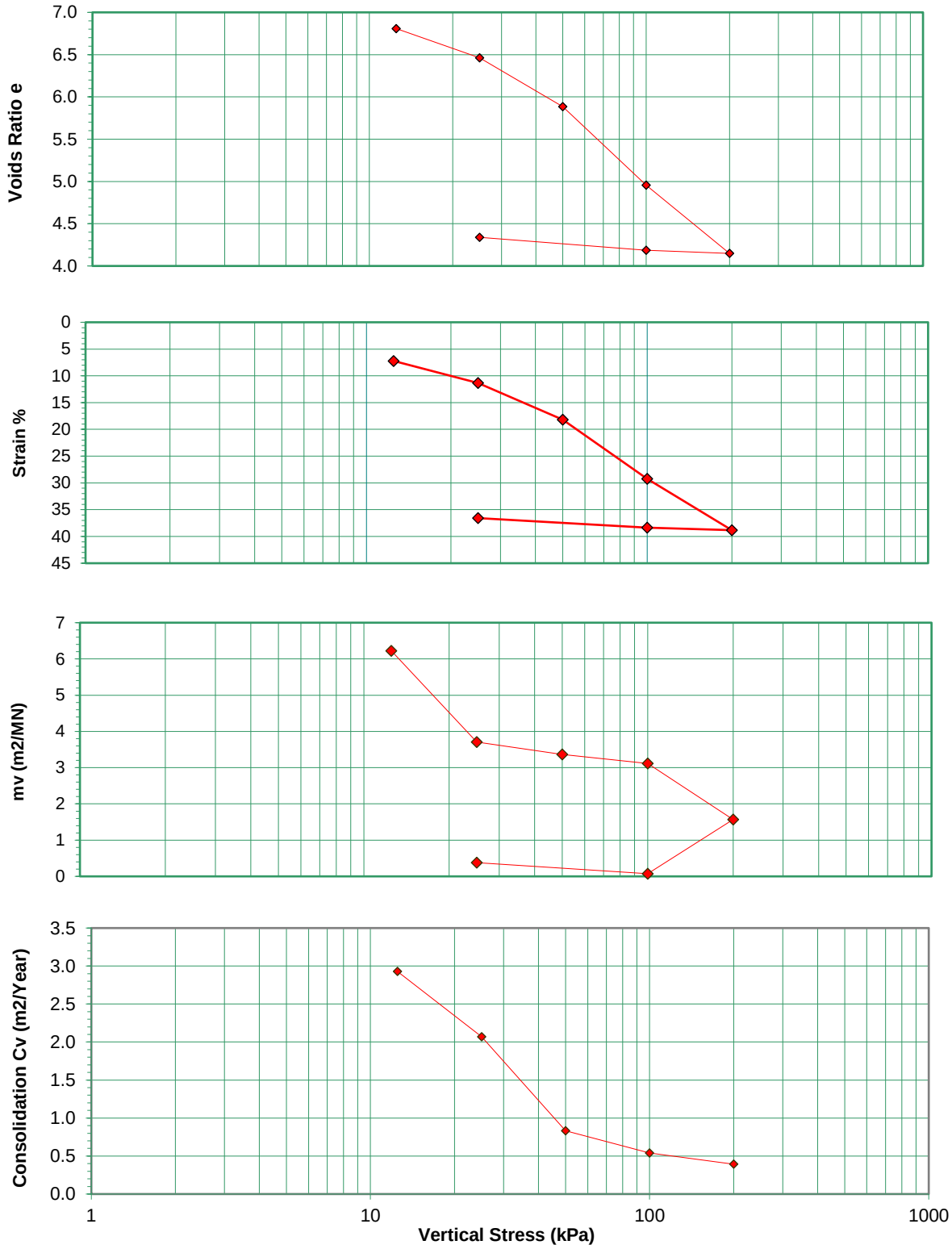
Moisture Content (%)	288.6
Dry Density (Mg/m3)	0.28
Final voids ratio	4.337
Final degree of saturation (%)	99.8
Final settlement	7.316

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHPW301
		Sample No.	U11
		Depth m.	4.00-4.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BHPW301 U11 4.00-4.45m

Oedometer Test

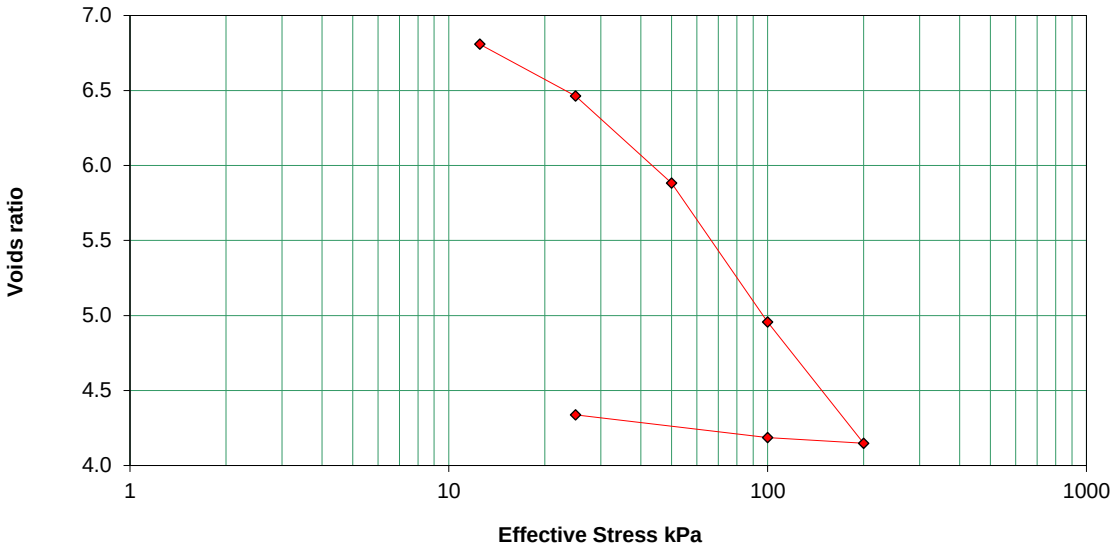
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown black slightly fiberous PEAT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		41.90
Bulk Density (mg/m3)		1.067
Particle Density	Assumed	1.50

Initial Conditions		Final Conditions	
Moisture content	498.6	288.6	%
Dry Density	0.178	0.281	Mg/m3
Initial Voids Ratio	7.4161	4.3375	
Degree of Saturation	100.84	99.79	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	7.220	6.8084	6.225	2.928	1.444
2	25	11.330	6.4625	3.708	2.071	2.266
3	50	18.210	5.8835	3.365	0.832	3.642
4	100	29.225	4.9565	3.113	0.540	5.845
5	200	38.825	4.1485	1.569	0.393	7.765
6	100	38.370	4.1868	0.074		7.674
7	25	36.580	4.3375	0.376		7.316

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHPW301
		Sample No.	U11
		Depth m.	4.00-4.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.01	1.07
Specimen Length	mm	202.00	Dry Density	Mg/m3	0.17	0.21
Specimen Diameter	mm	101.50	Moisture	%	478.86	406.43
Area	mm2	8091.37	Saturation	%	94.24	99.98
Volume	cc	1634.46	Sg(Assumed)	1.50		

Saturation Stage

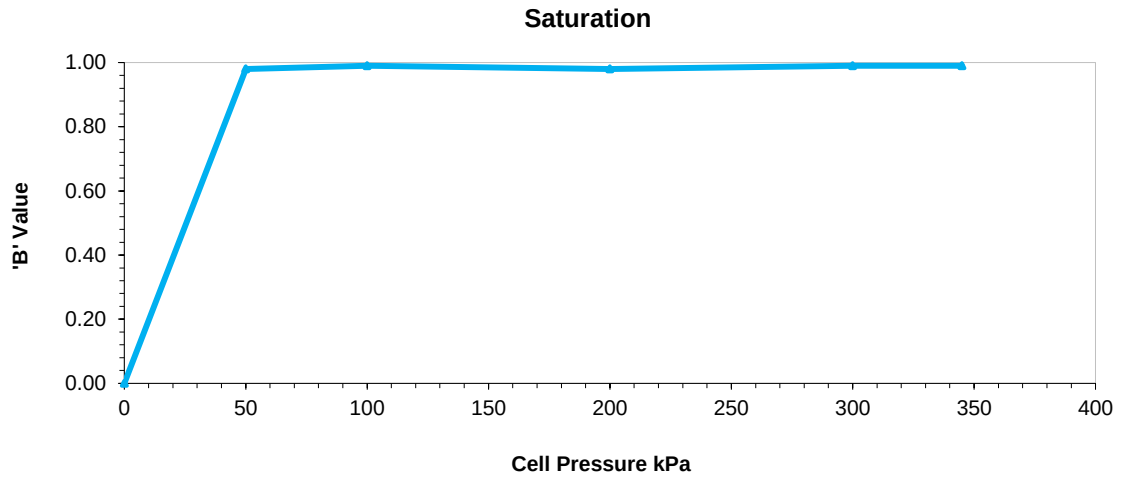
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.98
2	100	0.99
3	200	0.98
4	300	0.99
5	345	0.99

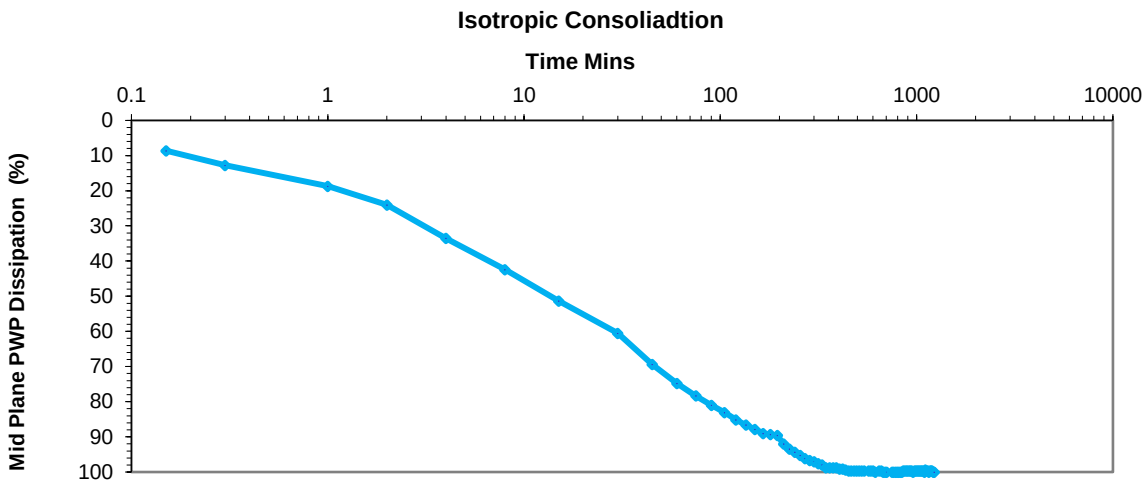
Isotropic Consolidation Stage

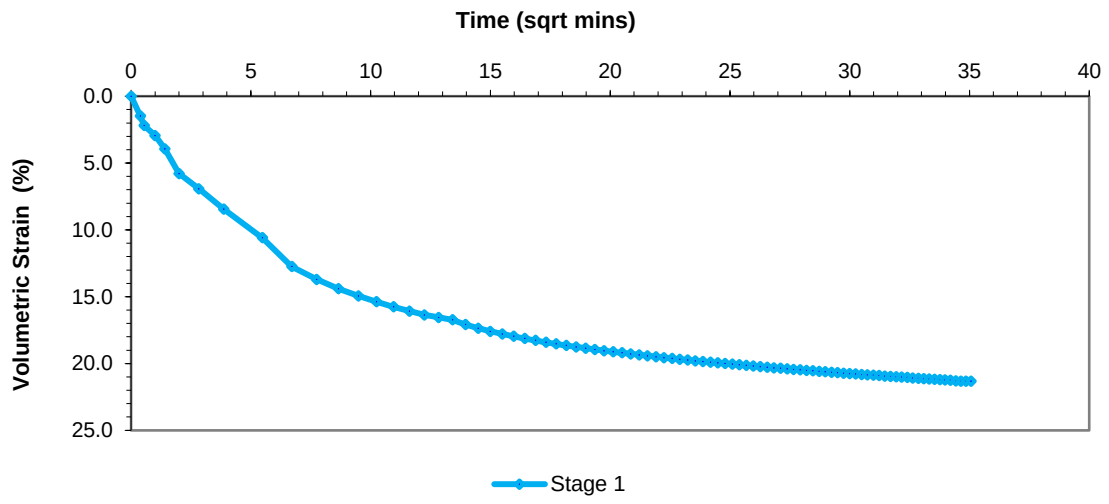
		Stage 1
Cell Pressure	kPa	345
Pore Pressure	kPa	332.7
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		151.3
Coef. Of Consolidation Cv	m2/year	1.388
Coef. Of Compressibility Mv	m2/MN	6.522
Permeability k	m/sec	2.81E-09

	Stage 1
Deviator Stress (kPa)	38.9
External Axial Strain (%)	19.16
Shear Stress (kPa)	19.5
Peak Stress Ratio	4.14
Pore Water Pressure (kPa)	32.6
Radial Effective Stress (kPa)	12.4
Axial Effective Stress (kPa)	51.3
Effective angle of friction (Degrees)	37.7°
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown /black slightly fiberous PEAT.**
	Plastic Failure

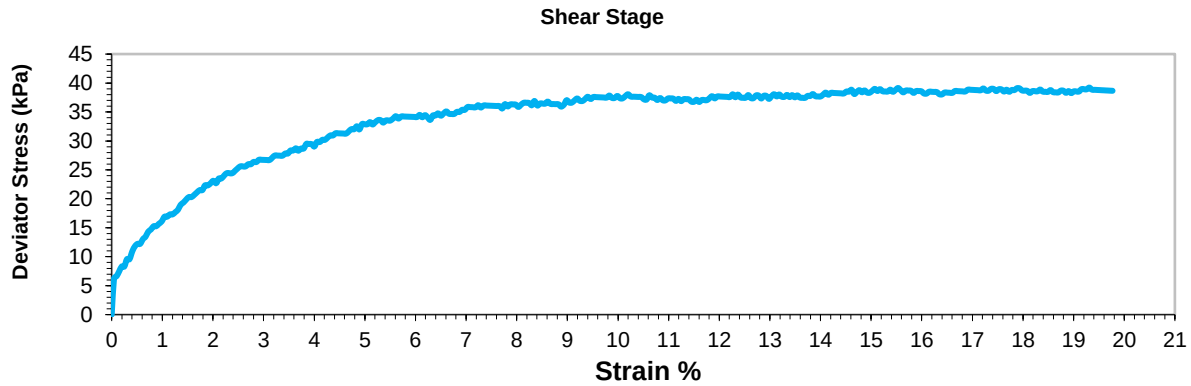
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHPW301
	Project: Derrygreenagh Power	Sample No.	U11
		Depth.	4.00-4.45m

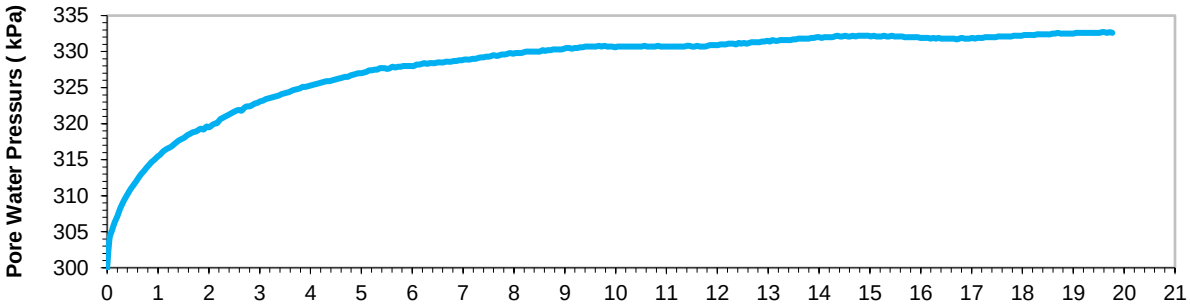


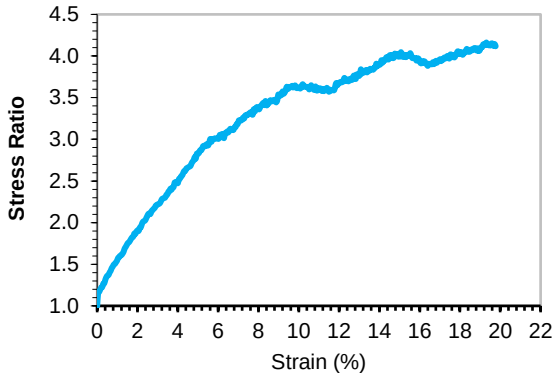


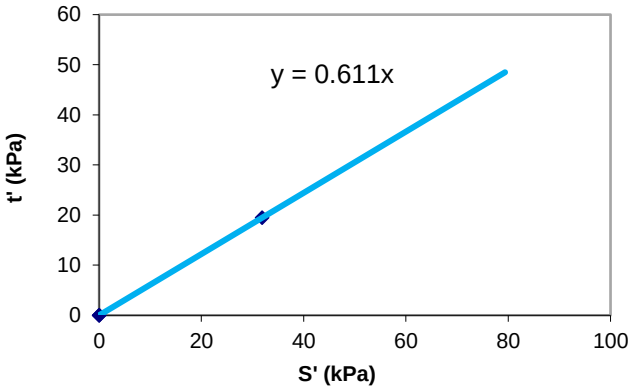


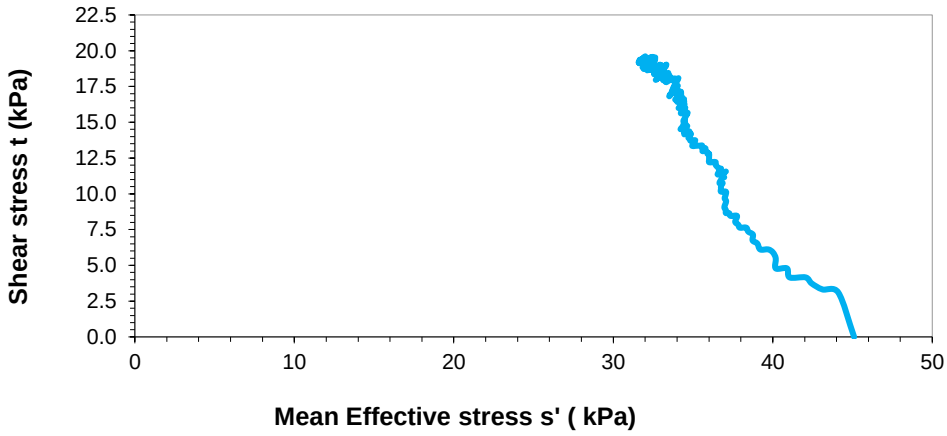
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BHPW301
	Project: Derrygreenagh Power	Sample No. U11
		Depth. 4.00-4.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHPW301
	Project: Derrygreenagh Power	Sample No.	U11
		Depth.	4.00-4.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown /black slightly fiberous PEAT.**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHPW301
	Project: Derrygreenagh Power	Sample No.	U11
		Depth.	4.00-4.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	0.95	0.99
Specimen Length	mm	202.00	Dry Density	Mg/m3	0.10	0.12
Specimen Diameter	mm	101.50	Moisture	%	823.61	731.90
Area	mm2	8091.37	Saturation	%	91.40	94.76
Volume	cc	1634.46	Sg(Assumed)	1.50		

Saturation Stage

Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.80
2	100	0.98
3	200	0.98
4	300	0.98
5	315	0.99

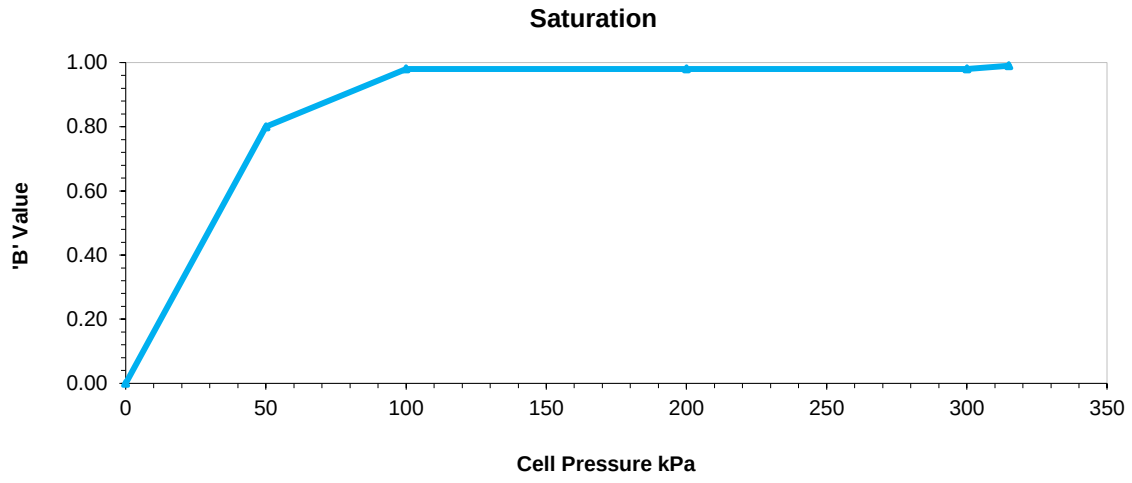
Isotropic Consolidation Stage

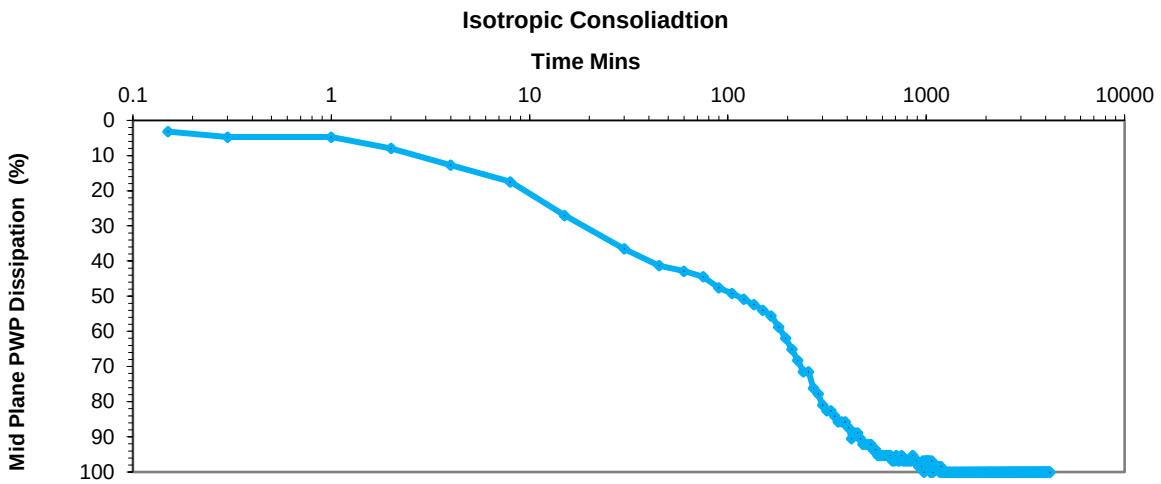
		Stage 1
Cell Pressure	kPa	315
Pore Pressure	kPa	305.4
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		324.0
Coef. Of Consolidation Cv	m2/year	0.648
Coef. Of Compressibility Mv	m2/MN	12.828
Permeability k	m/sec	2.58E-09

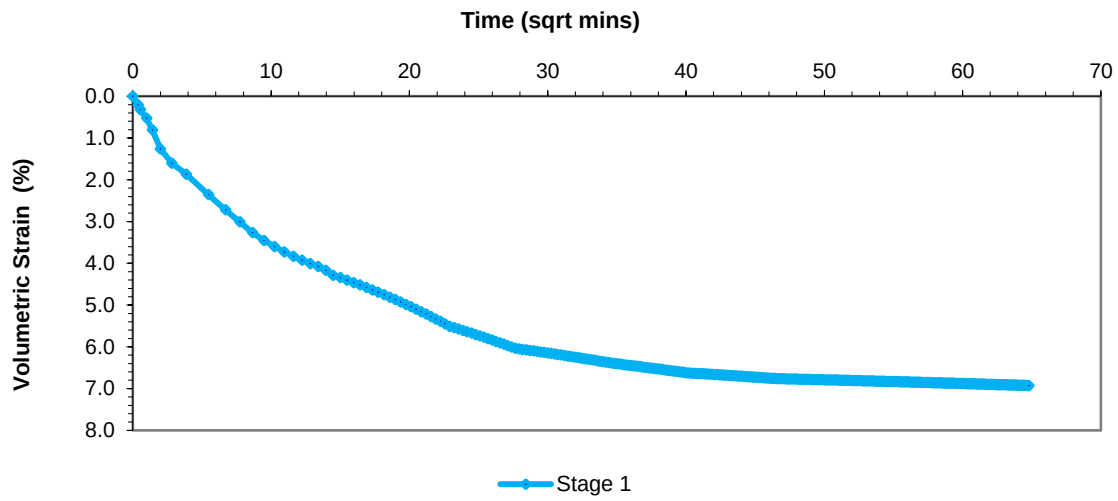
	Stage 1
Deviator Stress (kPa)	54.7
External Axial Strain (%)	18.18
Shear Stress (kPa)	27.3
Peak Stress Ratio	4.69
Pore Water Pressure (kPa)	0.2
Radial Effective Stress (kPa)	14.8
Axial Effective Stress (kPa)	69.5
Effective angle of friction (Degrees)	40.4°
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0030
Sample Description	**Dark brown/black slightly firberous PEAT.**

Plastic Failure

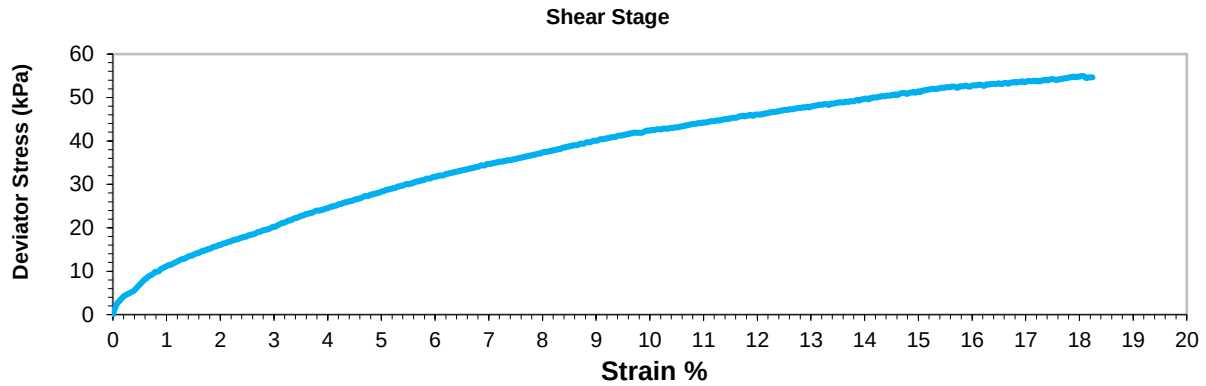
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS01
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

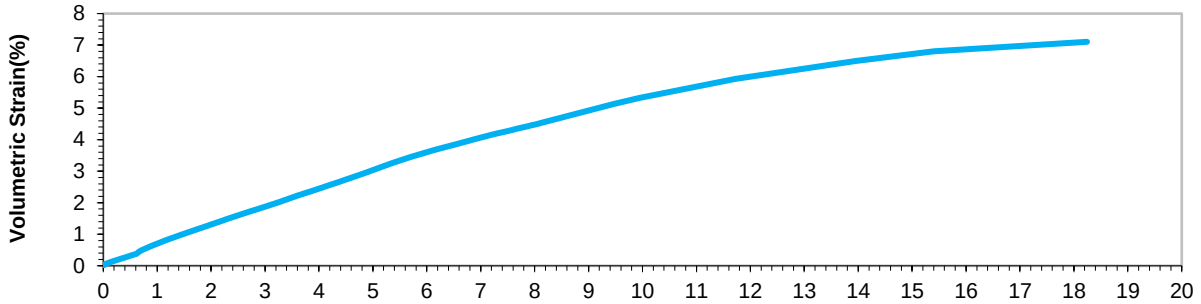


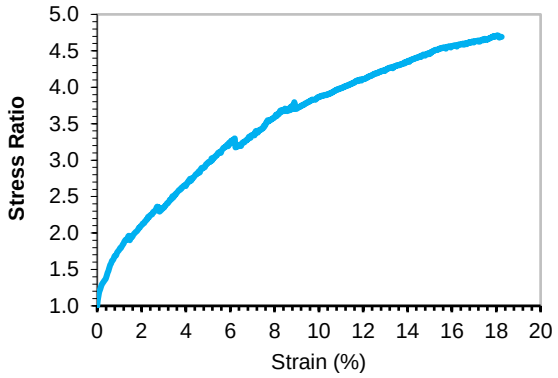


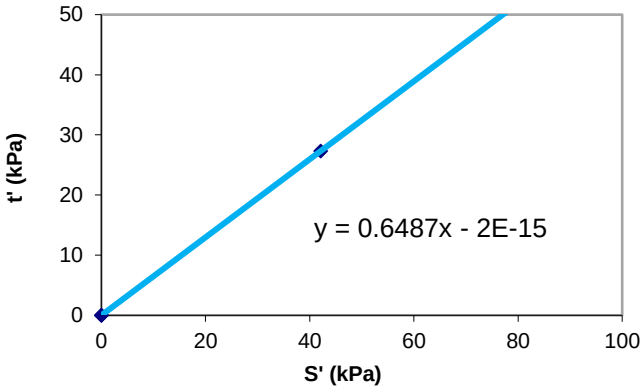


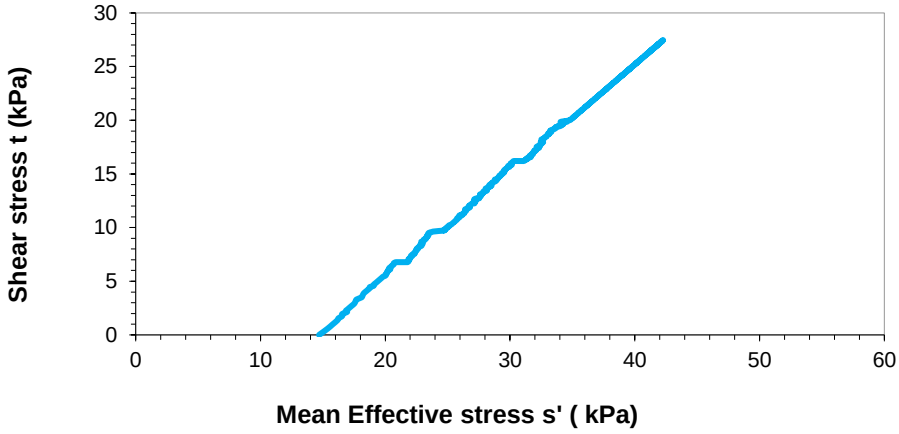
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No	BHSS01
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m











NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS01
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown/black slightly firberous PEAT.**

NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS01
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.05	1.07
Specimen Length	mm	206.00	Dry Density	Mg/m3	0.18	0.23
Specimen Diameter	mm	102.00	Moisture	%	492.67	369.08
Area	mm2	8171.28	Saturation	%	99.19	98.92
Volume	cc	1683.28	Sg(Assumed)	1.50		

Saturation Stage

Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.92
2	100	0.92
3	200	0.98
4	300	0.98
5	330	0.96

Isotropic Consolidation Stage

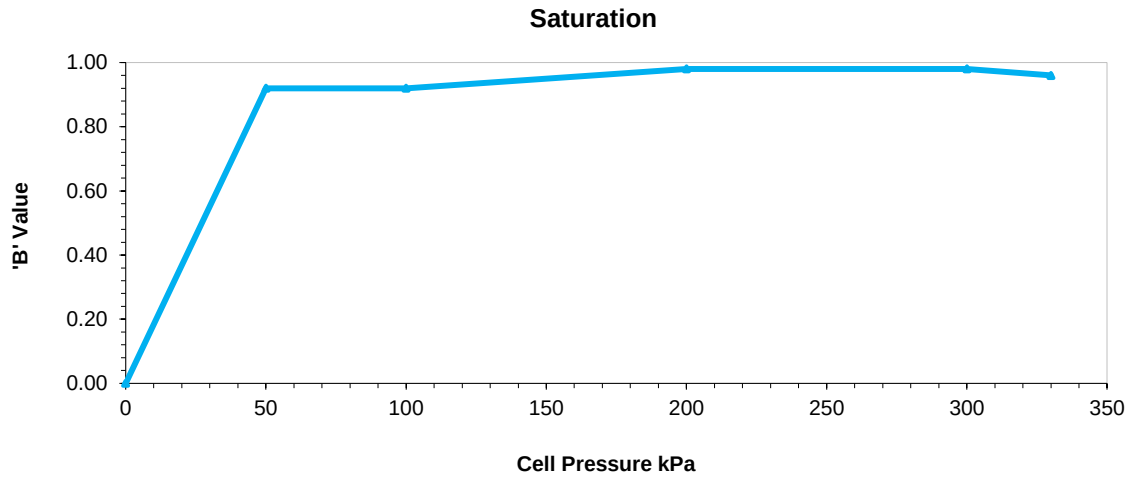
		Stage 1
Cell Pressure	kPa	325
Pore Pressure	kPa	319.3
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		992.3
Coef. Of Consolidation Cv	m2/year	0.212
Coef. Of Compressibility Mv	m2/MN	7.449
Permeability k	m/sec	4.89E-10

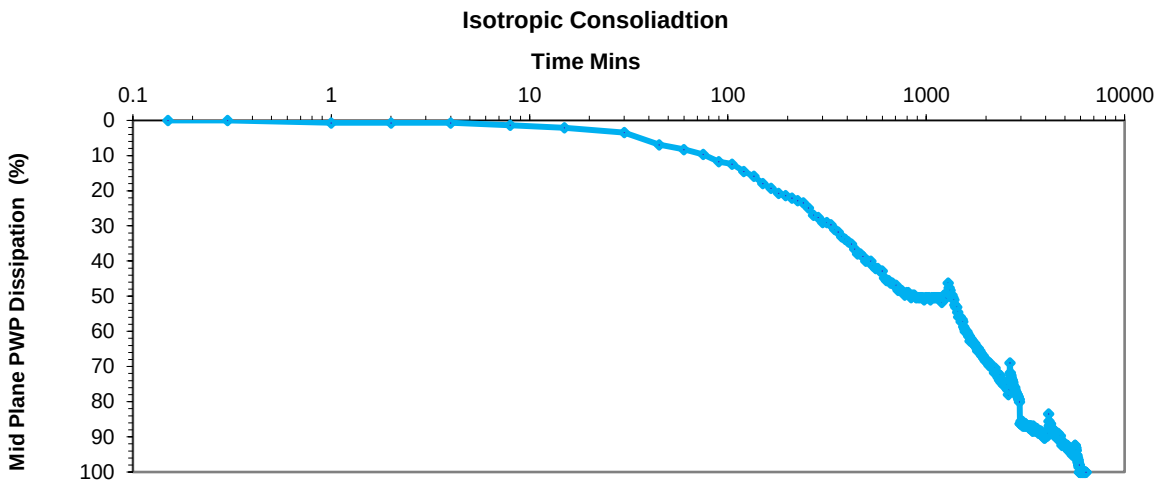
	Stage 1
Deviator Stress (kPa)	101.7
External Axial Strain (%)	24.65
Shear Stress (kPa)	50.8
Peak Stress Ratio	4.40
Pore Water Pressure (kPa)	0.1
Radial Effective Stress (kPa)	29.9
Axial Effective Stress (kPa)	131.6
Effective angle of friction (Degrees)	39.0°
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0040

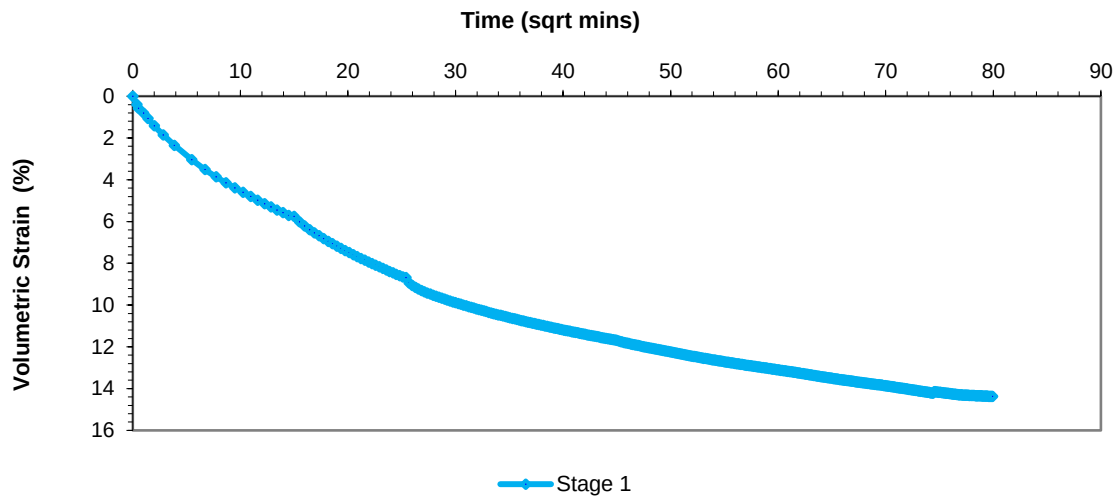
Sample Description **Dark brown/black slightly firberous PEAT, with some completely decompoded wood fragments, and shell.**

Plastic Failure

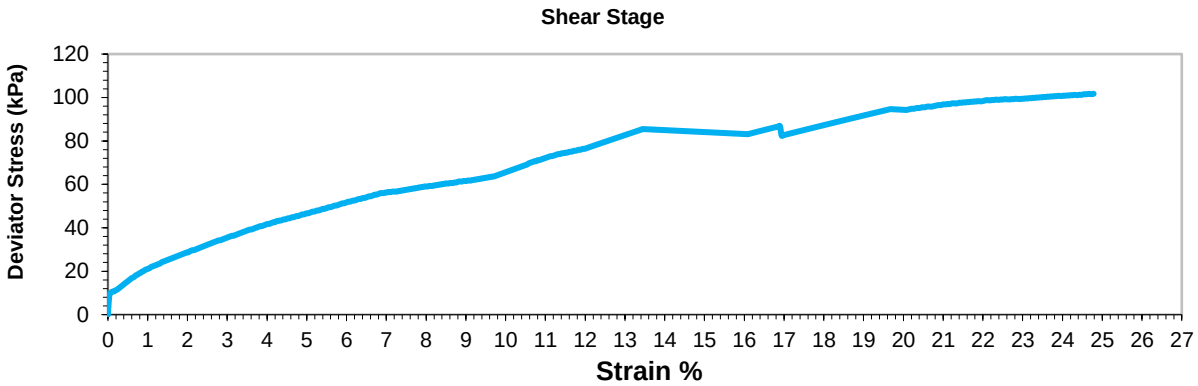
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS01
	Project: Derrygreenagh Power	Sample No.	U8
		Depth.	3.0-3.45m

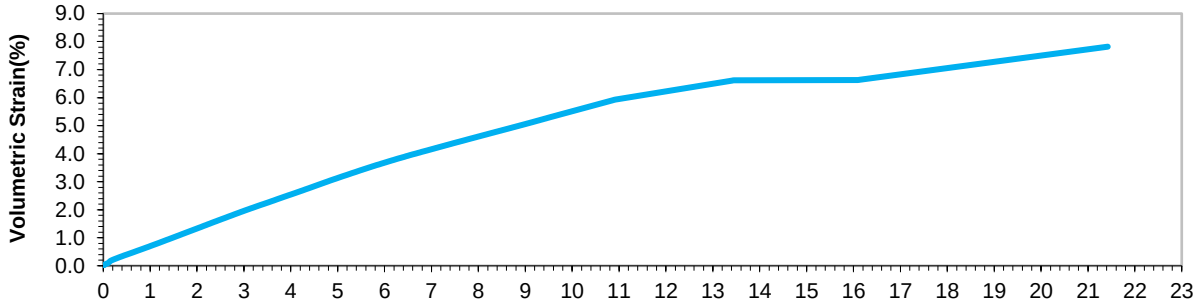


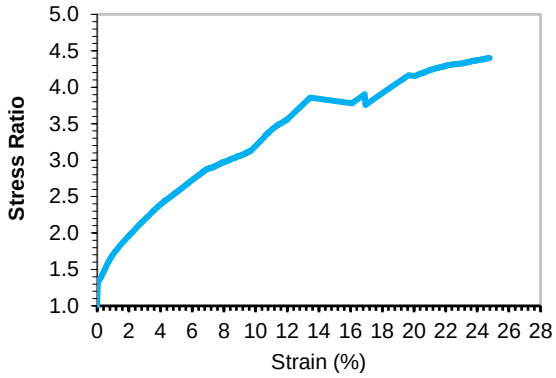


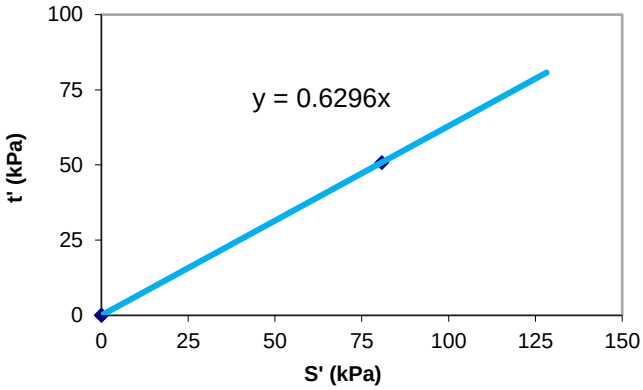


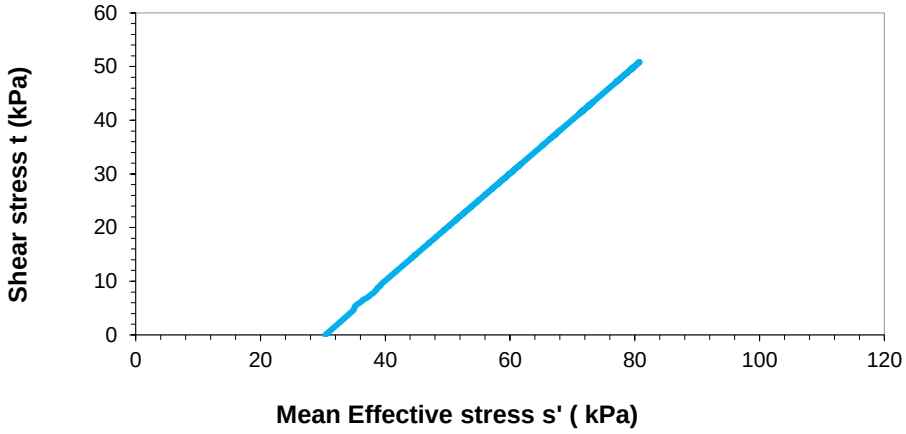
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No	BHSS01
	Project: Derrygreenagh Power	Sample No.	U8
		Depth.	3.0-3.45m











NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS01
	Project: Derrygreenagh Power	Sample No.	U8
		Depth.	3.0-3.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown/black slightly firberous PEAT, with some completely decompoded wood fragments, and shell.**

NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS01
	Project: Derrygreenagh Power	Sample No.	U8
		Depth.	3.0-3.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown black slightly fiberous PEAT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		39.02
Bulk density (Mg/m3)		0.99
Particle density	(Assumed)	1.50

Initial conditions

Settlement Channel	1107
Moisture content (%)	721.47
Dry density (Mg/m3)	0.121
Initial Voids Ratio	11.4026
Deg of Saturation (%)	94.9
Swelling pressure (kPa)	n/a

Final conditions

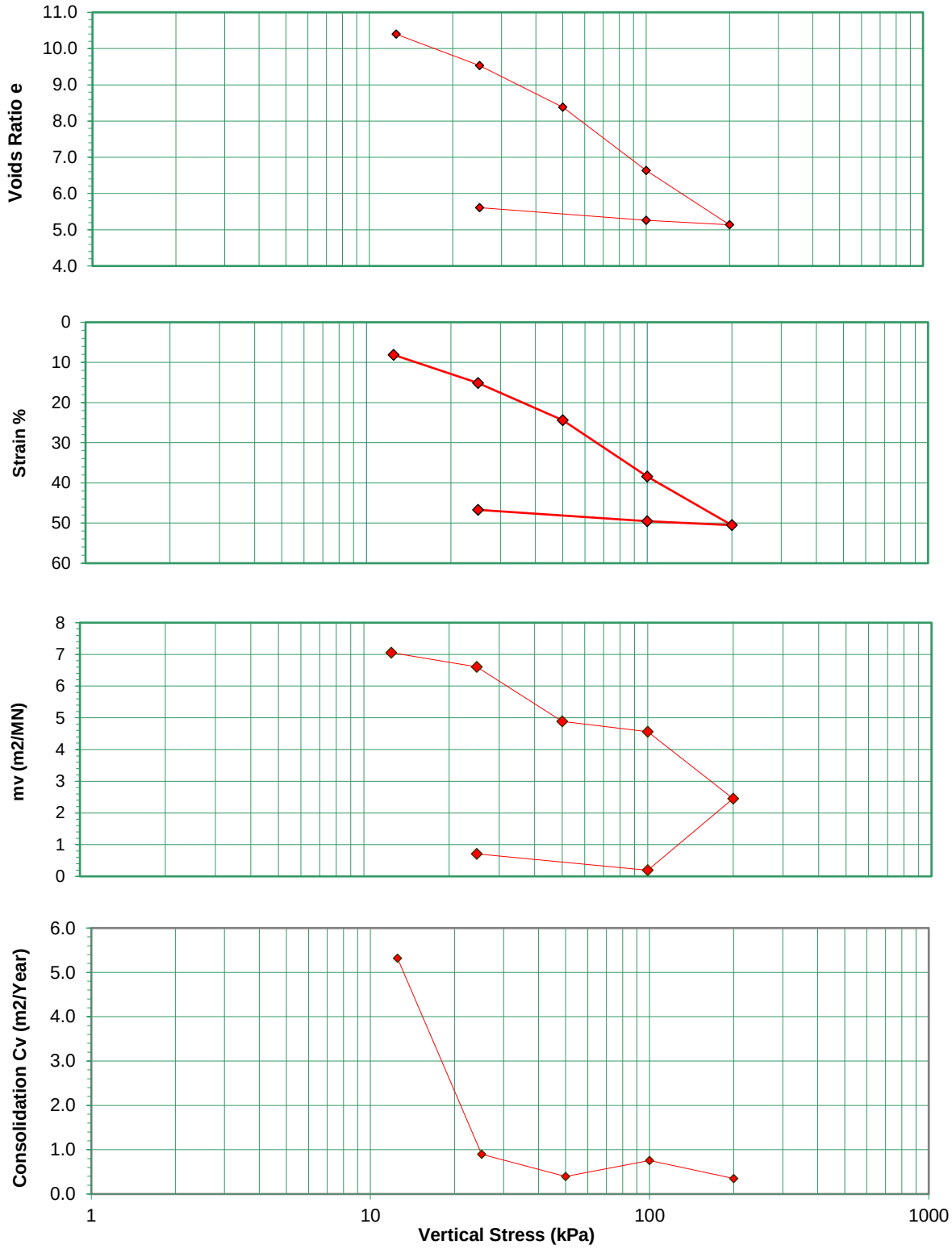
Moisture Content (%)	356.0
Dry Density (Mg/m3)	0.23
Final voids ratio	5.610
Final degree of saturation (%)	95.2
Final settlement	9.341

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHSS02
		Sample No.	U3
		Depth m.	1.0-1.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BHSS02 U3 1.0-1.45m

Oedometer Test

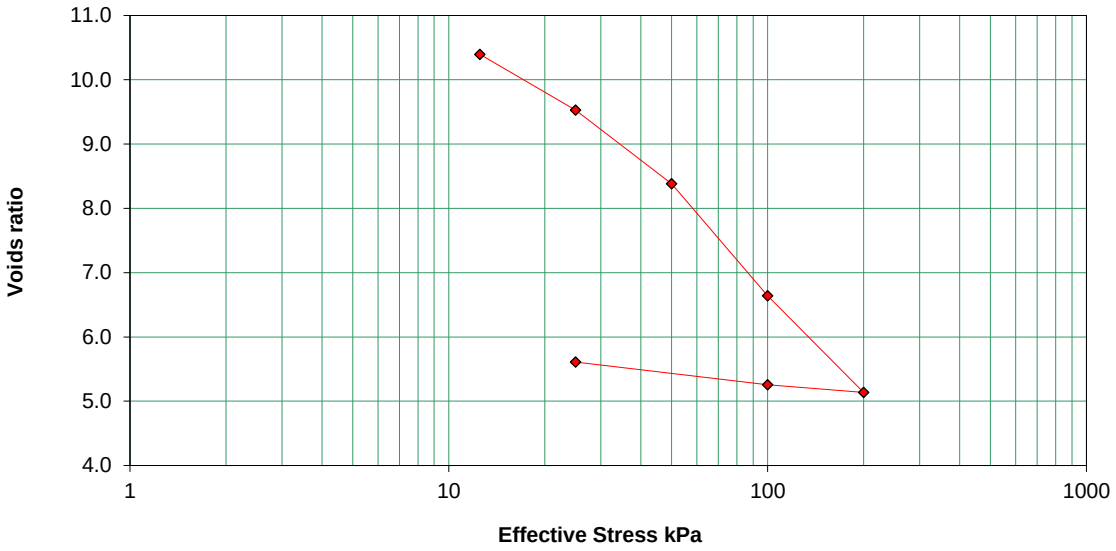
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown black slightly fiberous PEAT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		39.02
Bulk Density (mg/m3)		0.994
Particle Density	Assumed	1.50

Initial Conditions		Final Conditions	
Moisture content	721.5	356.0	%
Dry Density	0.121	0.227	Mg/m3
Initial Voids Ratio	11.4026	5.6100	
Degree of Saturation	94.91	95.19	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	8.105	10.3974	7.056	5.319	1.621
2	25	15.115	9.5280	6.607	0.895	3.023
3	50	24.355	8.3820	4.886	0.398	4.871
4	100	38.400	6.6400	4.560	0.755	7.680
5	200	50.520	5.1368	2.449	0.351	10.104
6	100	49.545	5.2577	0.193		9.909
7	25	46.705	5.6100	0.711		9.341

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHSS02
		Sample No.	U3
		Depth m.	1.0-1.45m

SUMMARY OF TEST RESULTS

		Initial				Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3		1.05	1.06
Specimen Length	mm	201.50	Dry Density	Mg/m3		0.13	0.18
Specimen Diameter	mm	101.50	Moisture	%		706.89	490.00
Area	mm2	8091.37	Saturation	%		101.19	100.43
Volume	cc	1630.41	Sg(Assumed)	1.50			

Saturation Stage

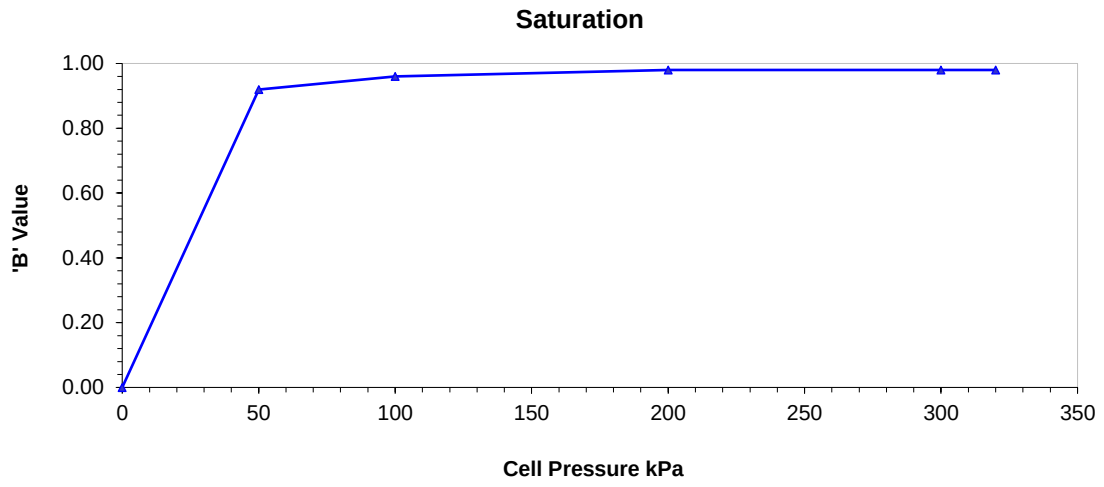
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.92
2	100	0.96
3	200	0.98
4	300	0.98
5	320	0.98

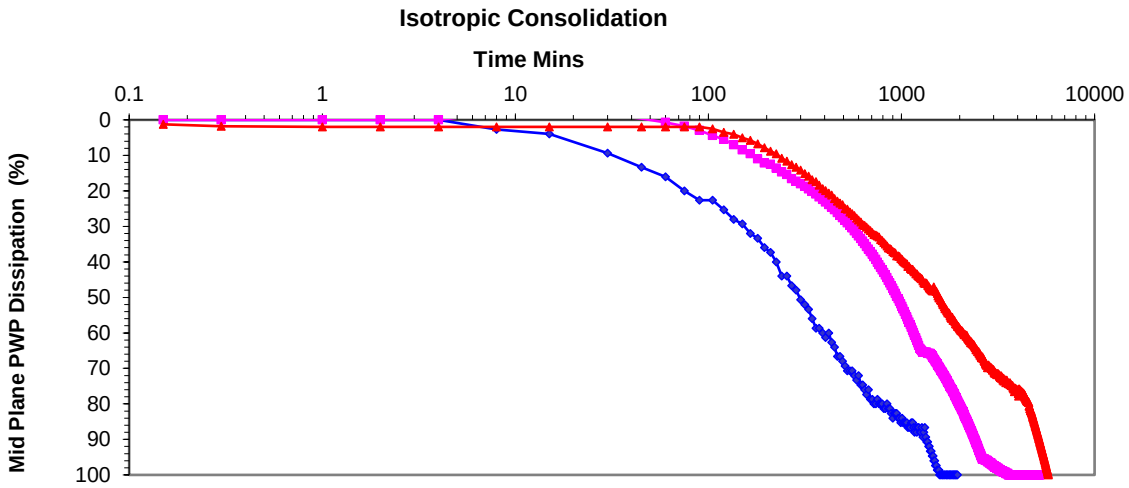
Isotropic Consolidation Stage

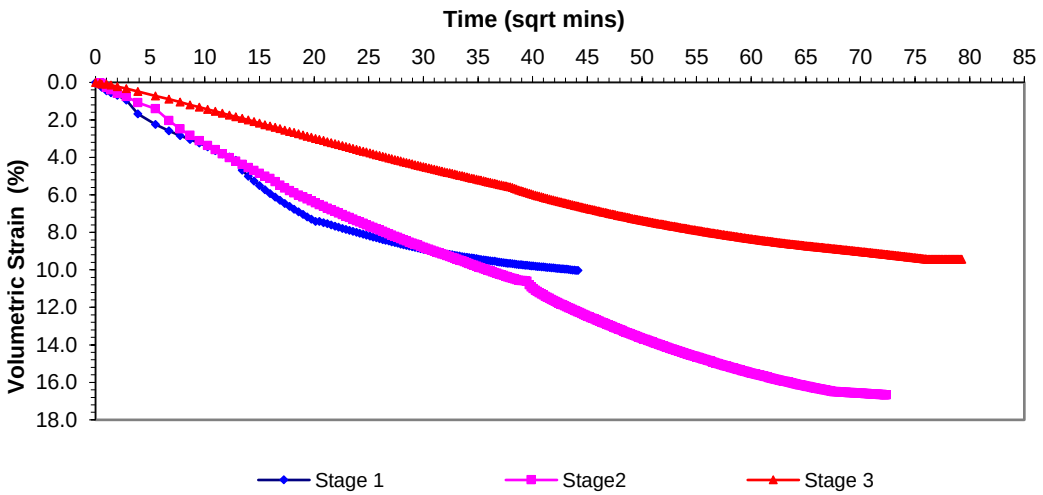
		Stage 1	Stage 2	Stage 3
Cell Pressure	kPa	320	340	380
Pore Pressure	kPa	308.5	327.1	348.5
Back Pressure	kPa	300	300	300
Drainage Method		One End and Radial boundary		
t100 (min)		686.4	2601.0	3136.0
Coef. Of Consolidation Cv	m2/year	0.306	0.081	0.067
Coef. Of Compressibility Mv	m2/MN	12.380	6.152	1.942
Permeability K	m/Sec	1.17E-09	1.54E-10	4.03E-11

	At Peak Stress Ratio			At peak deviator stress
	Stage 1	Stage 2	Stage 3	
Deviator Stress (kPa)	19.3	31.0	47.2	47.5
External Axial Strain (%)	6.36	10.24	17.88	20.10
Shear Stress (kPa)	9.7	15.51	23.6	23.8
Peak Stress Ratio	2.61	2.77	3.61	3.66
Pore Water Pressure (kPa)	8	22.50	61.9	62.1
Radial Effective Stress (kPa)	12	17.5	18.1	17.9
Axial Effective Stress (kPa)	31.3	48.5	65.3	65.4
Effective angle of friction (Degrees)	31.1°			34.8°
Cohesion c' (kPa)	0			
Rate of strain mm/min	0.0067			
Sample Description	**Dark brown /black fiberous PEAT. Plastic**			

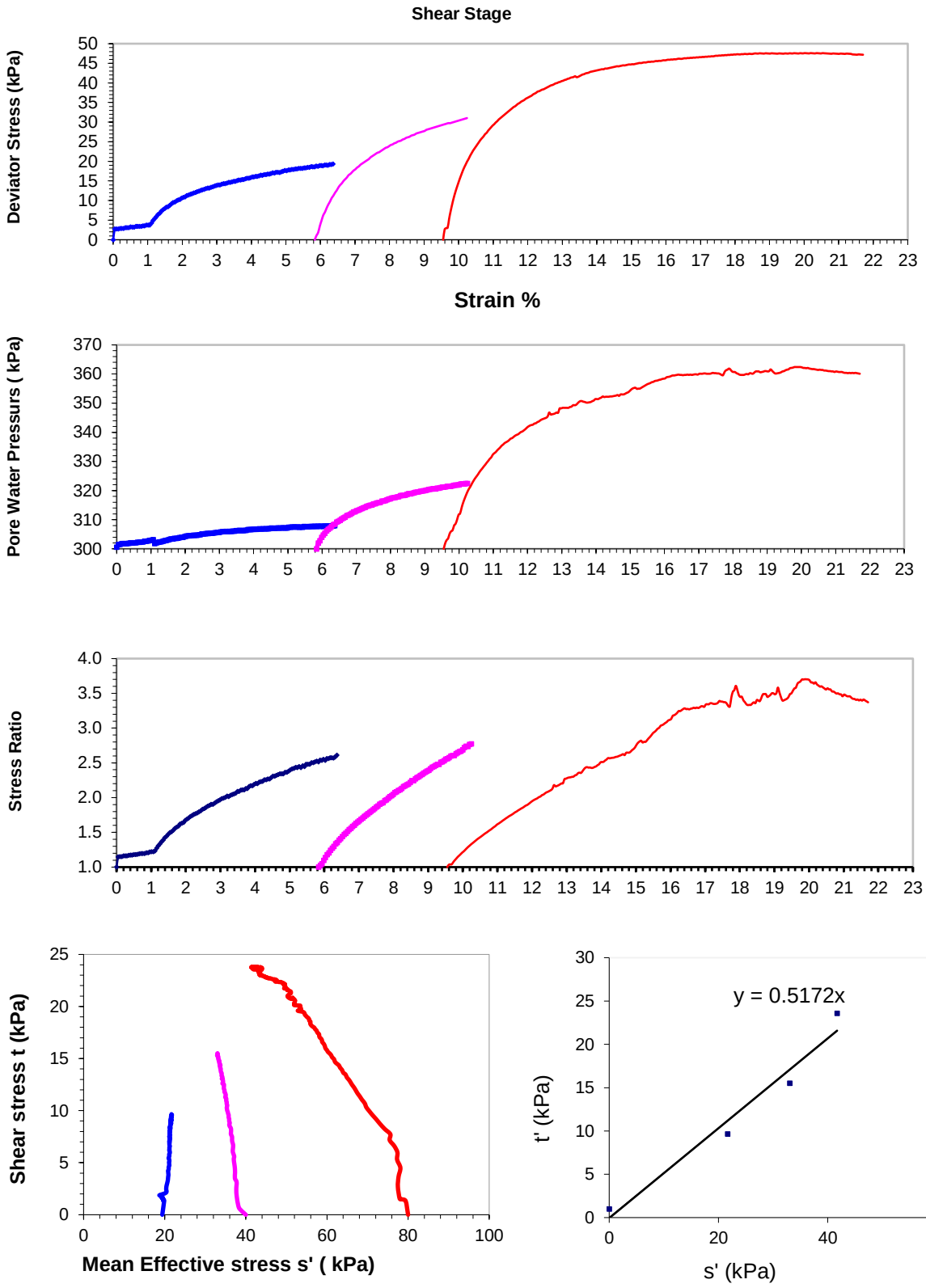
NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHSS04
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m





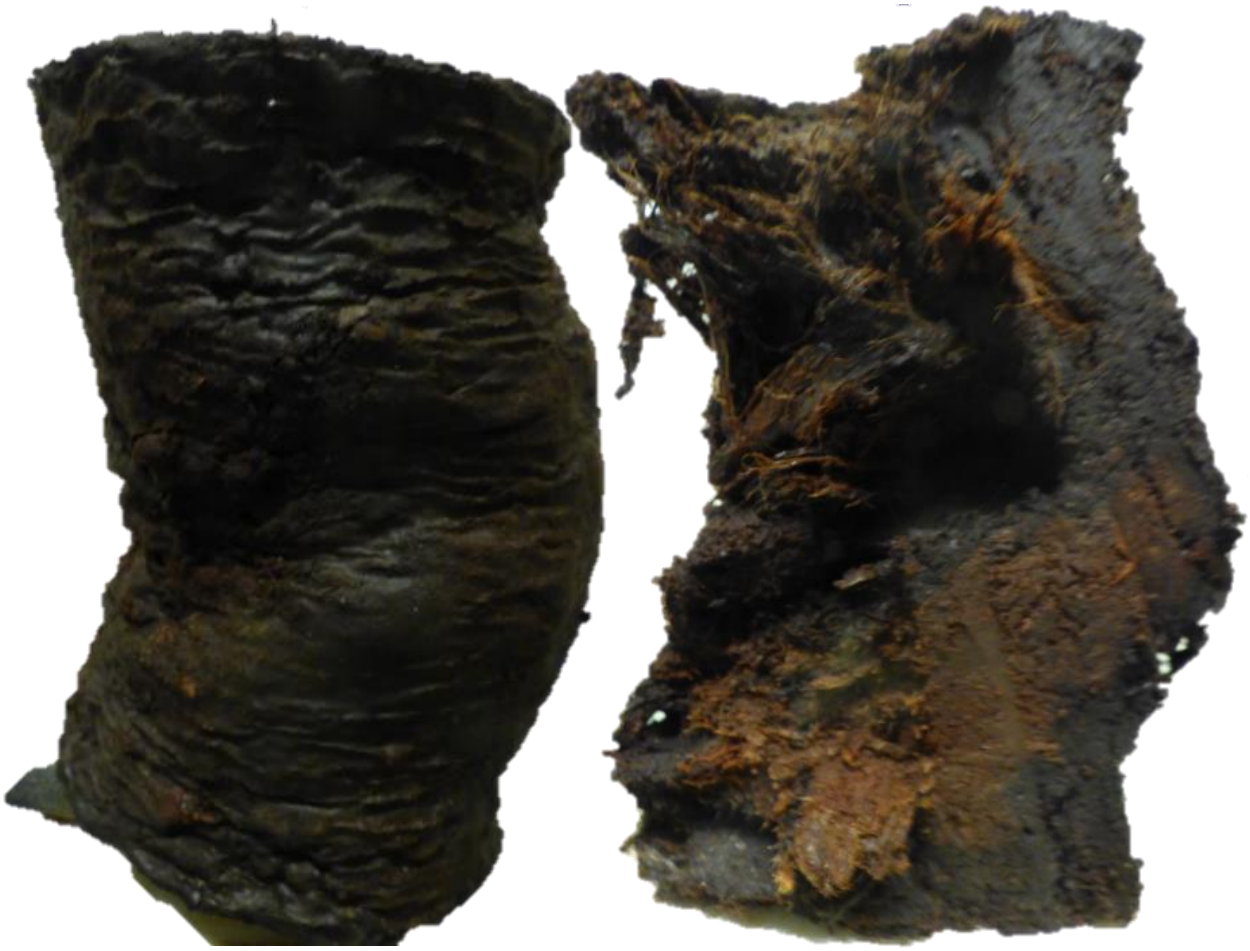


NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHSS04
	Project:	Sample No	U3
	Derrygreenagh Power	Depth.	1.00-1.45m



NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHSS04
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m

SPECIMEN AFTER TEST



Soil Description **Dark brown /black fiberous PEAT.**

NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHSS04
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown black slightly fiberous PEAT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		37.86
Bulk density (Mg/m3)		0.96
Particle density	(Assumed)	1.50

Initial conditions

Settlement Channel	1107
Moisture content (%)	611.65
Dry density (Mg/m3)	0.135
Initial Voids Ratio	10.0738
Deg of Saturation (%)	91.1
Swelling pressure (kPa)	n/a

Final conditions

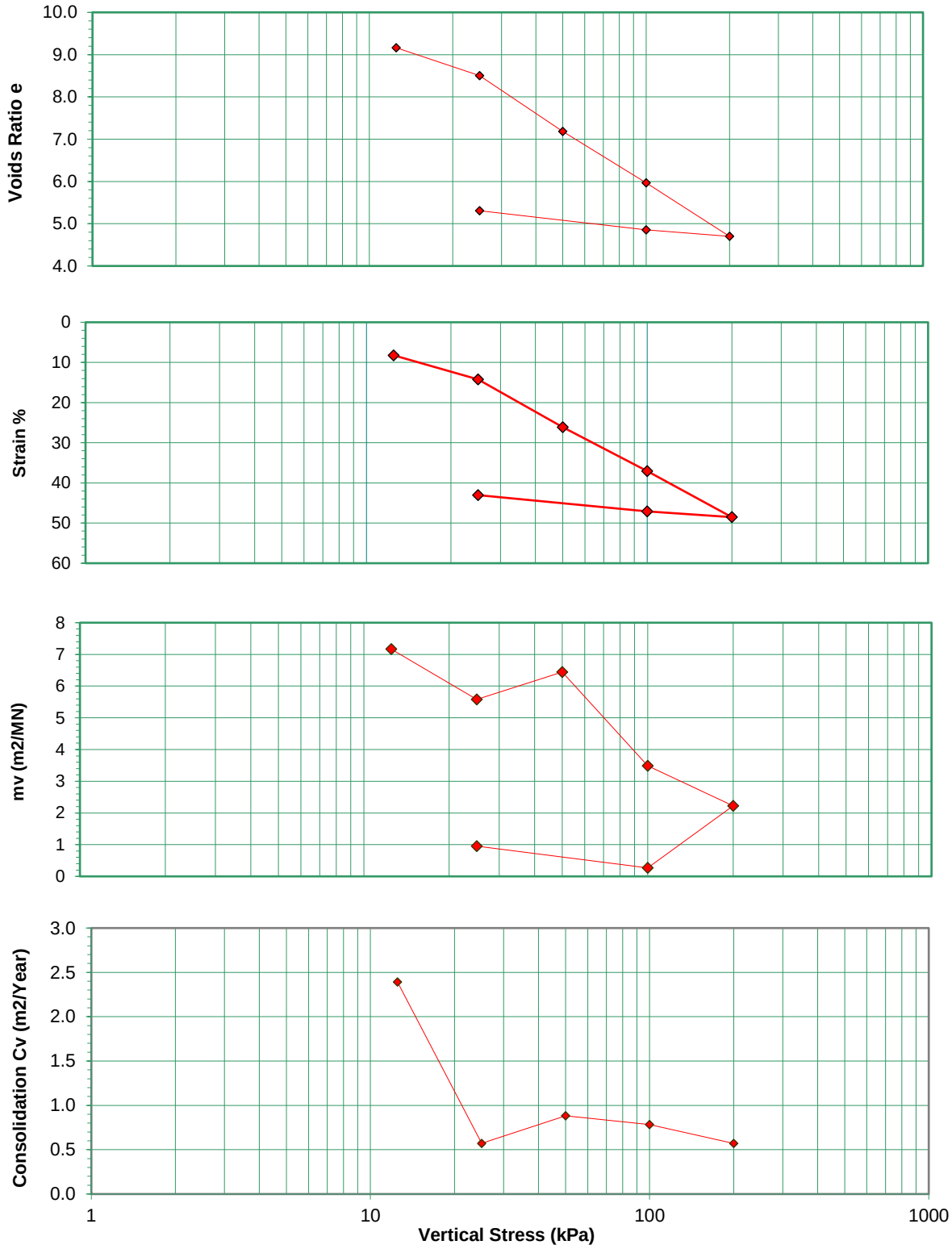
Moisture Content (%)	351.5
Dry Density (Mg/m3)	0.24
Final voids ratio	5.3087
Final degree of saturation (%)	99.3
Final settlement	8.606

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHSS05
		Sample No.	U3
		Depth m.	1.0-1.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BHSS05 U3 1.0-1.45m

Oedometer Test

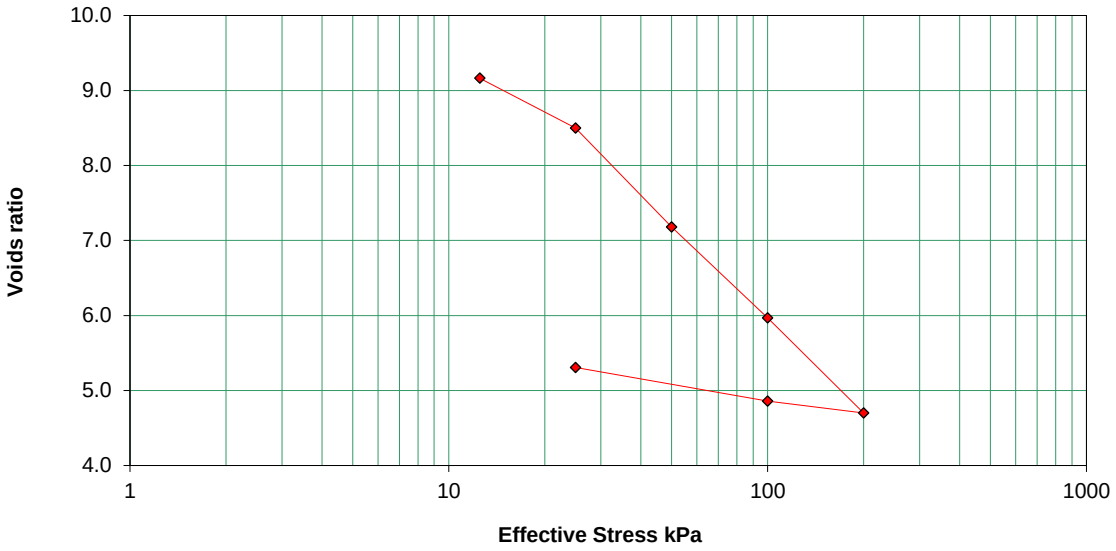
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown black slightly fiberous PEAT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		37.86
Bulk Density (mg/m3)		0.964
Particle Density	Assumed	1.50

Initial Conditions		Final Conditions	
Moisture content	611.7	351.5	%
Dry Density	0.135	0.238	Mg/m3
Initial Voids Ratio	10.0738	5.3087	
Degree of Saturation	91.08	99.32	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	8.220	9.1635	7.165	N/A	1.644
2	25	14.205	8.5007	5.581	0.572	2.841
3	50	26.110	7.1824	6.445	0.882	5.222
4	100	37.085	5.9671	3.489	0.784	7.417
5	200	48.525	4.7002	2.222	0.572	9.705
6	100	47.110	4.8569	0.268		9.422
7	25	43.030	5.3087	0.955		8.606

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHSS05
		Sample No.	U3
		Depth m.	1.0-1.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	0.97	0.97
Specimen Length	mm	198.50	Dry Density	Mg/m3	0.14	0.14
Specimen Diameter	mm	101.50	Moisture	%	611.16	575.73
Area	mm2	8091.37	Saturation	%	91.90	91.44
Volume	cc	1606.14	Sg(Assumed)	1.50		

Saturation Stage

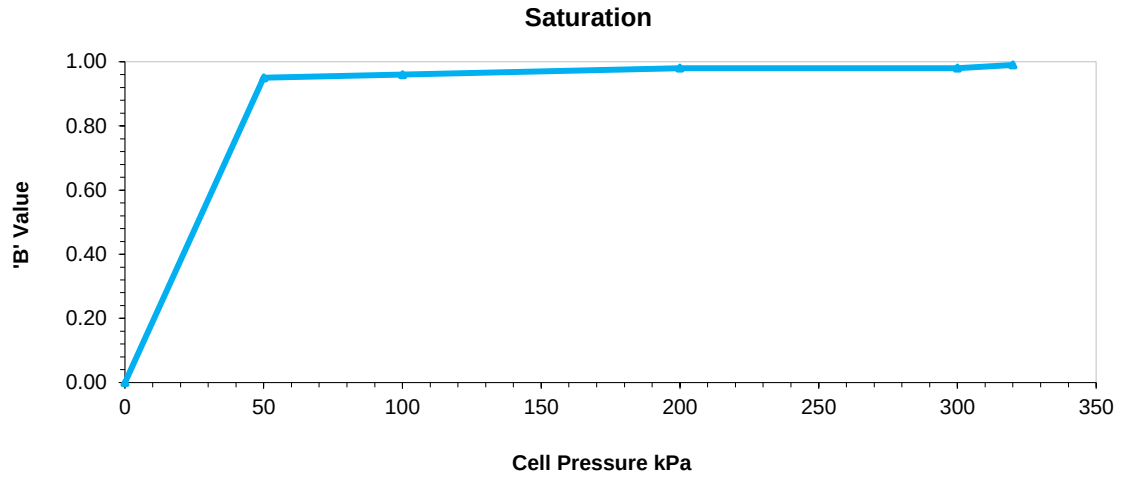
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.95
2	100	0.96
3	200	0.98
4	300	0.98
5	320	0.99

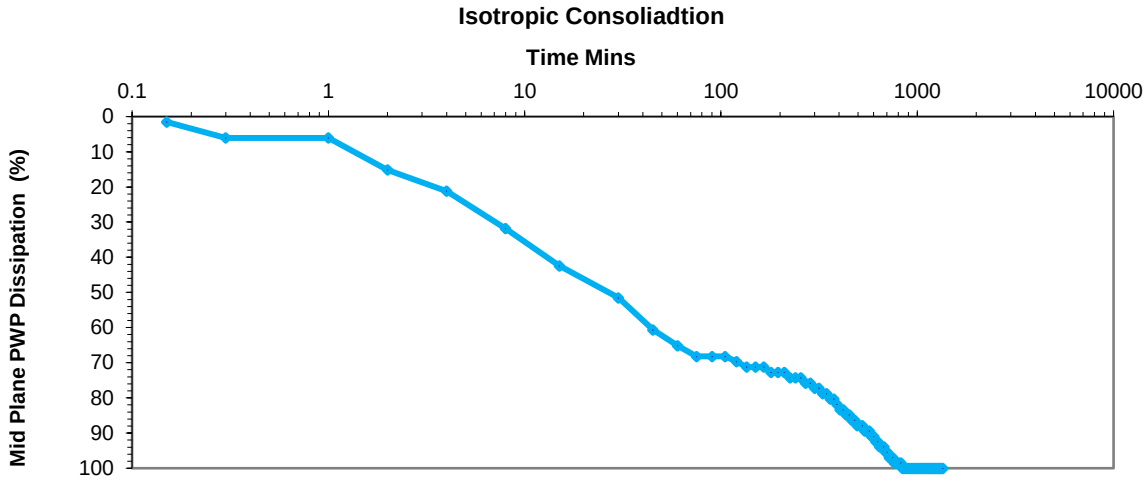
Isotropic Consolidation Stage

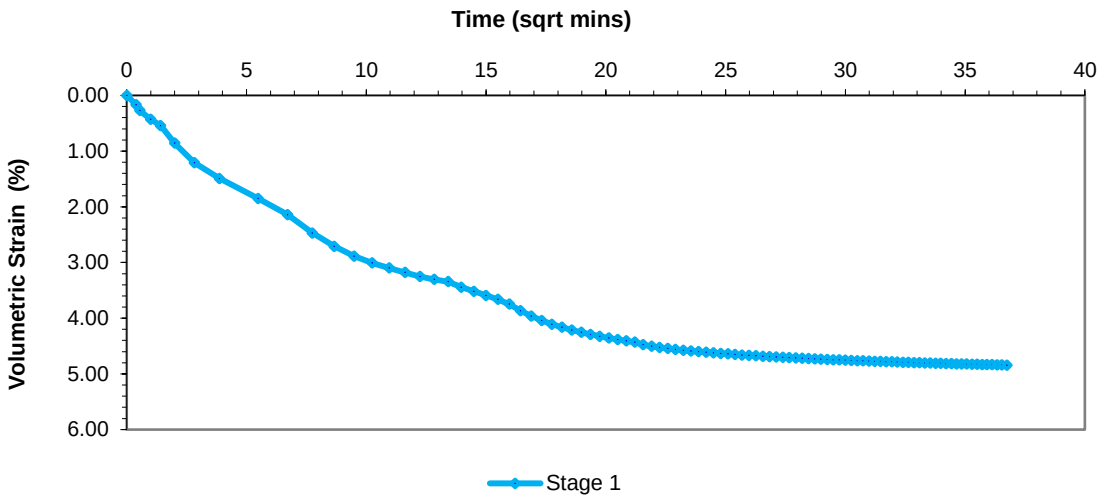
		Stage 1
Cell Pressure	kPa	320
Pore Pressure	kPa	305.7
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		249.6
Coef. Of Consolidation Cv	m2/year	0.841
Coef. Of Compressibility Mv	m2/MN	8.492
Permeability k	m/sec	2.21E-09

	Stage 1
Deviator Stress (kPa)	22.7
External Axial Strain (%)	15.67
Shear Stress (kPa)	11.3
Peak Stress Ratio	4.44
Pore Water Pressure (kPa)	13.4
Radial Effective Stress (kPa)	6.6
Axial Effective Stress (kPa)	29.3
Effective angle of friction (Degrees)	39.2
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown /black slightly fiberous PEAT, with some roots**
	Plastic Failure

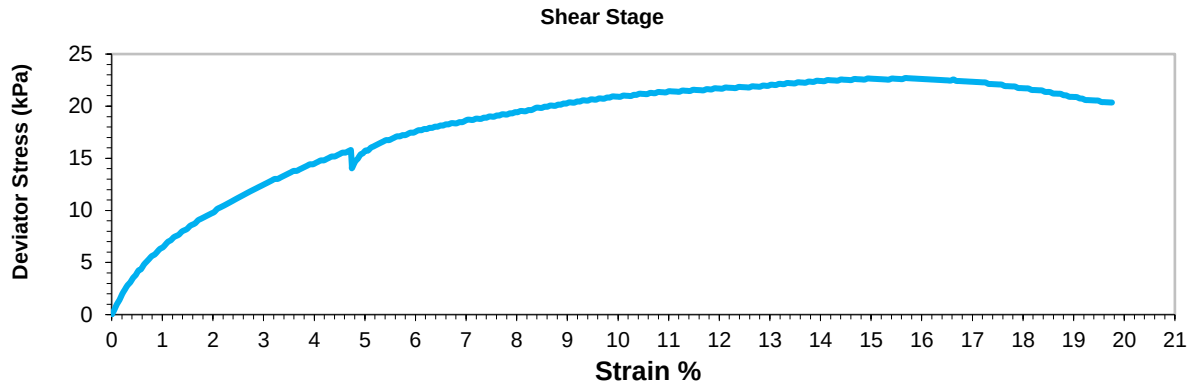
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS05
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

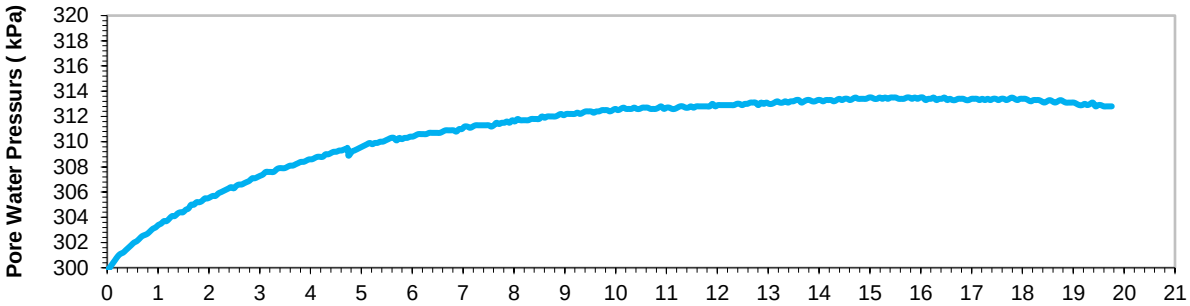


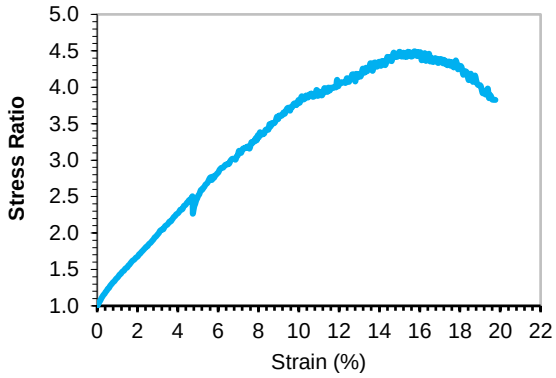


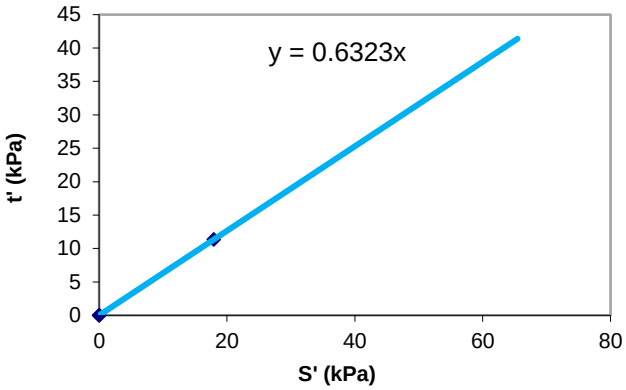


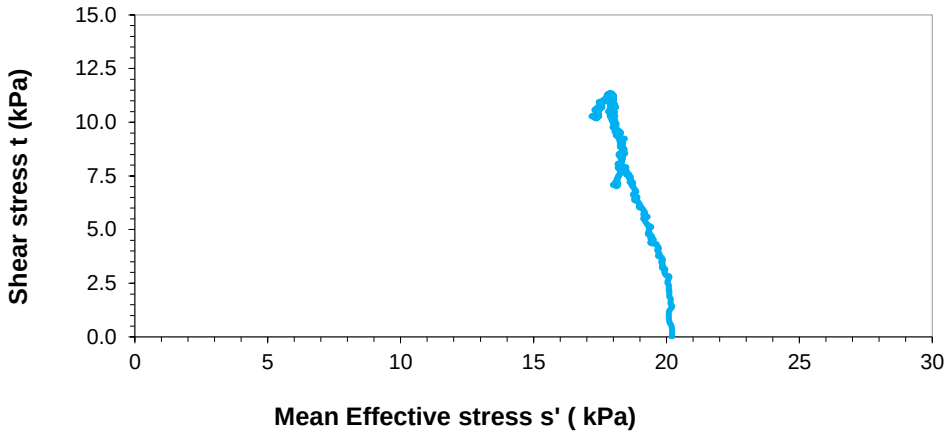
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BHSS05
	Project: Derrygreenagh Power	Sample No. U3
		Depth. 1.00-1.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS05
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown /black slightly fiberous PEAT, with some roots**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS05
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.01	1.01
Specimen Length	mm	195.00	Dry Density	Mg/m3	0.145	0.153
Specimen Diameter	mm	103.00	Moisture	%	596.05	555.92
Area	mm2	8332.29	Saturation	%	95.72	95.01
Volume	cc	1624.80	Sg(Assumed)	1.50		

Saturation Stage

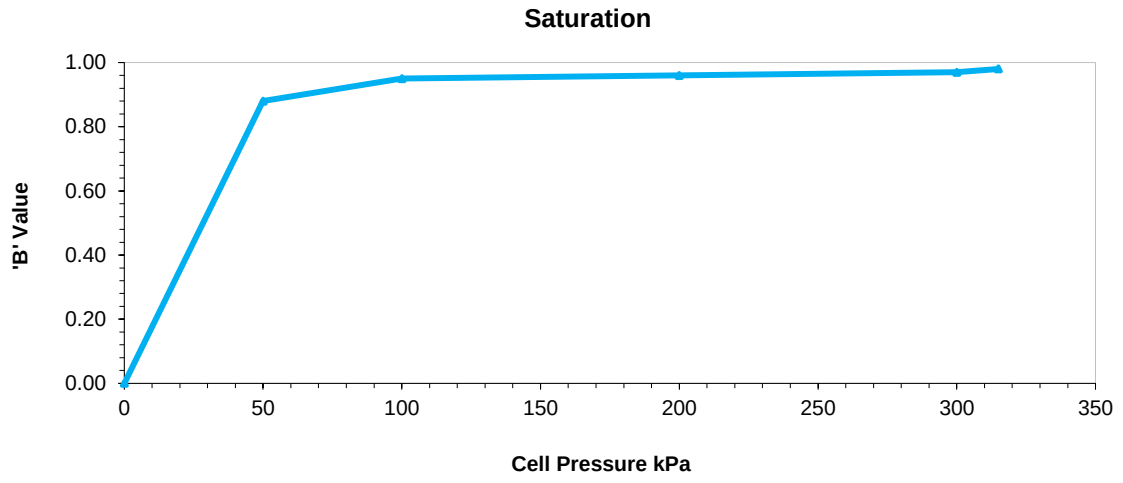
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.88
2	100	0.95
3	200	0.96
4	300	0.97
5	315	0.98

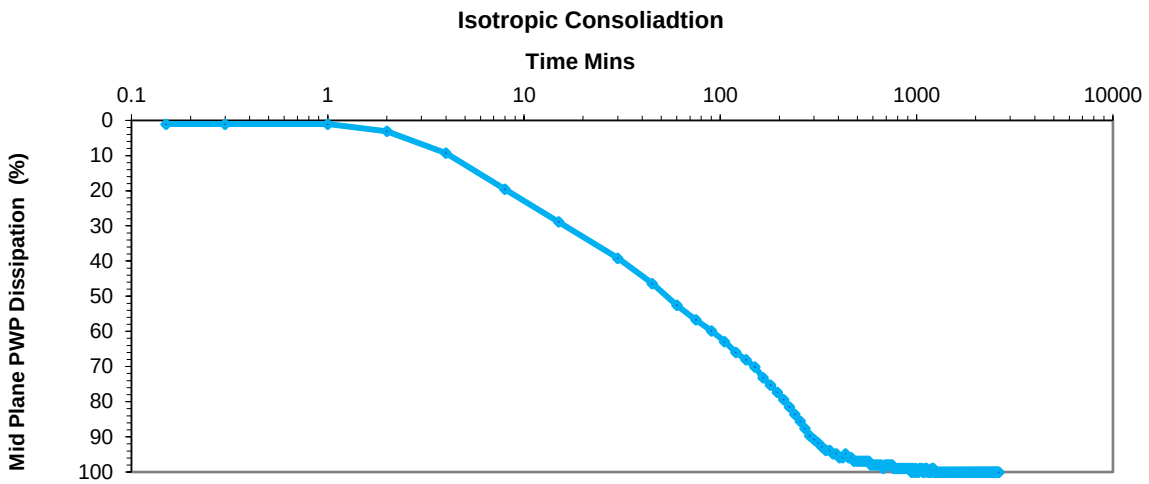
Isotropic Consolidation Stage

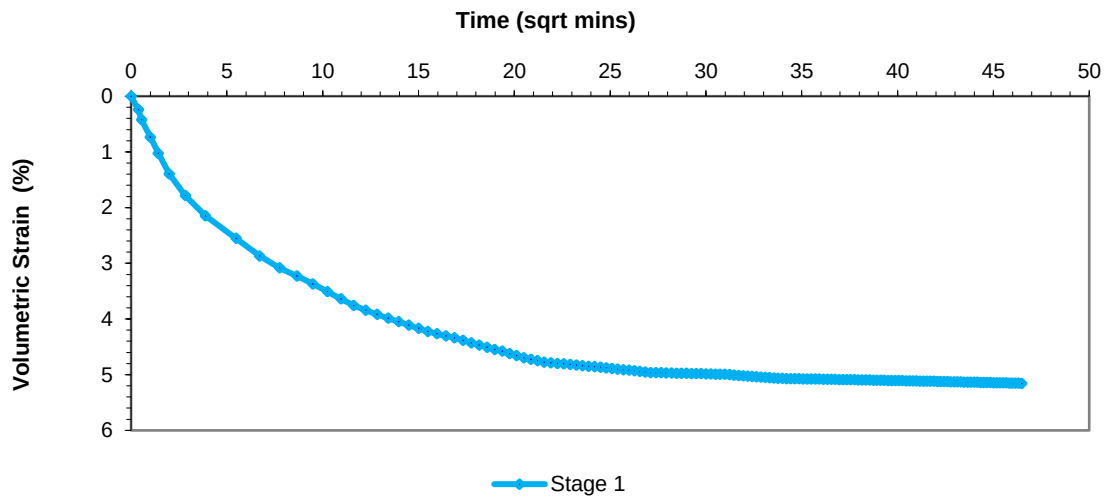
		Stage 1
Cell Pressure	kPa	315
Pore Pressure	kPa	305.7
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		84.6
Coef. Of Consolidation Cv	m2/year	2.481
Coef. Of Compressibility Mv	m2/MN	9.556
Permeability k	m/sec	7.35E-09

	Stage 1
Deviator Stress (kPa)	17.9
External Axial Strain (%)	15.12
Shear Stress (kPa)	8.9
Peak Stress Ratio	5.26
Pore Water Pressure (kPa)	10.8
Radial Effective Stress (kPa)	4.2
Axial Effective Stress (kPa)	22.1
Effective angle of friction (Degrees)	42.9°
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown /black slightly fiberous PEAT**
	Plastic Failure

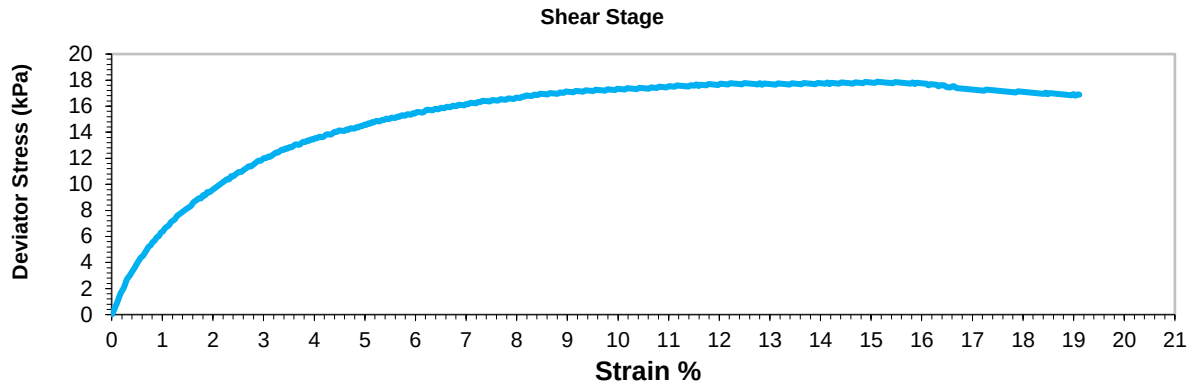
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHT03
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

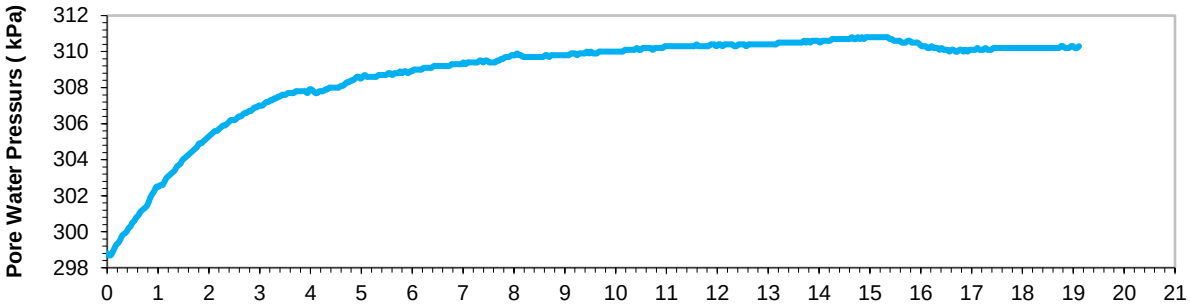


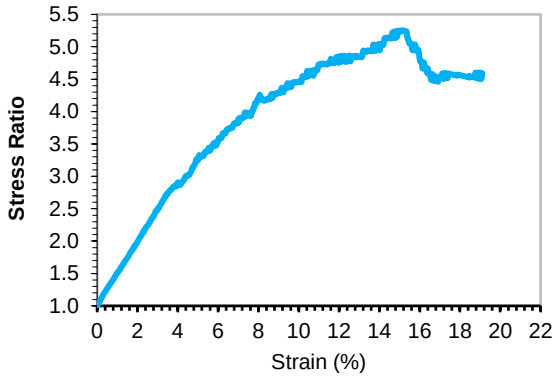


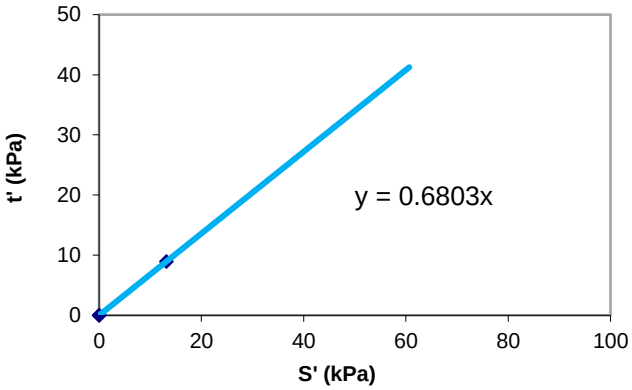


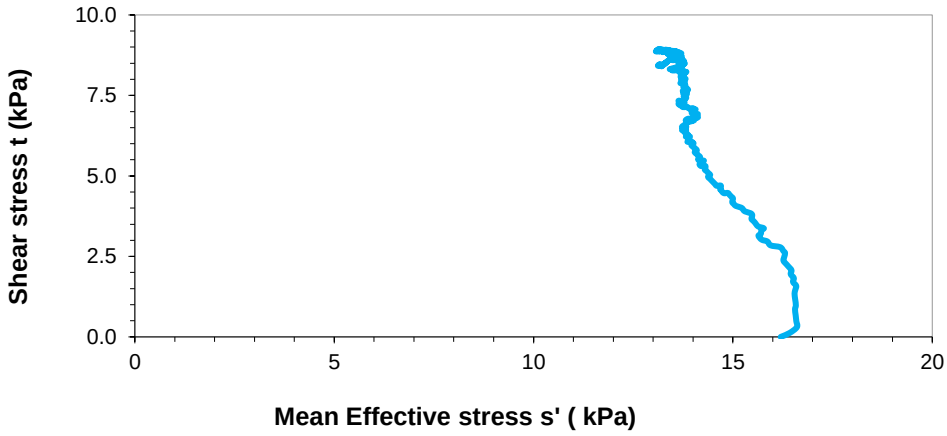
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BHT03
	Project: Derrygreenagh Power	Sample No. U3
		Depth. 1.00-1.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHT03
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown /black slightly fiberous PEAT**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHT03
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SUMMARY OF TEST RESULTS

		Initial				Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3		1.04	1.05
Specimen Length	mm	206.00	Dry Density	Mg/m3		0.16	0.18
Specimen Diameter	mm	103.50	Moisture	%		551.15	479.33
Area	mm2	8413.38	Saturation	%		98.67	98.48
Volume	cc	1733.16	Sg(Assumed)	1.50			

Saturation Stage

Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.98
2	100	0.98
3	200	0.99
4	300	0.98
5	315	0.98

Isotropic Consolidation Stage

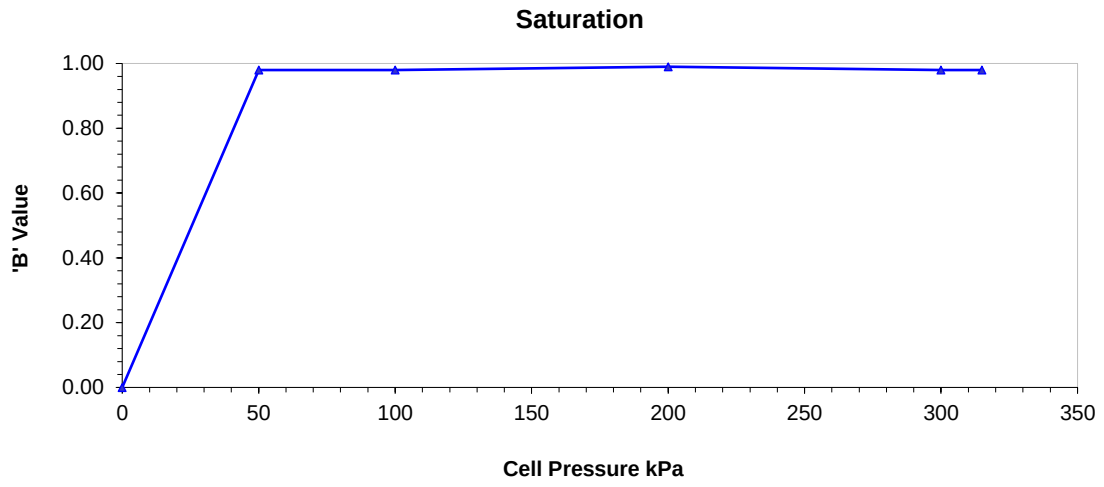
		Stage 1	Stage 2	Stage 3
Cell Pressure	kPa	315	330	360
Pore Pressure	kPa	308.2	322.6	347
Back Pressure	kPa	300	300	300
Drainage Method		One End and Radial boundary		
t100 (min)		912.0	1162.8	870.3
Coef. Of Consolidation Cv	m2/year	0.230	0.181	0.241
Coef. Of Compressibility Mv	m2/MN	2.903	1.832	1.095
Permeability K	m/Sec	2.07E-10	1.03E-10	8.19E-11

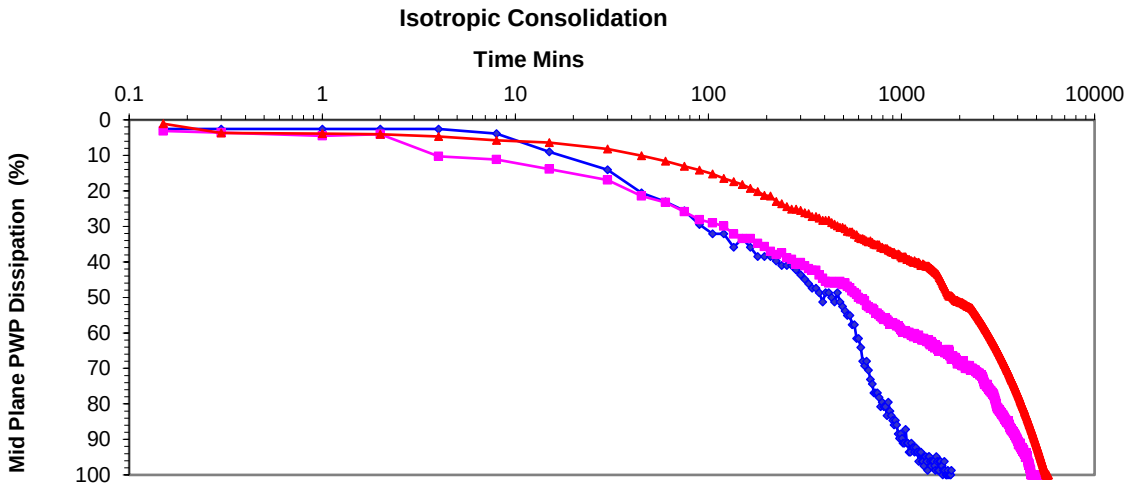
	At Peak Stress Ratio			At peak deviator stress
	Stage 1	Stage 2	Stage 3	
Deviator Stress (kPa)	26.3	40.8	55.6	61.0
External Axial Strain (%)	4.48	9.41	24.41	27.05
Shear Stress (kPa)	13.2	20.41	27.8	30.5
Peak Stress Ratio	10.08	6.44	8.72	7.62
Pore Water Pressure (kPa)	12.1	22.50	52.8	52
Radial Effective Stress (kPa)	2.9	7.5	7.2	8
Axial Effective Stress (kPa)	29.2	48.3	62.8	69.0
Effective angle of friction (Degrees)	48.0°			52.4°
Cohesion c' (kPa)	1.4			
Rate of strain mm/min	0.0060			

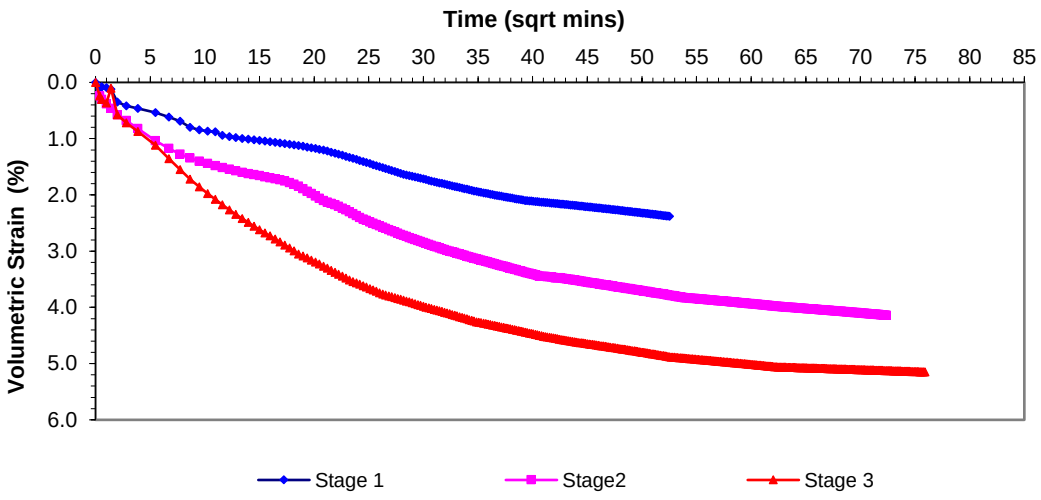
Sample Description **Dark brown /black fiberous PEAT, decomposed wood fragments**

Plastic

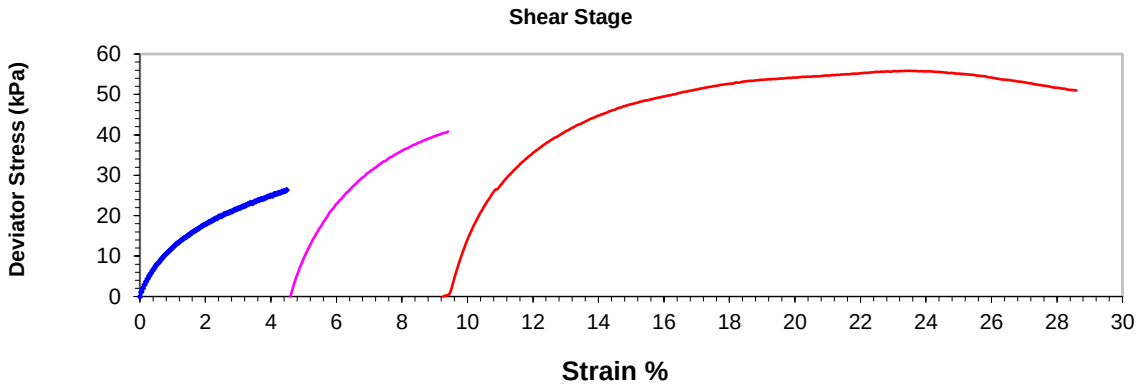
NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHT05
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m

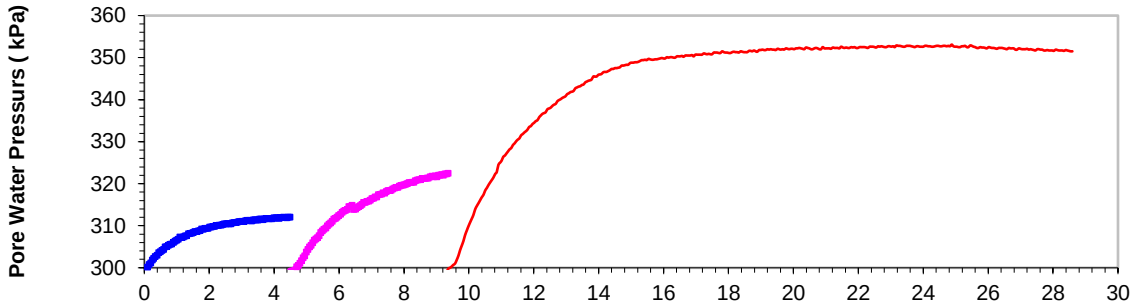


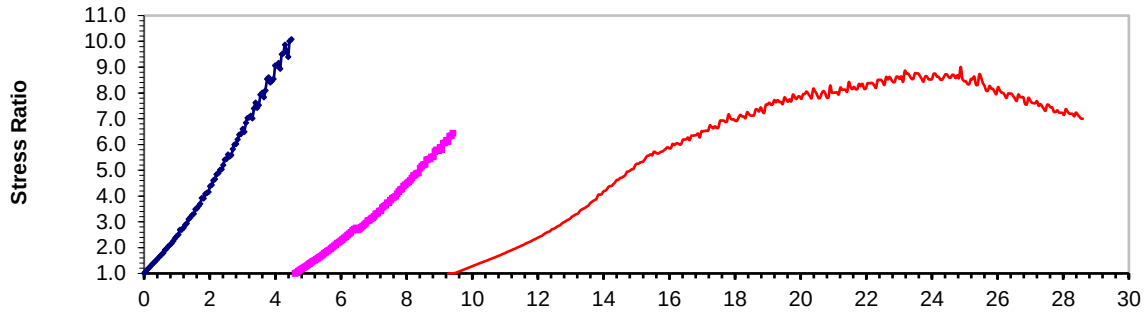


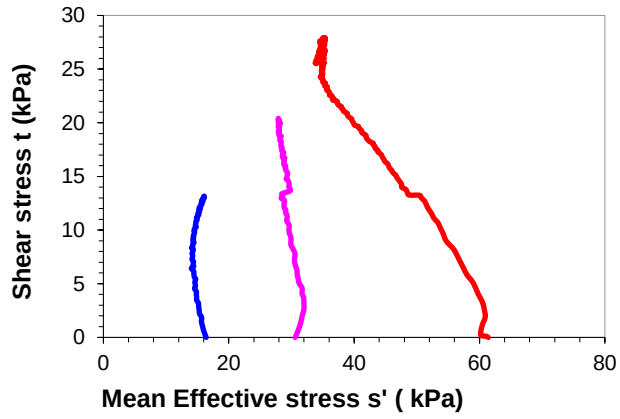


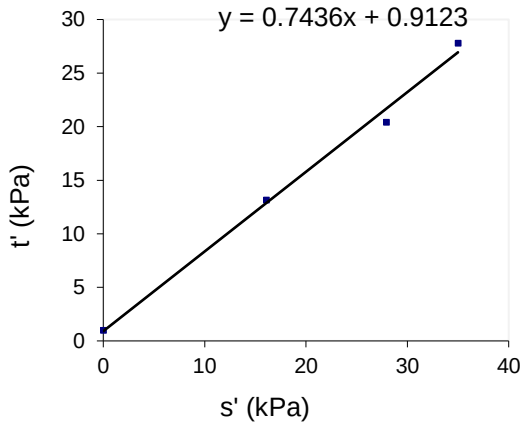
NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHT05
	Project:	Sample No	U3
	Derrygreenagh Power	Depth.	1.00-1.45m





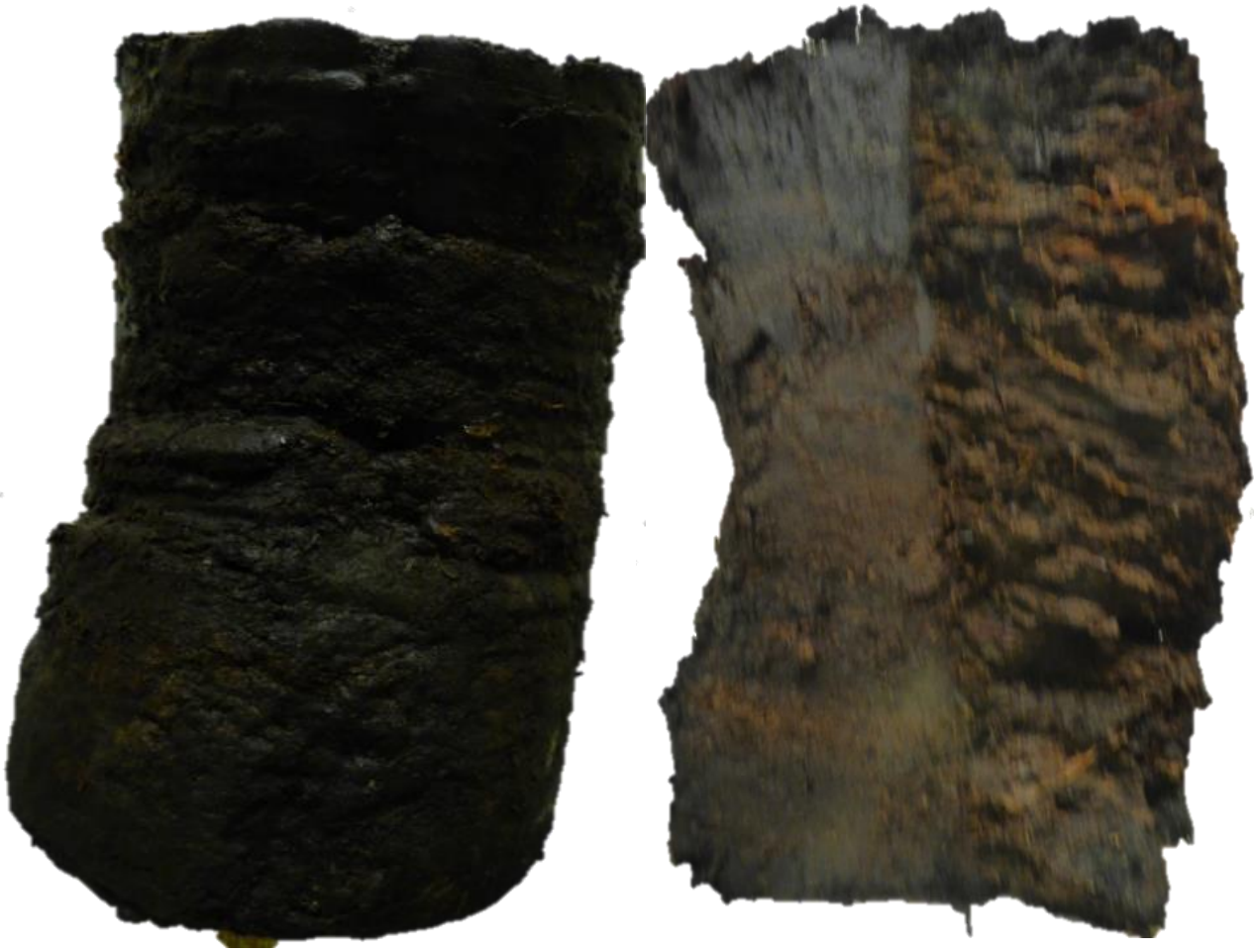






NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHT05
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m

SPECIMEN AFTER TEST



Soil Description **Dark brown /black fiberous PEAT, decomposed wood fragments**

NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHT05
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m

IDL

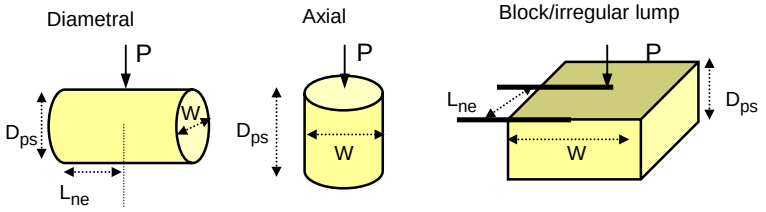
Point Load Strength Index Tests
Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Borehole No.	Sample			Specimen		Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Top Depth m	Base Depth m	Type	Ref	Top m		Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa	
BH102	38.00	40	C	39.3-39.5	39.30		D	U	YES		63.4		63.4	14.7	63.4	3.7	4.1	Very Strong
BH102	40.00	41.3	C	40.6-40.8	40.60		D	U	YES		63.4		63.4	37.7	63.4	9.4	10.4	Extremely Strong
BH102	41.30	42.5	C	41.7-42.0	41.70		D	U	YES		63.4		63.4	14.8	63.4	3.7	4.1	Very Strong
BH102	42.50	43.5	C	42.8-43.1	42.80		D	U	YES		63.4		63.4	12.4	63.4	3.1	3.4	Strong
BH102	43.50	45	C	43.7-43.8	43.70		D	U	YES		63.4		63.4	15.2	63.4	3.8	4.2	Very Strong
BH103	39.20	40.7	C	30-30.14	30.00		D	U	YES		63.4		63.4	15.3	63.4	3.8	4.2	Very Strong
BH103	40.70	41	C	40.9-41.04	40.90		D	U	YES		63.4		63.4	15.9	63.4	3.9	4.4	Very Strong
BH103	41.00	42.6	C	41.6-41.77	41.60		D	U	YES		63.4		63.4	4.8	63.4	1.2	1.3	Medium Strong
BH103	42.60	43.9	C	43.2-43.4	43.20		D	U	YES		63.4		63.4	4.8	63.4	1.2	1.3	Medium Strong
BH104	37.30	38.4	C	37.7-37.84	37.70		D	U	YES		63.4		63.4	2.0	63.4	0.5	0.5	Weak
BH104	38.40	40	C	39.26-39.45	39.26		D	U	YES		63.4		63.4	2.7	63.4	0.7	0.7	Weak
BH104	40.00	41	C	40.7-40.86	40.70		D	U	YES		63.4		63.4	5.5	63.4	1.4	1.5	Medium Strong
BH104	41.00	41.8	C	41.54-41.7	41.54		D	U	YES		63.4		63.4	10.3	63.4	2.6	2.8	Strong
BH104	41.80	42.8	C	42.1-42.31	42.10		D	U	YES		63.4		63.4	11.4	63.4	2.8	3.1	Strong
BH104	42.80	44.2	C	43.61-43.8	43.61		D	U	YES		63.4		63.4	8.4	63.4	2.1	2.3	Strong
BH104	44.20	45.5	C	44.3-44.5	44.30		D	U	YES		63.4		63.4	3.5	63.4	0.9	1.0	Medium Strong
BH104	45.50	46.8	C	46.2-46.36	46.20		D	U	YES		63.4		63.4	3.6	63.4	0.9	1.0	Medium Strong
BH104	46.80	48.3	C	46.8-47.0	46.80		D	U	YES		63.4		63.4	2.0	63.4	0.5	0.5	Weak
BH104	48.30	49.4	C	49.3-49.4	49.30		D	U	YES		63.4		63.4	1.4	63.4	0.3	0.4	Weak
BH104	49.40	50.9	C	49.8-50.0	49.80		D	U	YES		63.4		63.4	18.4	63.4	4.6	5.1	Very Strong

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise
Detailed legend for test and dimensions, based on ISRM, is shown above.
Size factor, F = (De/50)0.45 for all tests.

Date Printed	Approved By	Table
01/11/2023	DCD	1
		sheet 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL

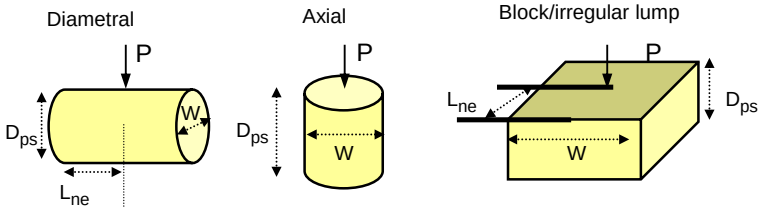
Point Load Strength Index Tests
Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Borehole No.	Sample			Specimen		Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Top Depth m	Base Depth m	Type	Ref	Top m		Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa	
BH105	37.20	38.7	C	37.6-37.8	37.60		D	U	YES		63.4		63.4	3.2	63.4	0.8	0.9	Weak
BH105	38.70	40.2	C	39.1-39.2	39.10		D	U	YES		63.4		63.4	2.7	63.4	0.7	0.7	Weak
BH105	40.20	41.3	C	41.1-41.3	41.10		D	U	YES		63.4		63.4	3.1	63.4	0.8	0.9	Weak
BH105	41.30	42	C	41.4-41.52	41.40		D	U	YES		63.4		63.4	3.3	63.4	0.8	0.9	Weak
BH105	42.00	43.5	C	42.5-42.64	42.50		D	U	YES		63.4		63.4	15.1	63.4	3.8	4.2	Very Strong
BH105	43.50	45	C	44.2-44.4	44.20		D	U	YES		63.4		63.4	19.4	63.4	4.8	5.4	Very Strong
BH108	11.90	13.4	C	12.5-12.7	12.50		D	U	YES		63.4		63.4	10.0	63.4	2.5	2.8	Strong
BH108	13.40	14.9	C	13.95-14.15	13.95		D	U	YES		63.4		63.4	17.8	63.4	4.4	4.9	Very Strong
BH108	14.90	16.3	C	15.5-15.65	15.50		D	U	YES		63.4		63.4	13.4	63.4	3.3	3.7	Strong
BH108	16.30	17.2	C	16.3-16.5	16.30		D	U	YES		63.4		63.4	14.7	63.4	3.6	4.1	Very Strong
BH110	14.70	16.2	C	15.85-16.0	15.85		D	U	YES		63.4		63.4	22.4	63.4	5.6	6.2	Very Strong
BH110	16.20	17.7	C	16.76-16.95	16.76		D	U	YES		63.4		63.4	23.3	63.4	5.8	6.4	Very Strong
BH110	17.70	18.7	C	17.77-17.90	17.77		D	U	YES		63.4		63.4	5.4	63.4	1.3	1.5	Medium Strong
BH110	18.70	19.7	C	19.1-19.2	19.10		D	U	YES		63.4		63.4	24.1	63.4	6.0	6.7	Very Strong
BH110	19.70	20.7	C	20.3-20.44	20.30		D	U	YES		63.4		63.4	4.1	63.4	1.0	1.1	Medium Strong
BH111	5.90	6.9	C	6.6-6.8	6.60		D	U	YES		63.4		63.4	13.9	63.4	3.5	3.9	Strong
BH111	6.90	8.4	C	7.6-7.84	7.60		D	U	YES		63.4		63.4	22.2	63.4	5.5	6.1	Very Strong
BH111	8.40	9.4	C	9.0-9.2	9.00		D	U	YES		63.4		63.4	21.5	63.4	5.3	5.9	Very Strong
BH111	9.40	11	C	9.9-10.03	9.90		D	U	YES		63.4		63.4	27.6	63.4	6.9	7.7	Very Strong
BH118	12.30	13.6	C	13.45-13.55	13.45		D	U	YES		63.4		63.4	12.2	63.4	3.0	3.4	Strong

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



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01/11/2023	DCD	1 sheet 2

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IDL

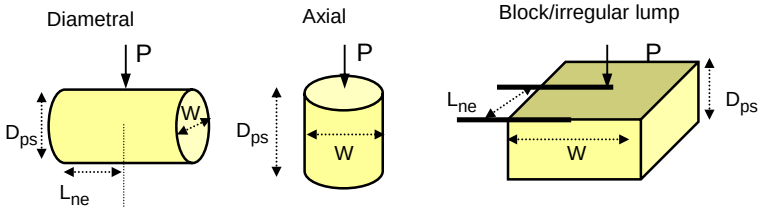
Point Load Strength Index Tests
Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Borehole No.	Sample			Specimen		Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Top Depth m	Base Depth m	Type	Ref	Top m		Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa	
BH118	13.60	14.6	C	14.5-14.6	14.50		D	U	YES		63.4		63.4	13.3	63.4	3.3	3.7	Strong
BH118	14.60	15.9	C	14.8-14.9	14.80		D	U	YES		63.4		63.4	15.6	63.4	3.9	4.3	Very Strong
BH118	16.50	17.6	C	16.6-16.7	16.60		D	U	YES		63.4		63.4	10.1	63.4	2.5	2.8	Strong
BH118	17.60	18.7	C	18.3-18.4	18.30		D	U	YES		63.4		63.4	13.0	63.4	3.2	3.6	Strong
BH118	18.70	20.3	C	19.1-19.2	19.10		D	U	YES		63.4		63.4	21.7	63.4	5.4	6.0	Very Strong
BHSS03	23.70	25.2	C	24.84-25.0	24.84		D	U	YES		63.4		63.4	5.7	63.4	1.4	1.6	Medium Strong
BHSS03	25.20	26.8	C	26.5-26.7	26.50		D	U	YES		63.4		63.4	8.3	63.4	2.1	2.3	Strong
BHSS03	26.80	28.4	C	27.6-27.76	27.60		D	U	YES		63.4		63.4	7.7	63.4	1.9	2.1	Strong
BHSS03	28.40	30	C	29.8-29.94	29.80		D	U	YES		63.4		63.4	9.1	63.4	2.3	2.5	Strong
BHT08	22.10	23.6	C	22.3-22.5	22.30		D	U	YES		63.4		63.4	21.6	63.4	5.4	6.0	Very Strong
BHT08	23.60	25.1	C	24.3-24.5	24.30		D	U	YES		63.4		63.4	26.1	63.4	6.5	7.2	Very Strong
BHT08	25.10	26.3	C	25.4-25.6	25.40		D	U	YES		63.4		63.4	20.9	63.4	5.2	5.8	Very Strong
BHT08	26.30	27.4	C	26.6-26.8	26.60		D	U	YES		63.4		63.4	19.2	63.4	4.8	5.3	Very Strong
BHT09	16.30	17.8	C	17.2-17.4	17.20		D	U	YES		63.4		63.4	23.8	63.4	5.9	6.6	Very Strong
BHT09	17.80	19.3	C	18.24-18.41	18.24		D	U	YES		63.4		63.4	15.2	63.4	3.8	4.2	Very Strong
BHT09	19.30	20.8	C	19.83-20.0	19.83		D	U	YES		63.4		63.4	17.0	63.4	4.2	4.7	Very Strong
BHT09	20.80	22.3	C	21.3-21.47	21.30		D	U	YES		63.4		63.4	22.4	63.4	5.6	6.2	Very Strong
BHT10	13.00	14	C	13.7-14.0	13.70		D	U	YES		63.4		63.4	15.3	63.4	3.8	4.2	Very Strong
BHT10	14.00	15.6	C	14.7-19.0	14.70		D	U	YES		63.4		63.4	21.5	63.4	5.4	6.0	Very Strong
BHT10	15.60	16.2	C	16.0-16.2	16.00		D	U	YES		63.4		63.4	13.6	63.4	3.4	3.8	Strong

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



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01/11/2023	DCD	1 sheet 3

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Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL

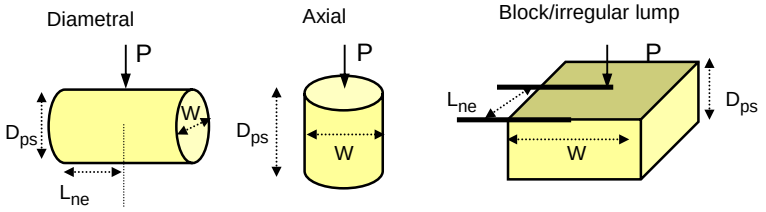
Point Load Strength Index Tests
Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Borehole No.	Sample			Specimen		Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Top Depth m	Base Depth m	Type	Ref	Top m		Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa	
BHT10	16.20	17.6	C	16.3-16.4	16.30		D	U	YES		63.4		63.4	19.7	63.4	4.9	5.5	Very Strong
BHT10	17.60	19.1	C	17.6-17.86	17.86		D	U	YES		63.4		63.4	13.1	63.4	3.3	3.6	Strong
BHT10	19.10	20.6	C	20.2-20.4	20.20		D	U	YES		63.4		63.4	16.9	63.4	4.2	4.7	Very Strong
BHT111A	7.00	8	C	7.1-7.3	7.10		D	U	YES		63.4		63.4	12.4	63.4	3.1	3.4	Strong
BHT111A	8.00	8.6	C	8.2-8.34	8.20		D	U	YES		63.4		63.4	14.8	63.4	3.7	4.1	Very Strong
BHT111A	8.60	10.2	C	9.55-9.7	9.55		D	U	YES		63.4		63.4	15.1	63.4	3.8	4.2	Very Strong
BHT111A	10.20	11.4	C	10.5-10.8	10.50		D	U	YES		63.4		63.4	13.4	63.4	3.3	3.7	Strong
BHT111A	11.40	13	C	12.0-12.2	12.00		D	U	YES		63.4		63.4	7.7	63.4	1.9	2.1	Strong
BHT111A	13.00	14	C	13.25-13.4	13.25		D	U	YES		63.4		63.4	19.2	63.4	4.8	5.3	Very Strong
BHT111A	14.00	15.6	C	14.9-15.0	14.90		D	U	YES		63.4		63.4	6.9	63.4	1.7	1.9	Medium Strong
BHT111A	15.60	16.4	C	15.7-15.9	15.70		D	U	YES		63.4		63.4	11.1	63.4	2.8	3.1	Strong
BHT111A	16.40	17.7	C	17.0-17.16	17.00		D	U	YES		63.4		63.4	20.5	63.4	5.1	5.7	Very Strong
BHT111A	17.70	19.3	C	18.9-19.14	18.90		D	U	YES		63.4		63.4	2.9	63.4	0.7	0.8	Weak
BHT111A	19.30	20.7	C	19.3-19.4	19.30		D	U	YES		63.4		63.4	14.5	63.4	3.6	4.0	Very Strong
BHT13	17.60	19.1	C	18.8-18.94	18.80		D	U	YES		63.4		63.4	17.6	63.4	4.4	4.9	Very Strong
BHT13	19.10	20.6	C	19.8-9.9	19.80		D	U	YES		63.4		63.4	6.4	63.4	1.6	1.8	Medium Strong
BHT15	20.60	22.1	C	21.9-22.1	21.90		D	U	YES		63.4		63.4	17.1	63.4	4.2	4.7	Very Strong
BHT15	22.10	23.1	C	22.9-23.1	22.29		D	U	YES		63.4		63.4	14.5	63.4	3.6	4.0	Very Strong
BHT15	23.10	23.6	C	23.3-23.5	23.30		D	U	YES		63.4		63.4	17.8	63.4	4.4	4.9	Very Strong
BHT15	23.60	24.6	C	24.16-24.4	24.16		D	U	YES		63.4		63.4	12.3	63.4	3.1	3.4	Strong

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise
Detailed legend for test and dimensions, based on ISRM, is shown above.
Size factor, F = (De/50)0.45 for all tests.

Date Printed	Approved By	Table
01/11/2023	DCD	1 sheet 4

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL

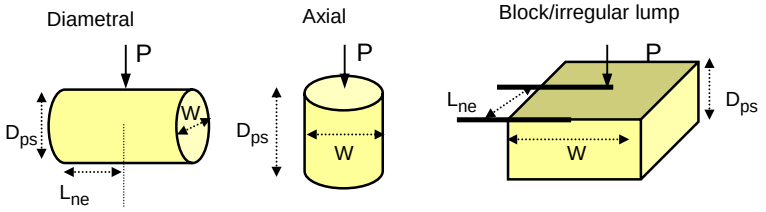
Point Load Strength Index Tests
Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Borehole No.	Sample			Specimen		Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Top Depth m	Base Depth m	Type	Ref	Top m		Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa	
BHT15	24.60	25.6	C	25.45-25.6	25.45		D	U	YES		63.4		63.4	10.7	63.4	2.7	3.0	Strong
BHT15	25.60	26.6	C	25.8-26.0	25.80		D	U	YES		63.4		63.4	17.5	63.4	4.3	4.8	Very Strong
BHT15	26.60	27.2	C	26.8-27	26.80		D	U	YES		63.4		63.4	17.1	63.4	4.3	4.7	Very Strong
BHT17	15.40	17	C	15.4-15.6	15.40		D	U	YES		63.4		63.4	8.0	63.4	2.0	2.2	Strong
BHT17	17.50	19.1	C	18.6-18.76	18.60		D	U	YES		63.4		63.4	20.0	63.4	5.0	5.5	Very Strong
BHT17	19.10	19.5	C	19.4-19.5	19.40		D	U	YES		63.4		63.4	16.7	63.4	4.2	4.6	Very Strong
BHT17	19.50	20.6	C	19.95-20.1	19.95		D	U	YES		63.4		63.4	13.7	63.4	3.4	3.8	Strong

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise
Detailed legend for test and dimensions, based on ISRM, is shown above.
Size factor, F = (De/50)0.45 for all tests.

Date Printed	Approved By	Table
01/11/2023	DCD	1
		sheet 5

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL

UNIAXIAL COMPRESSION TEST ON ROCK - SUMMARY OF RESULTS

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample				Specimen Depth (m)	Specimen Dimensions2			Bulk Density2	Water Content 1	Uniaxial Compression3				Remarks
	Ref	Top	Base	Type		Dia. mm	Length mm	H/D	Mg/m3	%	Condition	Stress Rate MPa/s	Mode of failure	UCS MPa	
BHT08		22.10	23.60	C	23.15	63.4	160.6	2.5	2.67		as received	0.5025	F	99.0	Strong
BHT08		26.30	27.40	C	26.8	63.4	161.6	2.5	2.68		as received	0.5640	F	145.0	Very Strong
BHT09		19.30	20.80	C	20.14	63.4	161.5	2.5	2.68		as received	0.5165	AC	82.6	Strong
BHT10		14.00	15.60	C	15	63.4	159.9	2.5	2.68		as received	0.1833	AC	45.6	Medium Strong
BHT10		16.20	17.60	C	17.1	63.4	159.5	2.5	2.67		as received	0.4555	AC	91.1	Strong
BHT111A		7.00	8.00	C	7.4	63.4	158.3	2.5	2.53		as received	0.1092	S	23.7	Weak
BHT111A		8.60	10.20	C	9.06	63.4	162.3	2.6	2.67		as received	0.4967	F	94.9	Strong
BHT111A		13.00	14.00	C	14	63.4	158.9	2.5	2.52		as received	0.2220	MS + AC	45.7	Medium Strong
BHT13		17.60	19.10	C	17.9	63.4	161.7	2.6	2.66		as received	0.2864	AC	88.8	Strong
BHT13		19.10	20.60	C	19.6	63.4	153.3	2.4	2.62		as received	0.2913	AC	68.2	Strong
BHT15		20.60	22.10	C	22.55	63.4	160.0	2.5	2.66		as received	0.3526	AC	115.0	Very Strong
BHT15		24.60	25.60	C	25	63.4	159.5	2.5	2.68		as received	0.5197	F	150.0	Very Strong
BHT17		15.40	17.00	C	16.2	63.4	159.9	2.5	2.72		as received	0.5951	AC	140.0	Very Strong
BHT17		19.10	19.50	C	20.1	63.4	161.2	2.5	2.68		as received	0.6615	F	232.0	Very Strong

Notes

1 ISRM p87 test 1, water content at 105 ± 3 oC, specimen as tested for UCS
2 ISRM p86 clause (vii), Caliper method used for determination of bulk volume and derivation of bulk density
3 ISRM p153 part 1, determination of Uniaxial Compressive Strength (UCS) of Rock Materials
above notes apply unless annotated otherwise in the remarks

Mode of failure :
S - Single shear MS - multiple shear
AC - Axial cleavage F - Fragmented

Test Specification	Date Printed	Approved By	Table
International Society for Rock Mechanics, The complete ISRM suggested methods for Rock Characterization Testing and Monitoring, 2007	01/11/2023	DCD	1 sheet 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Appendix 13
Environmental Laboratory Test Results

Project ID	2023OY104	2023OY104
Project Name	Derrygreenagh Power	Derrygreenagh Power
Schedule ID	2023OY104_all	2023OY104_all

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
	Total scheduled						152	155	33				
	Completed to date						152	155	33				
BH101	1	1.1	ES 1		13.4.23	Env Repo	1	1	1			230418-53	
BH102	1.00		ES		17.4.23	Env Repo	1	1	1			230421-102	
BH103	1.50		ES		17.4.23	Env Repo	1	1	1			230421-102	
BH104	1.00		ES		18.4.23	Env Repo	1	1	1			230421-103	
BH105	1.00		ES	3	19.4.23	Env Repo	1	1	1			230421-103	
BH106	4.00		ES		20.4.23	Env Repo	1	1	1			230426-63	
BH107	1.50		ES		26.4.23	Env Repo	1	1	1			230502-27	
BH108	1.00		ES		25.4.23	Env Repo	1	1	1			230502-27	
BH109	1.00		ES	3	20.4.23	Env Repo	1	1	*			230426-63	
bh110	1.00		ES	3	27.4.23	Env Repo	1	1	1			230502-30	
BH111	1.50		ES	3	2.5.23	Env Repo	1	1	1			230510-54	
BH112	0.6	0.6	ES 1		12.4.23	Env Repo	1	1	1			230418-53	
BH112	1.6	1.6	ES 2		12.4.23	Env Repo	1	1	1			230418-53	
BH113	2.00		ES		24.4.23	Env Repo	1	1	1			230502-27	
BH114	1.00		ES		24.4.23	Env Repo	1	1	1			230426-63	
BH115	3.00		ES		20.4.23	Env Repo	1	1	1			230426-63	
BH116	7	ES 1	ES 1		11.5.23	Env Repo	1	1				230518-59	
BH117	4.5	ES 1	ES 1		10.5.23	Env Repo	1	1				230515-36	
BH118	3.5	ES 1	ES 1		12.5.23	Env Repo	1	1				230518-59	
BHCC01	4.5		ES		15.6.23	Env Repo	1	1	1			230623-103	
BHCC02	3		ES		14.6.23	Env Repo	1	1	1			230623-103	
BHPW301	1.00		ES		19.4.23	Env Repo	1	1	*			230426-63	
BHSS01	7.5	ES 1	ES 1		16.5.23	Env Repo	1	1				230518-59	
BHSS02		ES 1	ES 1		5.5.23	Env Repo	1	1				230515-36	
BHSS03	4	ES 1	ES 1		9.5.23	Env Repo	1	1				230515-36	
BHSS04	3.50	3.50	ES		4.5.23	Env Repo	1	1	1			230510-54	
BHSS05	2.50		ES		3.5.23	Env Repo	1	1	1			230510-54	
BHSS06	5.5				20.6.23	Env Repo		1	1			230627-39	
BHSS101	1	1.5	es		17.7.23	Env Repo	1	1	1			230726-72	
BHSS102	3	3.8	es		18.7.23	Env Repo	1	1	1			230726-72	
BHSS103	3	3.5			17.7.23	Env Repo	1	1	1			230726-72	
BHSS104	2	2.5			19.7.23	Env Repo	1	1	1			230726-72	
BHSS105	1.00	1.50	ES	7	14.7.23	Env Repo	1	1	1			230726-72	
BHSS106	3.00	3.50	ES	16	20.7.23	Env Repo	1	1	1			230726-72	
BHSS107	2.50		ES	9	20.7.23	Env Repo	1	1	1			230726-72	
BHSS108	3	3	es		20.7.23	Env Repo	1	1	1			230726-72	
BHT01	5		ES		13.6.23	Env Repo	1	1				230615-86	
BHT02	6		ES		8.6.23	Env Repo	1	1				230615-86	
BHT03	5.5		ES		7.6.23	Env Repo	1	1				230615-86	
BHT04	4		ES		6.6.23	Env Repo	1	1				230615-86	
BHT06	5.5		ES	1	2.6.23	Env Repo	1	1				230615-86	
BHT07	5.5	5.5	ES		31.5.23	Env Repo	1	1				230605-71	
BHT08	0.50	0.80	ES	1	13.6.23	Env Repo	1	1				230615-86	
BHT08	3.5		es	2	19.6.23	Env Repo		1	1			230627-39	
BHT09	6	6	ES	1	29.5.23	Env Repo	1	1				230605-71	
BHT10	5.5	5.5	ES	1	25.5.23	Env Repo	1	1				230601-71	
BHT11	5	5	ES		24.5.23	Env Repo	1	1				230601-71	
BHT12	6	6	ES	1	24.5.23	Env Repo	1	1				230601-71	
BHT13	3	3	ES	1	24.5.23	Env Repo	1	1				230601-71	
BHT14	1.5	1.5	ES	1	19.5.23	Env Repo	1	1				230601-71	
BHT15	7	7	ES 1	1	19.5.23	Env Repo	1	1				230526-70	
BHT16	3.5		es	1	21.6.23	Env Repo		1	1			230627-39	
BHT16A	1.50		ES		1.8.23	Env Repo	1	1	1			230811-69	
BHT17	5.5	5.6	ES 1	1	17.5.23	Env Repo	1	1				230526-70	
BHT17A	3.00		ES		31.7.23	Env Repo	1	1	1			230811-69	
BHT18A	3.00		ES		3.8.23	Env Repo	1	1	1			230811-69	
TP201	2.80	3.00	ES		2.5.23	Env Repo	1	1				230510-55	
TP204	0.80	0.85	ES		2.5.23	Env Repo	1	1				230510-55	
TP205	2.45	2.55	ES		3.5.23	Env Repo	1	1				230510-55	
TP206	1	1.1	ES 1		8.5.23	Env Repo	1	1				230515-35	
TP207	1.00	1.10	ES		3.5.23	Env Repo	1	1				230510-55	
TP208	2	2.1	ES5	ES5	29.6.23	Env Repo	1	1				230705-77	
TP208	3.5	3.6	ES10	ES1(	29.6.23	Env Repo	1	1				230705-77	
TP209	1.00	1.10	ES		3.5.23	Env Repo	1	1				230510-55	
TP210	1	1.1	ES 1		8.5.23	Env Repo	1	1				230515-35	
TP211	1	1.1	ES 1		9.5.23	Env Repo	1	1				230515-35	
TP212	1.1	1.2	ES 1		9.5.23	Env Repo	1	1				230515-35	
TP213	1	1.1	ES 1		10.5.23	Env Repo	1	1				230515-35	
TP214	1	1.1	ES 1		10.5.23	Env Repo	1	1				230515-35	
TP215	1	1.1	ES 1		10.5.23	Env Repo	1	1				230515-35	
TP216	1.1	1.2	ES 1		8.5.23	Env Repo	1	1				230515-35	
tp217	1		ES		5.5.23	Env Repo	1	1				230511-90	
TP218	1.00	1.10	ES		4.5.23	Env Repo	1	1				230510-55	
TP219	1.00	1.10	ES		4.5.23	Env Repo	1	1				230510-55	

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Env Suite A414	Env Suite A416 (minus WAC)	Env WAC	BRE SD1	Thermal Resistivity	ALS ref	Notes
TP220	1.00	1.10	ES		4.5.23	Env Repo	1	1				230510-55	
TP221	2.70	2.80	ES		14.6.23	Env Repo	1	1				230623-103	
TP222	1.50	1.70	ES		14.6.23	Env Repo	1	1				230623-103	
TP223	2.50	2.60	ES		14.6.23	Env Repo	1	1				230623-103	
TP224	0.90	1.00	ES		14.6.23	Env Repo	1	1				230623-103	
TP301	0.70	0.80	ES	5	16.5.23	Env Repo	1	1				230526-70	
TP302	0.90	1.00	ES	5	16.5.23	Env Repo	1	1				230526-70	
TP303	2.20	2.30	ES	5	16.5.23	Env Repo	1	1				230526-70	
TP304	2.30	2.40	ES	5	17.5.23	Env Repo	1	1				230526-70	
TP305	0.80	0.90	ES	3	17.5.23	Env Repo	1	1				230526-70	
TP306	1.50	1.60	ES	5	17.5.23	Env Repo	1	1				230526-70	
TP307A	1.00	1.10	ES	3	17.5.23	Env Repo	1	1				230526-70	
TP308	1.30	1.40	ES	5	22.5.23	Env Repo	1	1				230526-70	
TP309	0.30	0.40	ES	3	22.5.23	Env Repo	1	1				230526-70	
TP310	3.10	3.20	ES	7	22.5.23	Env Repo	1	1				230526-70	
TP311	3.90	4.00	ES	6	22.5.23	Env Repo	1	1				230526-70	
TP312	1.20	1.30	ES	4	31.5.23	Env Repo	1	1				230605-71	
TP313	0.50	0.60	ES	3	31.5.23	Env Repo	1	1				230605-71	
TPBP01	1.40	1.50	ES	5	23.5.23	Env Repo	1	1				230601-68	
TPBP02	0.20	0.30	ES	3	23.5.23	Env Repo	1	1				230601-68	
TPBP03	0.20	0.30	ES	2	23.5.23	Env Repo	1	1				230601-68	
TPBP04	0.50	0.60	ES	3	24.5.23	Env Repo	1	1				230601-68	
TPBP05	0.50	0.60	ES	3	23.5.23	Env Repo	1	1				230601-68	
TPBP06	0.20	0.30	ES	3	24.5.23	Env Repo	1	1				230601-68	
TPBP07	0.30	0.40	ES	3	24.5.23	Env Repo	1	1				230601-68	
TPBP08	3.20	3.30	ES	7	24.5.23	Env Repo	1	1				230601-68	
TPC01	2.60	2.70	ES	6	29.5.23	Env Repo	1	1				230605-71	
TPC02	2.50	2.60	ES	7	29.5.23	Env Repo	1	1				230605-71	
TPC03	3.20	3.30	ES	7	29.5.23	Env Repo	1	1				230605-71	
TPC04	1.60	1.70	ES	5	30.5.23	Env Repo	1	1				230605-71	
TPC05	0.50	0.60	ES	3	30.5.23	Env Repo	1	1				230605-71	
TPC06	2.50	2.60	ES	5	30.5.23	Env Repo	1	1				230605-71	
TPC07	1.40	1.50	ES		30.5.23	Env Repo	1	1				230605-71	
TPC08	0.8	0.9	ES5	ES5	28.6.23	Env Repo	1	1				230705-77	
TPC08	2.3	2.6	ES8	ES8	28.6.23	Env Repo	1	1				230705-77	
TPC09	1.4	1.4	ES5	ES5	28.6.23	Env Repo	1	1				230705-77	
TPC09	2.7	2.8	ES8	ES8	28.6.23	Env Repo	1	1				230705-77	
TPCC01	2.90	3.00	ES	7	29.5.23	Env Repo	1	1				230605-71	
TPSS01	1.00	1.10	ES 1		11.5.23	Env Repo	1	1				230518-59	
TPSS01	3.25	3.35	ES 2		11.5.23	Env Repo	1	1				230518-59	
TPSS02	1.90	2.00	ES 1		10.5.23	Env Repo	1	1				230515-35	
TPSS02	3.40	3.60	ES 1		10.5.23	Env Repo	1	1				230511-90	
TPSS03	1.10	1.20	ES 1		10.5.23	Env Repo	1	1				230515-35	
TPSS03	2.00	2.20	ES 2		10.5.23	Env Repo	1	1				230515-35	
TPSS04	2.10	2.20	ES 1		11.5.23	Env Repo	1	1				230518-59	
TPSS04	4.10	4.20	ES 2		11.5.23	Env Repo	1	1				230518-59	
TPSS05	2.60	2.70	ES 1		11.5.23	Env Repo	1	1				230518-59	
TPSS05	3.50	3.70	ES 2		11.5.23	Env Repo	1	1				230518-59	
TPSS06	1.20	1.30	ES 1		11.5.23	Env Repo	1	1				230518-59	
TPSS06	3.00	3.20	ES 2		11.5.23	Env Repo	1	1				230518-59	
TPSS101	0.4	0.5	ES3	ES3	27.6.23	Env Repo	1	1				230705-77	
TPSS101	2.4	2.5	ES8	ES8	27.6.23	Env Repo	1	1				230705-77	
TPSS102	0.4	0.5	ES3	ES3	27.6.23	Env Repo	1	1				230705-77	
TPSS102	2.4	2.5	ES8	ES8	27.6.23	Env Repo	1	1				230705-77	
TPSS103	0.4	0.5	ES3	ES3	27.6.23	Env Repo	1	1				230705-77	
TPSS103	2.4	2.5	ES8	ES8	27.6.23	Env Repo	1	1				230705-77	
TPSS104	0.7	0.8	ES5	ES5	27.6.23	Env Repo	1	1				230705-77	
TPSS104	2	2.1	ES8	ES8	27.6.23	Env Repo	1	1				230705-77	
TPSS105	0.4	0.5	ES3	ES3	27.6.23	Env Repo	1	1				230705-77	
TPSS105	2.4	2.5	ES8	ES8	27.6.23	Env Repo	1	1				230705-77	
TPSS106	0.4	0.5	ES3	ES3	27.6.23	Env Repo	1	1				230705-77	
TPSS106	2.4	2.5	ES8	ES8	27.6.23	Env Repo	1	1				230705-77	
TPSS107	0.4	0.5	ES3	ES3	28.6.23	Env Repo	1	1				230705-77	
TPSS107	1.8	1.9	ES6	ES6	28.6.23	Env Repo	1	1				230705-77	
TPT01	2.40	2.50	ES	5	26.5.23	Env Repo	1	1				230601-67	
TPT02	2.10	2.20	ES	5	26.5.23	Env Repo	1	1				230601-67	
TPT03	1.50	1.60	ES	5	26.5.23	Env Repo	1	1				230601-67	
TPT04	0.10	0.20	ES	3	26.5.23	Env Repo	1	1				230601-67	
TPT05	1.00	1.10	ES	5	25.5.23	Env Repo	1	1				230601-67	
TPT06	0.30	0.40	ES	3	25.5.23	Env Repo	1	1				230601-67	
TPT07	0.30	0.40	ES	3	25.5.23	Env Repo	1	1				230601-67	
TPT09	0.50	0.60	ES	3	25.5.23	Env Repo	1	1				230601-67	
TPT10	0.20	0.30	ES	3	25.5.23	Env Repo	1	1				230601-67	
TPT11	0.20	0.30	ES	2	24.5.23	Env Repo	1	1				230601-67	
TPT12	0.30	0.40	ES	3	23.5.23	Env Repo	1	1				230601-67	
TPT13	0.2	0.3	ES 1		16.5.23	Env Repo	1	1				230526-70	
TPT14	0.15	0.3	ES 1		16.5.23	Env Repo	1	1				230526-70	
TPT15	0.40	0.50	ES	3	16.5.23	Env Repo	1	1				230526-70	
TPT16	0.80	0.90	ES 1	5	15.5.23	Env Repo	1	1				230518-59	
TPT17	2.1	2.2	ES 1	5	15.5.23	Env Repo	1	1				230518-59	
TPT18	1.3	1.4	ES 1	5	15.5.23	Env Repo	1	1				230518-59	

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230418-53
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	690922
Order Number:	12380

This report has been revised and directly supersedes 688330 in its entirety.

We received 3 samples on Tuesday April 18, 2023 and 3 of these samples were scheduled for analysis which was completed on Wednesday May 10, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27852611	BH101	ES1	1.00 - 1.00	13/04/2023
27852601	BH112	ES1	0.60 - 0.60	12/04/2023
27852606	BH112	ES2	1.60 - 1.60	12/04/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27852611			27852601			27852606		
Customer Sample Reference			BH101			BH112			BH112		
AGS Reference			ES1			ES1			ES2		
Depth (m)			1.00 - 1.00			0.60 - 0.60			1.60 - 1.60		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 3		X			X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 3	X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X		
CEN Readings	All	NDPs: 0 Tests: 3	X			X			X		
Chromium III	All	NDPs: 0 Tests: 3		X			X			X	
Coronene	All	NDPs: 0 Tests: 3		X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X			X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X			X			X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3	X			X			X		
EPH	All	NDPs: 0 Tests: 3		X			X			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3		X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
Fluoride	All	NDPs: 0 Tests: 3	X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X			X

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
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DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27852611			27852601			27852606
Customer Sample Reference					BH101			BH112			BH112
AGS Reference					ES1			ES1			ES2
Depth (m)					1.00 - 1.00			0.60 - 0.60			1.60 - 1.60
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3			X			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 3			X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 3			X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 3		X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 3			X			X			X	
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 3			X			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 3			X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 3			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 3			X			X			X	
pH	All	NDPs: 0 Tests: 3			X			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 3		X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3			X			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 3		X			X			X		
Sample description	All	NDPs: 0 Tests: 3			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3			X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
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SA - Saline Water
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RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27852611				27852601			27852606	
Customer Sample Reference			BH101				BH112			BH112	
AGS Reference			ES1				ES1			ES2	
Depth (m)			1.00 - 1.00				0.60 - 0.60			1.60 - 1.60	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Total Organic Carbon	All	NDPs: 0 Tests: 3		X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 3		X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 3			X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27852611	BH101	1.00 - 1.00	Light Brown	Sandy Silt Loam	Stones	None
27852601	BH112	0.60 - 0.60	Light Brown	Sandy Clay Loam	Stones	None
27852606	BH112	1.60 - 1.60	Light Brown	Silt Loam	Vegetation	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			.	.	.			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	15	9.4	19			
Loss on ignition	<0.7 %	TM018	2.49 M	2.66 M	4.23 M			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	0.011 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	0.044 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	0.055 M	<0.035 M			
Organic Carbon, Total	<0.2 %	TM132	0.451 M	<0.2 M	1.05 M			
Sulphur, Total	<0.02 %	TM132	0.0427 #	<0.02 #	0.0306 #			
Organic Matter, Total	<0.35 %	TM132	0.778 #	<0.35 #	1.81 #			
Sulphate, Total potential	<0.06 %	TM132	0.128	0.06	0.0918			
pH	1 pH Units	TM133	8.44 M	8.76 M	7.78 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M			
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21			
Chromium, Trivalent	<0.9 mg/kg	TM181	10.5	10.2	10.3			
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	<0.6 #			
Arsenic	<0.6 mg/kg	TM181	8.08 M	3.21 M	6.15 M			
Barium	<0.6 mg/kg	TM181	23.7 #	35.2 #	34.2 #			
Beryllium	<0.01 mg/kg	TM181	0.452 M	0.429 M	0.413 M			
Boron	<0.7 mg/kg	TM181	2.45 #	3.95 #	3.05 #			
Cadmium	<0.02 mg/kg	TM181	1.24 M	1.19 M	1.17 M			
Chromium	<0.9 mg/kg	TM181	10.5 M	10.2 M	10.3 M			
Copper	<1.4 mg/kg	TM181	14.6 M	15 M	11.4 M			
Lead	<0.7 mg/kg	TM181	12.5 M	11.4 M	13.6 M			
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M			
Molybdenum	<0.1 mg/kg	TM181	0.719 #	0.403 #	0.5 #			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			.	.	.			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
Component	**LOD/Units**	**Method**						
Nickel	<0.2 mg/kg	TM181	30.8 M	30.8 M	28.5 M			
Selenium	<1 mg/kg	TM181	1.54 #	1.03 #	<1 #			
Vanadium	<0.2 mg/kg	TM181	13.8 #	14.8 #	18.8 #			
Zinc	<1.9 mg/kg	TM181	122 M	72.1 M	72.7 M			
ANC @ pH 4	<0.03 mol/kg	TM182	0.786	1.99	0.327			
ANC @ pH 6	<0.03 mol/kg	TM182	0.0445	0.072	0.0371			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0199 M	0.032 M	<0.004 M			
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.000692	0.000378	0.00483			
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008			
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318	<318			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10			
Coronene	<200 µg/kg	TM410	<200	<200	<200			
EPH (C5-C40)	<35 mg/kg	TM415	<35	<35	67			
EPH Surrogate % recovery**	%	TM415	106	103	94.8			
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	<35 M	<35 M	67 M			
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	10.1	30.3	16.9			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			.	.	.			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	87.8	85.8	86.8			
Acenaphthene-d10 % recovery**	%	TM218	83.9	82.2	83.4			
Phenanthrene-d10 % recovery**	%	TM218	81.8	81.8	82.7			
Chrysene-d12 % recovery**	%	TM218	74.9	79.9	78.6			
Perylene-d12 % recovery**	%	TM218	83.6	86.2	83.5			
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
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- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			.	.	.			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100			
Isophorone	<100 µg/kg	TM157	<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100			
Carbazole	<100 µg/kg	TM157	<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100			
Azobenzene	<100 µg/kg	TM157	<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			-	-	-			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH101	BH112	BH112			
Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			.	.	.			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
GRO Surrogate % recovery**	%	TM089	169 4	72.1	104			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	2170 #	<1000 #	<1000 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	39400 #	63500 #	9480 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	10700	12800	<1000			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	52300	76300	10400			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	72600	83400	43200			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	1870 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	18200 #	5990 #	24200 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1470	<1000	6710			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	20400	7150	32800			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	72600	83400	43200			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 4	<50	<50			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 4	<50	<50			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 4	<20	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			.	.	.			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	107	116	111			
Toluene-d8**	%	TM116	81	109	84.9			
4-Bromofluorobenzene**	%	TM116	91.5	91.5	89.8			
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<100 M	<10 M			
Benzene	<1 µg/kg	TM116	<9 M	<90 M	<9 M			
Toluene	<1 µg/kg	TM116	<7 M	<70 M	<7 M			
Ethylbenzene	<1 µg/kg	TM116	<4 M	<40 M	<4 M			
p/m-Xylene	<2 µg/kg	TM116	<10 #	<100 #	<10 #			
o-Xylene	<2 µg/kg	TM116	<10 M	<100 M	<10 M			
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.2	<0.02			
Sum of BTEX	<7 µg/kg	TM116	<40	<400	<40			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH101ES1 1.00 - 1.00 SOLID 13/04/2023 00:00:00 18/04/2023 10:00:00 230418-53 27852611 TM048	20/04/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH112ES1 0.60 - 0.60 SOLID 12/04/2023 00:00:00 18/04/2023 10:00:00 230418-53 27852601 TM048	20/04/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH112ES2 1.60 - 1.60 SOLID 12/04/2023 00:00:00 18/04/2023 10:00:00 230418-53 27852606 TM048	20/04/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.114	**Natural Moisture Content (%)**	25.8
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	79.5
Particle Size <4mm	>95%		

Case	
SDG	230418-53
Lab Sample Number(s)	27852601
Sampled Date	12-Apr-2023
Customer Sample Ref.	BH112 ES1
Depth (m)	0.60 - 0.60

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	2.66	-	-	10
Sum of BTEX (mg/kg)	<0.4	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	30.3	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.76	-	>6	-
ANC to pH 6 (mol/kg)	0.072	-	-	-
ANC to pH 4 (mol/kg)	1.99	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00331	<0.0005	0.0331	<0.005	0.5	2	25
Barium	0.011	<0.0002	0.11	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00379	<0.0003	0.0379	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00476	<0.003	0.0476	<0.03	0.5	10	30
Nickel	0.00313	<0.0004	0.0313	<0.004	0.4	10	40
Lead	0.000313	<0.0002	0.00313	<0.002	0.5	10	50
Antimony	0.00131	<0.001	0.0131	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00238	<0.001	0.0238	<0.01	4	50	200
Chloride	3.8	<2	38	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	141	<10	1410	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	15.6	<3	156	<30	500	800	1000

Leach Test Information

Date Prepared	19-Apr-2023
pH (pH Units)	8.27
Conductivity (µS/cm)	189
Volume Leachant (Litres)	0.876

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 12:22:03

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.101	**Natural Moisture Content (%)**	12.7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88.7
Particle Size <4mm	>95%		

Case	
SDG	230418-53
Lab Sample Number(s)	27852606
Sampled Date	12-Apr-2023
Customer Sample Ref.	BH112 ES2
Depth (m)	1.60 - 1.60

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	1.05	3	5	6
Loss on Ignition (%)	4.23	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	16.9	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.78	-	>6	-
ANC to pH 6 (mol/kg)	0.0371	-	-	-
ANC to pH 4 (mol/kg)	0.327	-	-	-

Eluate Analysis	**C2** Concⁿ in 10:1 eluate (mg/l)		**A2** 10:1 concⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00176	<0.0005	0.0176	<0.005	0.5	2	25
Barium	0.00631	<0.0002	0.0631	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00209	<0.001	0.0209	<0.01	0.5	10	70
Copper	0.00386	<0.0003	0.0386	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00385	<0.003	0.0385	<0.03	0.5	10	30
Nickel	0.000898	<0.0004	0.00898	<0.004	0.4	10	40
Lead	0.00139	<0.0002	0.0139	<0.002	0.5	10	50
Antimony	0.00843	<0.001	0.0843	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00309	<0.001	0.0309	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	69.4	<10	694	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.91	<3	59.1	<30	500	800	1000

Leach Test Information

Date Prepared	19-Apr-2023
pH (pH Units)	8.60
Conductivity (µS/cm)	91
Volume Leachant (Litres)	0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 12:22:03

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.101	**Natural Moisture Content (%)**	11.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	89.7
Particle Size <4mm	>95%		

Case	
SDG	230418-53
Lab Sample Number(s)	27852611
Sampled Date	13-Apr-2023
Customer Sample Ref.	BH101 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.451	3	5	6
Loss on Ignition (%)	2.49	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	10.1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.44	-	>6	-
ANC to pH 6 (mol/kg)	0.0445	-	-	-
ANC to pH 4 (mol/kg)	0.786	-	-	-

Eluate Analysis	**C2** Concⁿ in 10:1 eluate (mg/l)		**A2** 10:1 concⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00165	<0.0005	0.0165	<0.005	0.5	2	25
Barium	0.00526	<0.0002	0.0526	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00129	<0.001	0.0129	<0.01	0.5	10	70
Copper	0.000978	<0.0003	0.00978	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00362	<0.003	0.0362	<0.03	0.5	10	30
Nickel	0.000794	<0.0004	0.00794	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00182	<0.001	0.0182	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	73.6	<10	736	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	19-Apr-2023
pH (pH Units)	8.69
Conductivity (µS/cm)	97
Volume Leachant (Litres)	0.890

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 12:22:03

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	27852611	27852601	27852606
Customer Sample Ref.	BH101	BH112	BH112
AGS Ref.	ES1	ES1	ES2
Depth	1.00 - 1.00	0.60 - 0.60	1.60 - 1.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	24-Apr-2023	24-Apr-2023	24-Apr-2023
Anions by Kone (soil)	24-Apr-2023	24-Apr-2023	24-Apr-2023
Anions by Kone (w)	24-Apr-2023	25-Apr-2023	24-Apr-2023
Asbestos ID in Solid Samples	20-Apr-2023	20-Apr-2023	20-Apr-2023
CEN 10:1 Leachate (1 Stage)	20-Apr-2023	20-Apr-2023	20-Apr-2023
CEN Readings	24-Apr-2023	24-Apr-2023	24-Apr-2023
Chromium III	25-Apr-2023	25-Apr-2023	25-Apr-2023
Coronene	20-Apr-2023	20-Apr-2023	20-Apr-2023
Cyanide Comp/Free/Total/Thiocyanate	21-Apr-2023	21-Apr-2023	21-Apr-2023
Dissolved Metals by ICP-MS	25-Apr-2023	25-Apr-2023	25-Apr-2023
Dissolved Organic/Inorganic Carbon	22-Apr-2023	22-Apr-2023	22-Apr-2023
EPH	21-Apr-2023	21-Apr-2023	21-Apr-2023
EPH by GCxGC-FID	21-Apr-2023	21-Apr-2023	21-Apr-2023
EPH CWG GC (S)	21-Apr-2023	21-Apr-2023	21-Apr-2023
Fluoride	24-Apr-2023	24-Apr-2023	24-Apr-2023
GRO by GC-FID (S)	21-Apr-2023	21-Apr-2023	21-Apr-2023
Hexavalent Chromium (s)	21-Apr-2023	21-Apr-2023	21-Apr-2023
Loss on Ignition in soils	24-Apr-2023	24-Apr-2023	24-Apr-2023
Magnesium (BRE)	05-May-2023	04-May-2023	04-May-2023
Mercury Dissolved	24-Apr-2023	24-Apr-2023	24-Apr-2023
Metals in solid samples by OES	04-May-2023	05-May-2023	05-May-2023
Moisture at 105C	19-Apr-2023	19-Apr-2023	19-Apr-2023
NO3, NO2 and TON by KONE (s)	04-May-2023	10-May-2023	10-May-2023
PAH 16 & 17 Calc	21-Apr-2023	21-Apr-2023	20-Apr-2023
PAH by GCMS	20-Apr-2023	20-Apr-2023	20-Apr-2023
PCBs by GCMS	21-Apr-2023	21-Apr-2023	21-Apr-2023
pH	21-Apr-2023	21-Apr-2023	21-Apr-2023
pH Value of Filtered Water	24-Apr-2023	24-Apr-2023	24-Apr-2023
Phenols by HPLC (S)	21-Apr-2023	21-Apr-2023	21-Apr-2023
Phenols by HPLC (W)	25-Apr-2023	25-Apr-2023	25-Apr-2023
Sample description	19-Apr-2023	19-Apr-2023	19-Apr-2023
Semi Volatile Organic Compounds	04-May-2023	04-May-2023	04-May-2023
Total Organic Carbon	25-Apr-2023	25-Apr-2023	24-Apr-2023
Total Sulphur	05-May-2023	05-May-2023	05-May-2023
TPH CWG GC (S)	21-Apr-2023	21-Apr-2023	21-Apr-2023
VOC MS (S)	20-Apr-2023	20-Apr-2023	20-Apr-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230418-53	N/A	N/A	01/06/2023	Site Reference Change	2023WH101	2023OY104	688330

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230421-102
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	690973
Order Number:	12380

This report has been revised and directly supersedes 688118 in its entirety.

We received 2 samples on Friday April 21, 2023 and 2 of these samples were scheduled for analysis which was completed on Tuesday May 09, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27873156	BH102	ES1	1.00 - 1.00	14/04/2023
27873165	BH103	ES1	1.50 - 1.50	14/04/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27873156			27873165	
Customer Sample Reference					BH102			BH103	
AGS Reference					ES1			ES1	
Depth (m)					1.00 - 1.00			1.50 - 1.50	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 2		X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 2		X			X	
Anions in soil by IC	All	NDPs: 0 Tests: 2		X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X			X		
Asbestos Quantification - Full	All	NDPs: 0 Tests: 1	X					
CEN Readings	All	NDPs: 0 Tests: 2		X			X	
Chromium III	All	NDPs: 0 Tests: 2		X			X	
Coronene	All	NDPs: 0 Tests: 2		X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2		X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2		X			X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2		X			X	
EPH	All	NDPs: 0 Tests: 2		X			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X	
Fluoride	All	NDPs: 0 Tests: 2		X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27873156			27873165		
Customer Sample Reference			BH102			BH103		
AGS Reference			ES1			ES1		
Depth (m)			1.00 - 1.00			1.50 - 1.50		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 2		X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 2		X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 2		X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 2		X			X	
PAH by GCMS	All	NDPs: 0 Tests: 2		X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 2		X			X	
pH	All	NDPs: 0 Tests: 2		X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 2		X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2		X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2		X			X	
Sample description	All	NDPs: 0 Tests: 2		X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27873156			27873165	
Customer Sample Reference					BH102			BH103	
AGS Reference					ES1			ES1	
Depth (m)					1.00 - 1.00			1.50 - 1.50	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S
Total Organic Carbon	All	NDPs: 0 Tests: 2		X			X	
Total Sulphate	All	NDPs: 0 Tests: 2		X			X	
Total Sulphur	All	NDPs: 0 Tests: 2		X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X	
VOC MS (S)	All	NDPs: 0 Tests: 2			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27873156	BH102	1.00 - 1.00	Dark Brown	Sandy Silt Loam	Stones	Vegetation
27873165	BH103	1.50 - 1.50	Dark Brown	Sandy Clay Loam	Stones	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	33	16				
Loss on ignition	<0.7 %	TM018	16.7 M	2.45 M				
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0621	0.016				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Organic Carbon, Total	<0.2 %	TM132	14.9 M	0.261 M				
Sulphur, Total	<0.02 %	TM132	0.0284 #	<0.02 #				
Organic Matter, Total	<0.35 %	TM132	25.7 #	0.45 #				
Sulphate, Total potential	<0.06 %	TM132	0.0852	0.06				
pH	1 pH Units	TM133	7.75 M	8.5 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
Chromium, Trivalent	<0.9 mg/kg	TM181	15.6	12				
Arsenic	<0.6 mg/kg	TM181	6.7 M	17.6 M				
Barium	<0.6 mg/kg	TM181	54.4 #	58.3 #				
Beryllium	<0.01 mg/kg	TM181	0.462 M	1.17 M				
Boron	<0.7 mg/kg	TM181	3.18 #	3.89 #				
Cadmium	<0.02 mg/kg	TM181	1.01 M	5.66 M				
Chromium	<0.9 mg/kg	TM181	15.6 M	12 M				
Copper	<1.4 mg/kg	TM181	27.9 M	13.6 M				
Lead	<0.7 mg/kg	TM181	70.1 M	15.4 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181	26 M	139 M				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Selenium	<1 mg/kg	TM181	<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	16.1 #	19.8 #				
Zinc	<1.9 mg/kg	TM181	112 M	248 M				
ANC @ pH 4	<0.03 mol/kg	TM182	0.265	0.813				
ANC @ pH 6	<0.03 mol/kg	TM182	<0.03	0.0574				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0465 M	0.0122 M				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304	<0.001 #					
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304	<0.001 #					
Additional Asbestos Components (Using TM048)		TM304	None #					
Analysts Comments		TM304	N/A					
Asbestos Quantification - Total - %	<0.001 %	TM304	<0.001 #					
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318				
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10				
Coronene	<200 µg/kg	TM410	<200	<200				
EPH (C5-C40)	<35 mg/kg	TM415	1040	<35				
EPH Surrogate % recovery**	%	TM415	96.7	100				
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	1040 M	<35 M				
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	337	8.98				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	87.1	92.6				
Acenaphthene-d10 % recovery**	%	TM218	96.4	89.4				
Phenanthrene-d10 % recovery**	%	TM218	111	96.6				
Chrysene-d12 % recovery**	%	TM218	92.8	93.1				
Perylene-d12 % recovery**	%	TM218	86.4	89.4				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M				
Pyrene	<15 µg/kg	TM218	25.3 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M				
Chrysene	<10 µg/kg	TM218	<10 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	62.9 4	105				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	32.8 4	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	26.8 4	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	24500 #	<1000 #				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	94300 #	<1000 #				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	322000 #	4940 #				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	127000	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	569000	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	1620000	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	17.9 4	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	9450 #	<1000 #				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	70300 #	<1000 #				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	690000 #	2140 #				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	279000	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	111000	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	1050000	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	1620000	<10000				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	59.6 4	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 4	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	59.6 4	<20				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	109	99.9				
Toluene-d8**	%	TM116	95.6	95.6				
4-Bromofluorobenzene**	%	TM116	101	102				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<200 M	<10 M				
Benzene	<1 µg/kg	TM116	<180 M	<9 M				
Toluene	<1 µg/kg	TM116	<140 M	<7 M				
Ethylbenzene	<1 µg/kg	TM116	<80 M	<4 M				
p/m-Xylene	<2 µg/kg	TM116	<200 #	<10 #				
o-Xylene	<2 µg/kg	TM116	<200 M	<10 M				
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4	<0.02				
Sum of BTEX	<7 µg/kg	TM116	<800	<40				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH102ES1 1.00 - 1.00 SOLID 14/04/2023 00:00:00 21/04/2023 10:00:00 230421-102 27873156 TM048	26/04/2023	James Richards	Fibre bundles in soil	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH103ES1 1.50 - 1.50 SOLID 14/04/2023 00:00:00 21/04/2023 10:00:00 230421-102 27873165 TM048	25/04/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Asbestos Quantification - Full

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Additional Asbestos Components	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM	Asbestos Quantification - Total - %
Cust. Sample Ref.	BH102ES1	None (#)	N/A	<0.001 (#)	<0.001 (#)	<0.001 (#)
Depth (m)	1.00 - 1.00					
Sample Type	SOLID					
Date Sampled	14/04/2023 00:00:00					
Date Receieved	21/04/2023 10:00:00					
SDG	230421-102					
Original Sample	27873156					
Method Number	TM304					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.117	**Natural Moisture Content (%)**	30.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	76.7
Particle Size <4mm	>95%		

Case	
SDG	230421-102
Lab Sample Number(s)	27873156
Sampled Date	14-Apr-2023
Customer Sample Ref.	BH102 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	14.9	3	5	6
Loss on Ignition (%)	16.7	-	-	10
Sum of BTEX (mg/kg)	<0.8	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	337	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.75	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.265	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00159	<0.0005	0.0159	<0.005	0.5	2	25
Barium	0.0158	<0.0002	0.158	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00167	<0.0003	0.0167	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00919	<0.003	0.0919	<0.03	0.5	10	30
Nickel	0.00113	<0.0004	0.0113	<0.004	0.4	10	40
Lead	0.000353	<0.0002	0.00353	<0.002	0.5	10	50
Antimony	0.00127	<0.001	0.0127	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00931	<0.001	0.0931	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	5.8	<2	58	<20	1000	20000	50000
Total Dissolved Solids	176	<10	1760	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	10.7	<3	107	<30	500	800	1000

Leach Test Information

Date Prepared	24-Apr-2023
pH (pH Units)	8.30
Conductivity (µS/cm)	230
Volume Leachant (Litres)	0.873

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 15:47:21

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	9.25
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91.5
Particle Size <4mm	>95%		

Case	
SDG	230421-102
Lab Sample Number(s)	27873165
Sampled Date	14-Apr-2023
Customer Sample Ref.	BH103 ES1
Depth (m)	1.50 - 1.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.261	3	5	6
Loss on Ignition (%)	2.45	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	8.98	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.5	-	>6	-
ANC to pH 6 (mol/kg)	0.0574	-	-	-
ANC to pH 4 (mol/kg)	0.813	-	-	-

Eluate Analysis	**C2** Concⁿ in 10:1 eluate (mg/l)		**A2** 10:1 concⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0041	<0.0005	0.041	<0.005	0.5	2	25
Barium	0.0186	<0.0002	0.186	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.0015	<0.0003	0.015	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00503	<0.003	0.0503	<0.03	0.5	10	30
Nickel	0.00496	<0.0004	0.0496	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00151	<0.001	0.0151	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00214	<0.001	0.0214	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	98.8	<10	988	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.53	<3	55.3	<30	500	800	1000

Leach Test Information

Date Prepared	24-Apr-2023
pH (pH Units)	8.43
Conductivity (µS/cm)	129
Volume Leachant (Litres)	0.892

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 15:47:21

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
TPT03	1.50	1.60	ES	5	26.5.23	Env Repo										1	1				230601-67	
TPT04	0.10	0.20	ES	3	26.5.23	Env Repo										1	1				230601-67	
TPT05	1.00	1.10	ES	5	25.5.23	Env Repo										1	1				230601-67	
TPT06	0.30	0.40	ES	3	25.5.23	Env Repo										1	1				230601-67	
TPT07	0.30	0.40	ES	3	25.5.23	Env Repo										1	1				230601-67	
TPT09	0.50	0.60	ES	3	25.5.23	Env Repo										1	1				230601-67	
TPT10	0.20	0.30	ES	3	25.5.23	Env Repo										1	1				230601-67	
TPT11	0.20	0.30	ES	2	24.5.23	Env Repo										1	1				230601-67	
TPT12	0.30	0.40	ES	3	23.5.23	Env Repo										1	1				230601-67	
TPT13	0.2	0.3	ES 1		16.5.23	Env Repo										1	1				230526-70	
TPT14	0.15	0.3	ES 1		16.5.23	Env Repo										1	1				230526-70	
TPT15	0.40	0.50	ES	3	16.5.23	Env Repo										1	1				230526-70	
TPT16	0.80	0.90	ES 1	5	15.5.23	Env Repo										1	1				230518-59	
TPT17	2.1	2.2	ES 1	5	15.5.23	Env Repo										1	1				230518-59	
TPT18	1.3	1.4	ES 1	5	15.5.23	Env Repo										1	1				230518-59	

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM304	Asbestos Quantification in Soil: Fibres identified by morphology only
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	27873156	27873165
Customer Sample Ref.	BH102	BH103
AGS Ref.	ES1	ES1
Depth	1.00 - 1.00	1.50 - 1.50
Type	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	27-Apr-2023	27-Apr-2023
Anions by Kone (w)	27-Apr-2023	27-Apr-2023
Anions in soil by IC	28-Apr-2023	28-Apr-2023
Asbestos ID in Solid Samples	26-Apr-2023	25-Apr-2023
Asbestos Quantification - Full	27-Apr-2023	
CEN 10:1 Leachate (1 Stage)	25-Apr-2023	25-Apr-2023
CEN Readings	27-Apr-2023	27-Apr-2023
Chromium III	28-Apr-2023	28-Apr-2023
Coronene	26-Apr-2023	26-Apr-2023
Cyanide Comp/Free/Total/Thiocyanate	26-Apr-2023	26-Apr-2023
Dissolved Metals by ICP-MS	27-Apr-2023	27-Apr-2023
Dissolved Organic/Inorganic Carbon	27-Apr-2023	27-Apr-2023
EPH	26-Apr-2023	26-Apr-2023
EPH by GCxGC-FID	26-Apr-2023	26-Apr-2023
EPH CWG GC (S)	26-Apr-2023	26-Apr-2023
Fluoride	27-Apr-2023	27-Apr-2023
GRO by GC-FID (S)	25-Apr-2023	26-Apr-2023
Hexavalent Chromium (s)	26-Apr-2023	26-Apr-2023
Loss on Ignition in soils	27-Apr-2023	27-Apr-2023
Magnesium (BRE)	09-May-2023	04-May-2023
Mercury Dissolved	28-Apr-2023	28-Apr-2023
Metals in solid samples by OES	28-Apr-2023	28-Apr-2023
Moisture at 105C	24-Apr-2023	24-Apr-2023
PAH 16 & 17 Calc	26-Apr-2023	25-Apr-2023
PAH by GCMS	26-Apr-2023	26-Apr-2023
PCBs by GCMS	27-Apr-2023	27-Apr-2023
pH	25-Apr-2023	25-Apr-2023
pH Value of Filtered Water	27-Apr-2023	27-Apr-2023
Phenols by HPLC (S)	26-Apr-2023	26-Apr-2023
Phenols by HPLC (W)	27-Apr-2023	27-Apr-2023
Sample description	22-Apr-2023	23-Apr-2023
Semi Volatile Organic Compounds	27-Apr-2023	27-Apr-2023
Total Organic Carbon	28-Apr-2023	28-Apr-2023
Total Sulphate	28-Apr-2023	28-Apr-2023
Total Sulphur	28-Apr-2023	28-Apr-2023
TPH CWG GC (S)	26-Apr-2023	26-Apr-2023
VOC MS (S)	25-Apr-2023	25-Apr-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230421-102	N/A	N/A	01/06/2023	Client Reference Change	2023WH101	2023OY104	688118

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230421-103
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	690980
Order Number:	12380

This report has been revised and directly supersedes 688333 in its entirety.

We received 2 samples on Friday April 21, 2023 and 2 of these samples were scheduled for analysis which was completed on Wednesday May 10, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27873185	BH104	ES1	1.00 - 1.00	18/04/2023
27873191	BH105	ES1	1.00 - 1.00	18/04/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27873185				27873191	
Customer Sample Reference			BH104				BH105	
AGS Reference			ES1				ES1	
Depth (m)			1.00 - 1.00				1.00 - 1.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 2		X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 2	X				X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X			X		
CEN Readings	All	NDPs: 0 Tests: 2	X				X	
Chromium III	All	NDPs: 0 Tests: 2		X			X	
Coronene	All	NDPs: 0 Tests: 2		X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2		X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	X				X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2	X				X	
EPH	All	NDPs: 0 Tests: 2		X			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X	
Fluoride	All	NDPs: 0 Tests: 2	X				X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27873185			27873191	
Customer Sample Reference					BH104			BH105	
AGS Reference					ES1			ES1	
Depth (m)					1.00 - 1.00			1.00 - 1.00	
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 2			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 2			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 2		X				X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 2			X			X	
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 2			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 2			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 2			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 2			X			X	
pH	All	NDPs: 0 Tests: 2			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 2		X				X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2		X				X	
Sample description	All	NDPs: 0 Tests: 2			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)				27873185				27873191	
Customer Sample Reference				BH104				BH105	
AGS Reference				ES1				ES1	
Depth (m)				1.00 - 1.00				1.00 - 1.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S
Total Organic Carbon	All	NDPs: 0 Tests: 2		X			X	
Total Sulphur	All	NDPs: 0 Tests: 2		X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X	
VOC MS (S)	All	NDPs: 0 Tests: 2			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27873185	BH104	1.00 - 1.00	Dark Brown	Sandy Silt Loam	Stones	Vegetation
27873191	BH105	1.00 - 1.00	Dark Brown	Silty Clay	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	42	13				
Loss on ignition	<0.7 %	TM018	22.9 M	0.913 M				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Organic Carbon, Total	<0.2 %	TM132	11.6 M	<0.2 M				
Sulphur, Total	<0.02 %	TM132	0.0389 #	0.032 #				
Organic Matter, Total	<0.35 %	TM132	20 #	<0.35 #				
Sulphate, Total potential	<0.06 %	TM132	0.117	0.096				
pH	1 pH Units	TM133	8.04 M	9.01 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
Chromium, Trivalent	<0.9 mg/kg	TM181	24.8	8.76				
Antimony	<0.6 mg/kg	TM181	4.78 #	<0.6 #				
Arsenic	<0.6 mg/kg	TM181	9.73 M	6.86 M				
Barium	<0.6 mg/kg	TM181	76.5 #	31.6 #				
Beryllium	<0.01 mg/kg	TM181	0.424 M	0.451 M				
Boron	<0.7 mg/kg	TM181	4.85 #	3.14 #				
Cadmium	<0.02 mg/kg	TM181	1.79 M	1.22 M				
Chromium	<0.9 mg/kg	TM181	24.8 M	8.76 M				
Copper	<1.4 mg/kg	TM181	152 M	13.7 M				
Lead	<0.7 mg/kg	TM181	117 M	16.3 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Molybdenum	<0.1 mg/kg	TM181	2.34 #	0.433 #				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Nickel	<0.2 mg/kg	TM181	50.1 M	31.2 M				
Selenium	<1 mg/kg	TM181	1.02 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	15.1 #	14.1 #				
Zinc	<1.9 mg/kg	TM181	236 M	89.3 M				
ANC @ pH 4	<0.03 mol/kg	TM182	0.257	4.17				
ANC @ pH 6	<0.03 mol/kg	TM182	<0.03	0.0842				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0156 M	0.0113 M				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.0525	0.00376				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	794	<318				
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10				
Coronene	<200 µg/kg	TM410	<200	<200				
EPH (C5-C40)	<35 mg/kg	TM415	597	<35				
EPH Surrogate % recovery**	%	TM415	105	90.9				
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	597 M	<35 M				
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	145	<5				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	85	93.9				
Acenaphthene-d10 % recovery**	%	TM218	94.1	93.5				
Phenanthrene-d10 % recovery**	%	TM218	110	101				
Chrysene-d12 % recovery**	%	TM218	92.6	96.5				
Perylene-d12 % recovery**	%	TM218	84	100				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	46.2 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	125 M	<17 M				
Pyrene	<15 µg/kg	TM218	105 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	61.2 M	<14 M				
Chrysene	<10 µg/kg	TM218	83.8 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	114 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	40 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	59 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	70.5 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	89.4 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	794	<118				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	57.7 4	122				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	2550 #	<1000 #				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	37600 #	<1000 #				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	195000 #	<1000 #				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	45500	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	281000	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	820000	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	2750 #	<1000 #				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	28400 #	<1000 #				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	366000 #	<1000 #				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	141000	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	51900	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	539000	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	820000	<10000				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 4	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 4	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 4	<20				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	112	100				
Toluene-d8**	%	TM116	94.6	95.9				
4-Bromofluorobenzene**	%	TM116	99.8	104				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<200 M	<10 M				
Benzene	<1 µg/kg	TM116	<180 M	<9 M				
Toluene	<1 µg/kg	TM116	<140 M	<7 M				
Ethylbenzene	<1 µg/kg	TM116	<80 M	<4 M				
p/m-Xylene	<2 µg/kg	TM116	<200 #	<10 #				
o-Xylene	<2 µg/kg	TM116	<200 M	<10 M				
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4	<0.02				
Sum of BTEX	<7 µg/kg	TM116	<800	<40				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH104ES1 1.00 - 1.00 SOLID 18/04/2023 00:00:00 21/04/2023 10:00:00 230421-103 27873185 TM048	26/04/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH105ES1 1.00 - 1.00 SOLID 18/04/2023 00:00:00 21/04/2023 10:00:00 230421-103 27873191 TM048	25/04/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.177	**Natural Moisture Content (%)**	95.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	51.2
Particle Size <4mm	>95%		

Case	
SDG	230421-103
Lab Sample Number(s)	27873185
Sampled Date	18-Apr-2023
Customer Sample Ref.	BH104 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	11.6	3	5	6
Loss on Ignition (%)	22.9	-	-	10
Sum of BTEX (mg/kg)	<0.8	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	145	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.04	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.257	-	-	-

Eluate Analysis	**C2** Concⁿ in 10:1 eluate (mg/l)		**A2** 10:1 concⁿ leached (mg/kg)		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Arsenic	-	-	-	-	0.5	2	25
Barium	-	-	-	-	20	100	300
Barium	0.0405	<0.0002	0.405	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Cadmium	-	-	-	-	0.04	1	5
Chromium	-	-	-	-	0.5	10	70
Chromium	0.00321	<0.001	0.0321	<0.01	0.5	10	70
Copper	0.00522	<0.0003	0.0522	<0.003	2	50	100
Copper	-	-	-	-	2	50	100
Mercury Dissolved (CVAF)	-	-	-	-	0.01	0.2	2
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00521	<0.003	0.0521	<0.03	0.5	10	30
Molybdenum	-	-	-	-	0.5	10	30
Nickel	-	-	-	-	0.4	10	40
Nickel	0.00175	<0.0004	0.0175	<0.004	0.4	10	40
Lead	0.000719	<0.0002	0.00719	<0.002	0.5	10	50
Lead	-	-	-	-	0.5	10	50
Antimony	-	-	-	-	0.06	0.7	5
Antimony	0.00531	<0.001	0.0531	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Selenium	-	-	-	-	0.1	0.5	7

Leach Test Information

Date Prepared	24-Apr-2023
pH (pH Units)	8.28
Conductivity (µS/cm)	292
Volume Leachant (Litres)	0.814

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 15:56:17

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.177	**Natural Moisture Content (%)**	95.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	51.2
Particle Size <4mm	>95%		

Case	
SDG	230421-103
Lab Sample Number(s)	27873185
Sampled Date	18-Apr-2023
Customer Sample Ref.	BH104 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	11.6	3	5	6
Loss on Ignition (%)	22.9	-	-	10
Sum of BTEX (mg/kg)	<0.8	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	145	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.04	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.257	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	Limit of Detection	Result	Limit of Detection			
Zinc	-	-	-	-	4	50	200
Zinc	0.00399	<0.001	0.0399	<0.01	4	50	200
Chloride	3.8	<2	38	<20	800	15000	25000
Chloride	-	-	-	-	800	15000	25000
Fluoride	-	-	-	-	10	150	500
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Sulphate (soluble)	-	-	-	-	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Dissolved Solids	225	<10	2250	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Total Monohydric Phenols (W)	-	-	-	-	1	-	-
Dissolved Organic Carbon	-	-	-	-	500	800	1000
Dissolved Organic Carbon	13.7	<3	137	<30	500	800	1000

Leach Test Information

Date Prepared	
pH (pH Units)	8.28
Conductivity (µS/cm)	292
Volume Leachant (Litres)	0.814

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 15:56:17

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.096	**Natural Moisture Content (%)**	7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.5
Particle Size <4mm	>95%		

Case	
SDG	230421-103
Lab Sample Number(s)	27873191
Sampled Date	18-Apr-2023
Customer Sample Ref.	BH105 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	0.913	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	9.01	-	>6	-
ANC to pH 6 (mol/kg)	0.0842	-	-	-
ANC to pH 4 (mol/kg)	4.17	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00126	<0.0002	0.0126	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000589	<0.0003	0.00589	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0013	<0.001	0.013	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	51.6	<10	516	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.86	<3	38.6	<30	500	800	1000

Leach Test Information

Date Prepared	24-Apr-2023
pH (pH Units)	8.46
Conductivity (µS/cm)	67
Volume Leachant (Litres)	0.894

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	27873185	27873191
Customer Sample Ref.	BH104	BH105
AGS Ref.	ES1	ES1
Depth	1.00 - 1.00	1.00 - 1.00
Type	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	27-Apr-2023	27-Apr-2023
Anions by Kone (soil)	28-Apr-2023	28-Apr-2023
Anions by Kone (w)	27-Apr-2023	27-Apr-2023
Asbestos ID in Solid Samples	26-Apr-2023	25-Apr-2023
CEN 10:1 Leachate (1 Stage)	25-Apr-2023	25-Apr-2023
CEN Readings	27-Apr-2023	27-Apr-2023
Chromium III	28-Apr-2023	28-Apr-2023
Coronene	26-Apr-2023	26-Apr-2023
Cyanide Comp/Free/Total/Thiocyanate	26-Apr-2023	26-Apr-2023
Dissolved Metals by ICP-MS	27-Apr-2023	27-Apr-2023
Dissolved Organic/Inorganic Carbon	27-Apr-2023	27-Apr-2023
EPH	26-Apr-2023	26-Apr-2023
EPH by GCxGC-FID	26-Apr-2023	26-Apr-2023
EPH CWG GC (S)	26-Apr-2023	26-Apr-2023
Fluoride	27-Apr-2023	27-Apr-2023
GRO by GC-FID (S)	25-Apr-2023	26-Apr-2023
Hexavalent Chromium (s)	26-Apr-2023	26-Apr-2023
Loss on Ignition in soils	27-Apr-2023	27-Apr-2023
Magnesium (BRE)	09-May-2023	04-May-2023
Mercury Dissolved	28-Apr-2023	28-Apr-2023
Metals in solid samples by OES	04-May-2023	04-May-2023
Moisture at 105C	24-Apr-2023	24-Apr-2023
NO3, NO2 and TON by KONE (s)	10-May-2023	10-May-2023
PAH 16 & 17 Calc	25-Apr-2023	25-Apr-2023
PAH by GCMS	26-Apr-2023	26-Apr-2023
PCBs by GCMS	28-Apr-2023	28-Apr-2023
pH	25-Apr-2023	25-Apr-2023
pH Value of Filtered Water	27-Apr-2023	27-Apr-2023
Phenols by HPLC (S)	26-Apr-2023	26-Apr-2023
Phenols by HPLC (W)	28-Apr-2023	27-Apr-2023
Sample description	22-Apr-2023	23-Apr-2023
Semi Volatile Organic Compounds	04-May-2023	04-May-2023
Total Organic Carbon	28-Apr-2023	28-Apr-2023
Total Sulphur	05-May-2023	05-May-2023
TPH CWG GC (S)	26-Apr-2023	26-Apr-2023
VOC MS (S)	25-Apr-2023	25-Apr-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230421-103	N/A	N/A	01/06/2023	Client Reference Change	2023WH101	2023OY104	688333

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230426-63
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691206
Order Number:	12380

This report has been revised and directly supersedes 688901 in its entirety.

We received 5 samples on Wednesday April 26, 2023 and 5 of these samples were scheduled for analysis which was completed on Wednesday May 10, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27899499	BH-106	ES1	4.00 - 4.00	19/04/2023
27899513	BH-109	ES1	1.00 - 1.00	20/04/2023
27899494	BH-114	ES1	1.00 - 1.00	21/04/2023
27899504	BH-115	ES1	3.00 - 3.00	20/04/2023
27899509	BH-301	ES1	1.00 - 1.00	19/04/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)													27899499			27899513			27899494			27899504			27899509	
Customer Sample Reference													BH-106			BH-109			BH-114			BH-115			BH-301	
AGS Reference													ES1			ES1			ES1			ES1			ES1	
Depth (m)													4.00 - 4.00			1.00 - 1.00			1.00 - 1.00			3.00 - 3.00			1.00 - 1.00	
Container													1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	15ml plastic tube	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type													S	S	S	S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 5												X			X		X		X			X
Anions by Kone (soil)	All	NDPs: 0 Tests: 5												X			X		X		X			X
Anions by Kone (w)	All	NDPs: 2 Tests: 4											X			N		X		X		N		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5											X			X		X		X			X	
CEN Readings	All	NDPs: 2 Tests: 3											X			N		X		X		N		
Chromium III	All	NDPs: 0 Tests: 5												X			X		X		X			X
Coronene	All	NDPs: 0 Tests: 5												X			X		X		X			X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5												X			X		X		X			X
Dissolved Metals by ICP-MS	All	NDPs: 2 Tests: 4											X			N		X		X		N		
Dissolved Organic/Inorganic Carbon	All	NDPs: 2 Tests: 4											X			N		X		X		N		
EPH	All	NDPs: 0 Tests: 5												X			X		X		X			X
EPH by GCxGC-FID	All	NDPs: 0 Tests: 5												X			X		X		X			X
EPH CWG GC (S)	All	NDPs: 0 Tests: 5												X			X		X		X			X
Fluoride	All	NDPs: 2 Tests: 4											X			N		X		X		N		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 5													X		X	X		X				X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27899499			27899513			27899494			27899504			27899509	
Customer Sample Reference			BH-106			BH-109			BH-114			BH-115			BH-301	
AGS Reference			ES1			ES1			ES1			ES1			ES1	
Depth (m)			4.00 - 4.00			1.00 - 1.00			1.00 - 1.00			3.00 - 3.00			1.00 - 1.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	15ml plastic tube	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 5		X			X		X		X			X
Loss on Ignition in soils	All	NDPs: 0 Tests: 5		X			X		X		X			X
Magnesium (BRE)	All	NDPs: 0 Tests: 5		X			X		X		X			X
Mercury Dissolved	All	NDPs: 2 Tests: 4	X			N		X		X		N	X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 5		X			X		X		X			X
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 5		X			X		X		X			X
NRA Leachate	All	NDPs: 0 Tests: 1											X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 5		X			X		X		X			X
PAH by GCMS	All	NDPs: 0 Tests: 5		X			X		X		X			X
PCBs by GCMS	All	NDPs: 0 Tests: 5		X			X		X		X			X
pH	All	NDPs: 0 Tests: 5		X			X		X		X			X
pH Value of Filtered Water	All	NDPs: 2 Tests: 4	X			N		X		X		N	X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 5		X			X		X		X			X
Phenols by HPLC (W)	All	NDPs: 2 Tests: 4	X			N		X		X		N	X	
Sample description	All	NDPs: 0 Tests: 5		X			X		X		X			X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27899499			27899513			27899494			27899504			27899509	
Customer Sample Reference			BH-106			BH-109			BH-114			BH-115			BH-301	
AGS Reference			ES1			ES1			ES1			ES1			ES1	
Depth (m)			4.00 - 4.00			1.00 - 1.00			1.00 - 1.00			3.00 - 3.00			1.00 - 1.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	15ml plastic tube	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 5		X			X		X		X			X
Total Organic Carbon	All	NDPs: 0 Tests: 5		X			X		X		X			X
Total Sulphur	All	NDPs: 0 Tests: 5		X			X		X		X			X
TPH CWG GC (S)	All	NDPs: 0 Tests: 5		X			X		X		X			X
VOC MS (S)	All	NDPs: 0 Tests: 5			X		X	X		X				X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27899499	BH-106	4.00 - 4.00	Dark Brown	Sandy Clay Loam	Stones	None
27899513	BH-109	1.00 - 1.00	Dark Brown	Peat	Vegetation	None
27899494	BH-114	1.00 - 1.00	Dark Brown	Sandy Clay Loam	Stones	None
27899504	BH-115	3.00 - 3.00	Dark Brown	Sandy Clay Loam	Stones	None
27899509	BH-301	1.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH-106	BH-109	BH-114	BH-115	BH-301
Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			.	.	.	.	.
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	16	84	14	13	79
Loss on ignition	<0.7 %	TM018	1.18 M	82 #	0.967 M	0.878 M	82.2 M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 #	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 #	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	0.128 #	<0.015 M	<0.015 M	0.141 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 #	<0.035 M	<0.035 M	<0.035 M
Carbon, Organic (diss.filt) NRA leach	<3 mg/l	TM090					17.7
Fluoride NRA leach	<0.5 mg/l	TM104					<0.5
Organic Carbon, Total	<0.2 %	TM132	<0.2 M	16.9 #	<0.2 M	<0.2 M	24.3 M
Sulphur, Total	<0.02 %	TM132	0.0232 #	0.06 #	<0.02 #	0.0259 #	0.0275 #
Organic Matter, Total	<0.35 %	TM132	<0.35 #	29.1 #	<0.35 #	<0.35 #	41.9 #
Sulphate, Total potential	<0.06 %	TM132	0.0696	0.18	0.06	0.0777	0.0825
pH	1 pH Units	TM133	8.45 M	5.54 #	8.63 M	8.87 M	5.08 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<1.2 #	<0.6 M	<0.6 M	<0.6 M
Antimony (diss.filt) NRA leach	<1 µg/l	TM152					<1
Arsenic (diss.filt) NRA leach	<0.5 µg/l	TM152					3.8
Barium (diss.filt) NRA leach	<0.2 µg/l	TM152					0.691
Cadmium (diss.filt) NRA leach	<0.08 µg/l	TM152					<0.08
Chromium (diss.filt) NRA leach	<1 µg/l	TM152					2.33
Copper (diss.filt) NRA leach	<0.3 µg/l	TM152					1.5
Lead (diss.filt) NRA leach	<0.2 µg/l	TM152					<0.2
Molybdenum (diss.filt) NRA leach	<3 µg/l	TM152					<3
Nickel (diss.filt) NRA leach	<0.4 µg/l	TM152					1.59
Selenium (diss.filt) NRA leach	<1 µg/l	TM152					<1
Zinc (diss.filt) NRA leach	<1 µg/l	TM152					5.11
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 #	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			-	-	-	-	-
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21
Chromium, Trivalent	<0.9 mg/kg	TM181	17.8	3.58	8.35	14	4.07
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181	13.6 M	2.01 #	9.39 M	6.18 M	3.54 M
Barium	<0.6 mg/kg	TM181	27 #	14 #	28.7 #	13.4 #	27.8 #
Beryllium	<0.01 mg/kg	TM181	0.724 M	0.267 #	1.41 M	0.327 M	0.254 M
Boron	<0.7 mg/kg	TM181	0.989 #	2.5 #	2.34 #	1.23 #	3.97 #
Cadmium	<0.02 mg/kg	TM181	1.44 M	0.503 #	3.85 M	1.1 M	0.67 M
Chromium	<0.9 mg/kg	TM181	17.8 M	3.58 #	8.35 M	14 M	4.07 M
Copper	<1.4 mg/kg	TM181	17.9 M	8.04 #	15.9 M	11.8 M	11.7 M
Lead	<0.7 mg/kg	TM181	18.3 M	6.33 #	16 M	48 M	10 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 #	<0.1 M	<0.1 M	<0.1 M
Molybdenum	<0.1 mg/kg	TM181	0.664 #	0.639 #	0.586 #	0.592 #	0.943 #
Nickel	<0.2 mg/kg	TM181	55.7 M	15.9 #	85.2 M	29.4 M	18.6 M
Selenium	<1 mg/kg	TM181	<1 #	2.01 #	<1 #	<1 #	2.17 #
Vanadium	<0.2 mg/kg	TM181	16.9 #	3.79 #	17 #	12.2 #	4.65 #
Zinc	<1.9 mg/kg	TM181	153 M	49.9 #	180 M	94.6 M	55.7 M
ANC @ pH 4	<0.03 mol/kg	TM182	0.452	<0.03	0.5	0.265	0.114
ANC @ pH 6	<0.03 mol/kg	TM182	0.0551	<0.03	0.0513	0.0584	<0.03
Mercury (diss.filt) NRA leach	<0.01 µg/l	TM183					<0.01
Sulphate NRA leach	<2 mg/l	TM184					<2
Chloride NRA leach	<2 mg/l	TM184					3
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0514 M	0.0292 #	0.0165 M	0.0295 M	0.0371 M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.000566	0.00473	0.000319	0.000489	0.0146
Dissolved solids, Total (meter) NRA leach	<5 mg/l	TM256					18.3
Phenols, Total Detected monohydric NRA leach	<0.016 mg/l	TM259					<0.016
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318	<318	<318	<318
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10	<10	<10
Coronene	<200 µg/kg	TM410	<200	<200	<200	<200	<200
EPH (C5-C40)	<35 mg/kg	TM415	42.1	811	<35	<35	1040
EPH Surrogate % recovery**	%	TM415	104	94	105	100	102
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	42.1 M	811 #	<35 M	<35 M	1040 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH-106	BH-109	BH-114	BH-115	BH-301
Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			-	-	-	-	-
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	39.8	192	19.1	8.65	255

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH-106	BH-109	BH-114	BH-115	BH-301
Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			.	.	.	.	.
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
Naphthalene-d8 % recovery**	%	TM218	96.4	96	89	92.9	97.8
Acenaphthene-d10 % recovery**	%	TM218	93.9	99	87.1	90.6	94
Phenanthrene-d10 % recovery**	%	TM218	97.8	106	90	93.5	92.8
Chrysene-d12 % recovery**	%	TM218	104	104	89	95.5	88.8
Perylene-d12 % recovery**	%	TM218	111	106	94.2	100	91.5
Naphthalene	<9 µg/kg	TM218	<9 M	<9 #	<9 M	<9 M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 #	<12 M	<12 M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 #	<8 M	<8 M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 M	<10 #	<10 M	<10 M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 #	<15 M	<15 M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 M	<16 #	<16 M	<16 M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 #	<17 M	<17 M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 M	<15 #	<15 M	<15 M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 #	<14 M	<14 M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 M	<10 #	<10 M	<10 M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 #	<15 M	<15 M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 #	<14 M	<14 M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 #	<15 M	<15 M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 #	<18 M	<18 M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 #	<23 M	<23 M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 #	<24 M	<24 M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			.	.	.	.	.
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301	
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00	
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023	
Sample Time			-	-	-	-	-	
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023	
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63	
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509	
AGS Reference			ES1	ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH-106	BH-109	BH-114	BH-115	BH-301
Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			.	.	.	.	.
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM089	89.8	60.5 4	113 2	95.5 2	61.6 4
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 4	33.9 2	24.2 2	<10 4
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 4	147 2	40.3 2	<10 4
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 4	1500 2	35.7 2	<10 4
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	1250 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	5390 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	26200 #	5360 #	<1000 #	14200 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	52000 #	1630000 #	<1000 #	6690 #	580000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	5060	476000	<1000	<1000	154000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	57100	2130000	12800	6690	749000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	62700	3010000	16700	<10000	986000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4	<10 2	<10 2	<10 4
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4	<10 2	<10 2	<10 4
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4	999 2	24.2 2	<10 4
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	2780 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	1290 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	24400 #	1700 #	<1000 #	9050 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	4260 #	708000 #	<1000 #	1250 #	206000 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	140000	<1000	<1000	22500
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	14200	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	5590	877000	<5000	<5000	238000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	62700	3010000	14500	<10000	986000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50 4	1680 2	100 2	<50 4
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50 4	999 2	<50 2	<50 4
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20 4	2680 2	100 2	<20 4

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH-106	BH-109	BH-114	BH-115	BH-301
Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			.	.	.	.	.
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
Dibromofluoromethane**	%	TM116	103	102 2	110 2	100 2	103 2
Toluene-d8**	%	TM116	75.2	92.8 2	96.2 2	91.5 2	91.1 2
4-Bromofluorobenzene**	%	TM116	118	97.6 2	89.8 2	91.6 2	92.2 2
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<200 2 #	<10 2 M	<10 2 M	<200 2 M
Benzene	<1 µg/kg	TM116	<9 M	<180 2 #	<9 2 M	<9 2 M	<180 2 M
Toluene	<1 µg/kg	TM116	<7 M	<140 2 #	<7 2 M	<7 2 M	<140 2 M
Ethylbenzene	<1 µg/kg	TM116	<4 M	<80 2 #	<4 2 M	<4 2 M	<80 2 M
p/m-Xylene	<2 µg/kg	TM116	<10 #	<200 2 #	<10 2 #	<10 2 #	<200 2 #
o-Xylene	<2 µg/kg	TM116	<10 M	<200 2 #	<10 2 M	<10 2 M	<200 2 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.4 2	<0.02 2	<0.02 2	<0.4 2
Sum of BTEX	<7 µg/kg	TM116	<40	<800 2	<40 2	<40 2	<800 2

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend
- # ISO17025 accredited.
- M *m*CERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&♦§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH-106ES1 4.00 - 4.00 SOLID 19/04/2023 00:00:00 26/04/2023 05:00:00 230426-63 27899499 TM048	02/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH-109ES1 1.00 - 1.00 SOLID 20/04/2023 00:00:00 26/04/2023 05:00:00 230426-63 27899513 TM048	02/05/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH-114ES1 1.00 - 1.00 SOLID 21/04/2023 00:00:00 26/04/2023 05:00:00 230426-63 27899494 TM048	02/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH-115ES1 3.00 - 3.00 SOLID 20/04/2023 00:00:00 26/04/2023 05:00:00 230426-63 27899504 TM048	02/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH-301ES1 1.00 - 1.00 SOLID 19/04/2023 00:00:00 26/04/2023 05:00:00 230426-63 27899509 TM048	02/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	11.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	89.9
Particle Size <4mm	>95%		

Case	
SDG	230426-63
Lab Sample Number(s)	27899494
Sampled Date	21-Apr-2023
Customer Sample Ref.	BH-114 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	0.967	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	19.1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.63	-	>6	-
ANC to pH 6 (mol/kg)	0.0513	-	-	-
ANC to pH 4 (mol/kg)	0.5	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0011	<0.0002	0.011	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000574	<0.0003	0.00574	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000758	<0.0004	0.00758	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00133	<0.001	0.0133	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	57.3	<10	573	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.75	<3	37.5	<30	500	800	1000

Leach Test Information

Date Prepared	28-Apr-2023
pH (pH Units)	8.11
Conductivity (µS/cm)	76
Volume Leachant (Litres)	0.890

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

05/06/2023 09:24:44

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	83.6
Particle Size <4mm	>95%		

Case	
SDG	230426-63
Lab Sample Number(s)	27899499
Sampled Date	19-Apr-2023
Customer Sample Ref.	BH-106 ES1
Depth (m)	4.00 - 4.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	1.18	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	39.8	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.45	-	>6	-
ANC to pH 6 (mol/kg)	0.0551	-	-	-
ANC to pH 4 (mol/kg)	0.452	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00055	<0.0005	0.0055	<0.005	0.5	2	25
Barium	0.00405	<0.0002	0.0405	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000554	<0.0004	0.00554	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0027	<0.001	0.027	<0.01	4	50	200
Chloride	3	<2	30	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	68.6	<10	686	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.09	<3	30.9	<30	500	800	1000

Leach Test Information

Date Prepared	27-Apr-2023
pH (pH Units)	7.99
Conductivity (µS/cm)	90
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

05/06/2023 09:24:44

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.095	**Natural Moisture Content (%)**	5.41
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	94.9
Particle Size <4mm	>95%		

Case	
SDG	230426-63
Lab Sample Number(s)	27899504
Sampled Date	20-Apr-2023
Customer Sample Ref.	BH-115 ES1
Depth (m)	3.00 - 3.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	0.878	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	8.65	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.87	-	>6	-
ANC to pH 6 (mol/kg)	0.0584	-	-	-
ANC to pH 4 (mol/kg)	0.265	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00114	<0.0002	0.0114	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00042	<0.0003	0.0042	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000477	<0.0004	0.00477	<0.004	0.4	10	40
Lead	0.000334	<0.0002	0.00334	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	57.1	<10	571	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.82	<3	38.2	<30	500	800	1000

Leach Test Information

Date Prepared	28-Apr-2023
pH (pH Units)	8.19
Conductivity (µS/cm)	75
Volume Leachant (Litres)	0.895

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

05/06/2023 09:24:44

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Notification of NDPs (No determination possible)

Date Received : 26/04/2023 11:10:13

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
27899509	BH-301	1.00 - 1.00	Dissolved Organic/Inorganic Carbon	Sample moisture too high
27899509	BH-301	1.00 - 1.00	Fluoride	Sample moisture too high
27899509	BH-301	1.00 - 1.00	Mercury Dissolved	Sample moisture too high
27899509	BH-301	1.00 - 1.00	Dissolved Metals by ICP-MS	Sample moisture too high
27899509	BH-301	1.00 - 1.00	Anions by Kone (w)	Sample moisture too high
27899509	BH-301	1.00 - 1.00	Phenols by HPLC (W)	Sample moisture too high
27899509	BH-301	1.00 - 1.00	pH Value of Filtered Water	Sample moisture too high
27899513	BH-109	1.00 - 1.00	Dissolved Organic/Inorganic Carbon	Insufficient Sample
27899513	BH-109	1.00 - 1.00	Fluoride	Insufficient Sample
27899513	BH-109	1.00 - 1.00	Mercury Dissolved	Insufficient Sample
27899513	BH-109	1.00 - 1.00	Dissolved Metals by ICP-MS	Insufficient Sample
27899513	BH-109	1.00 - 1.00	Anions by Kone (w)	Insufficient Sample
27899513	BH-109	1.00 - 1.00	Phenols by HPLC (W)	Insufficient Sample
27899513	BH-109	1.00 - 1.00	pH Value of Filtered Water	Insufficient Sample
27899509	BH-301	1.00 - 1.00	CEN 10:1 Leachate (1 Stage)	Sample moisture too high
27899509	BH-301	1.00 - 1.00	CEN Readings	Sample moisture too high
27899509	BH-301	1.00 - 1.00	pH Value of Filtered Water	Sample moisture too high
27899513	BH-109	1.00 - 1.00	CEN 10:1 Leachate (1 Stage)	Insufficient Sample
27899513	BH-109	1.00 - 1.00	CEN Readings	Insufficient Sample
27899513	BH-109	1.00 - 1.00	pH Value of Filtered Water	Insufficient Sample

Table of Results - Appendix

Method No	Description
PM023	Leaching Procedure for NRA Leachates
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	27899499	27899513	27899494	27899504	27899509
Customer Sample Ref.	BH-106	BH-109	BH-114	BH-115	BH-301
AGS Ref.	ES1	ES1	ES1	ES1	ES1
Depth	4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	03-May-2023	03-May-2023	03-May-2023	03-May-2023	05-May-2023
Anions by Kone (soil)	03-May-2023	03-May-2023	03-May-2023	03-May-2023	03-May-2023
Anions by Kone (w)	03-May-2023		03-May-2023	03-May-2023	04-May-2023
Asbestos ID in Solid Samples	02-May-2023	02-May-2023	02-May-2023	02-May-2023	02-May-2023
CEN 10:1 Leachate (1 Stage)	27-Apr-2023		28-Apr-2023	28-Apr-2023	
CEN Readings	04-May-2023		03-May-2023	03-May-2023	
Chromium III	04-May-2023	03-May-2023	04-May-2023	04-May-2023	03-May-2023
Coronene	02-May-2023	02-May-2023	02-May-2023	02-May-2023	02-May-2023
Cyanide Comp/Free/Total/Thiocyanate	28-Apr-2023	03-May-2023	28-Apr-2023	28-Apr-2023	03-May-2023
Dissolved Metals by ICP-MS	03-May-2023		03-May-2023	03-May-2023	05-May-2023
Dissolved Organic/Inorganic Carbon	02-May-2023		02-May-2023	02-May-2023	03-May-2023
EPH	29-Apr-2023	02-May-2023	29-Apr-2023	29-Apr-2023	02-May-2023
EPH by GCxGC-FID	29-Apr-2023	02-May-2023	29-Apr-2023	29-Apr-2023	02-May-2023
EPH CWG GC (S)	29-Apr-2023	02-May-2023	29-Apr-2023	02-May-2023	02-May-2023
Fluoride	02-May-2023		02-May-2023	02-May-2023	02-May-2023
GRO by GC-FID (S)	28-Apr-2023	02-May-2023	28-Apr-2023	28-Apr-2023	02-May-2023
Hexavalent Chromium (s)	28-Apr-2023	03-May-2023	28-Apr-2023	28-Apr-2023	03-May-2023
Loss on Ignition in soils	03-May-2023	03-May-2023	03-May-2023	03-May-2023	03-May-2023
Magnesium (BRE)	04-May-2023	05-May-2023	04-May-2023	04-May-2023	05-May-2023
Mercury Dissolved	03-May-2023		03-May-2023	03-May-2023	03-May-2023
Metals in solid samples by OES	04-May-2023	03-May-2023	04-May-2023	04-May-2023	03-May-2023
Moisture at 105C	27-Apr-2023	28-Apr-2023	28-Apr-2023	28-Apr-2023	28-Apr-2023
NO3, NO2 and TON by KONE (s)	04-May-2023	04-May-2023	04-May-2023	04-May-2023	04-May-2023
NRA Leachate					29-Apr-2023
PAH 16 & 17 Calc	02-May-2023	02-May-2023	02-May-2023	02-May-2023	04-May-2023
PAH by GCMS	02-May-2023	02-May-2023	02-May-2023	02-May-2023	04-May-2023
PCBs by GCMS	03-May-2023	03-May-2023	03-May-2023	03-May-2023	04-May-2023
pH	05-May-2023	05-May-2023	05-May-2023	05-May-2023	05-May-2023
pH Value of Filtered Water	05-May-2023		03-May-2023	03-May-2023	10-May-2023
Phenols by HPLC (S)	28-Apr-2023	02-May-2023	02-May-2023	28-Apr-2023	02-May-2023
Phenols by HPLC (W)	02-May-2023		03-May-2023	03-May-2023	03-May-2023
Sample description	27-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023
Semi Volatile Organic Compounds	04-May-2023	04-May-2023	04-May-2023	04-May-2023	04-May-2023
Total Organic Carbon	04-May-2023	05-May-2023	04-May-2023	05-May-2023	05-May-2023
Total Sulphur	03-May-2023	03-May-2023	03-May-2023	03-May-2023	03-May-2023
TPH CWG GC (S)	29-Apr-2023	02-May-2023	29-Apr-2023	02-May-2023	02-May-2023
VOC MS (S)	02-May-2023	02-May-2023	02-May-2023	02-May-2023	02-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230426-63	N/A	N/A	05/06/2023	Client Reference Change	2023WH101	2023OY104	688901

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230502-27
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	690985
Order Number:	12380

This report has been revised and directly supersedes 688434 in its entirety.

We received 3 samples on Tuesday May 02, 2023 and 3 of these samples were scheduled for analysis which was completed on Thursday May 11, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27929156	BH107	ES1	1.50 - 1.50	25/04/2023
27929162	BH108	ES1	1.00 - 1.00	25/04/2023
27929167	BH113	ES1	2.00 - 2.00	25/04/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27929156				27929162				27929167	
Customer Sample Reference			BH107				BH108				BH113	
AGS Reference			ES1				ES1				ES1	
Depth (m)			1.50 - 1.50				1.00 - 1.00				2.00 - 2.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	S	S	S	S	S	S	
Alkali Metals by iCap-OES (Soil)	All	NDPs: 0 Tests: 3		X			X			X		
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 3		X			X			X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X		
Anions by Kone (w)	All	NDPs: 0 Tests: 3	X			X			X			
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X			
CEN Readings	All	NDPs: 0 Tests: 3	X			X			X			
Chromium III	All	NDPs: 0 Tests: 3		X			X			X		
Coronene	All	NDPs: 0 Tests: 3		X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X			X			X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X			X			X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3	X			X			X			
EPH	All	NDPs: 0 Tests: 3		X			X			X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3		X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X		
Fluoride	All	NDPs: 0 Tests: 3	X			X			X			

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27929156			27929162			27929167
Customer Sample Reference					BH107			BH108			BH113
AGS Reference					ES1			ES1			ES1
Depth (m)					1.50 - 1.50			1.00 - 1.00			2.00 - 2.00
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3				X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3			X			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 3			X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 3		X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 3			X			X			X	
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 3			X			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 3			X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 3			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 3			X			X			X	
pH	All	NDPs: 0 Tests: 3			X			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 3		X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3			X			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 3		X			X			X		
Sample description	All	NDPs: 0 Tests: 3			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3			X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27929156			27929162			27929167		
Customer Sample Reference			BH107			BH108			BH113		
AGS Reference			ES1			ES1			ES1		
Depth (m)			1.50 - 1.50			1.00 - 1.00			2.00 - 2.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Total Organic Carbon	All	NDPs: 0 Tests: 3		X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 3		X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 3			X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27929156	BH107	1.50 - 1.50	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27929162	BH108	1.00 - 1.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27929167	BH113	2.00 - 2.00	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			.	.	.			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	16	20	7.7			
Loss on ignition	<0.7 %	TM018	2.31 M	2.73 M	1.45 M			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M			
Organic Carbon, Total	<0.2 %	TM132	0.285 M	0.462 M	<0.2 M			
Sulphur, Total	<0.02 %	TM132	<0.02 #	0.0227 #	0.0256 #			
Organic Matter, Total	<0.35 %	TM132	0.491 #	0.796 #	<0.35 #			
pH	1 pH Units	TM133	8.35 M	8.59 M	8.65 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M			
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21			
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36			
Chromium, Trivalent	<0.9 mg/kg	TM181	12	17.5	26.4			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			-	-	-			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	0.945 #			
Arsenic	<0.6 mg/kg	TM181	7.98 M	13.6 M	18.2 M			
Barium	<0.6 mg/kg	TM181	46.2 #	62.7 #	20.5 #			
Beryllium	<0.01 mg/kg	TM181	0.496 M	1.05 M	0.512 M			
Boron	<0.7 mg/kg	TM181	1.99 #	5.08 #	<0.7 #			
Cadmium	<0.02 mg/kg	TM181	1.16 M	2.9 M	1.53 M			
Chromium	<0.9 mg/kg	TM181	12 M	17.5 M	26.4 M			
Copper	<1.4 mg/kg	TM181	8.82 M	23.1 M	20.4 M			
Lead	<0.7 mg/kg	TM181	22.3 M	23.1 M	32.8 M			
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M			
Molybdenum	<0.1 mg/kg	TM181	0.645 #	0.936 #	1.23 #			
Nickel	<0.2 mg/kg	TM181	36 M	69.5 M	84.8 M			
Selenium	<1 mg/kg	TM181	1.24 #	1.34 #	<1 #			
Vanadium	<0.2 mg/kg	TM181	21.2 #	33 #	26.2 #			
Zinc	<1.9 mg/kg	TM181	83.6 M	164 M	181 M			
ANC @ pH 4	<0.03 mol/kg	TM182	0.0713	0.316	0.305			
ANC @ pH 6	<0.03 mol/kg	TM182	<0.03	0.0328	0.048			
Magnesium	<8 mg/kg	TM224	1260	2560	329			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.004 M	0.0118 M	0.0126 M			
Nitrate as NO3, 2:1 water soluble	<1 mg/kg	TM243	1.9	6.46	<1			
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318	<318			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10			
Coronene	<200 µg/kg	TM410	<200	<200	<200			
EPH (C5-C40)	<35 mg/kg	TM415	<35	<35	96.5			
EPH Surrogate % recovery**	%	TM415	91.7	96.4	89.9			
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	<35 M	<35 M	96.5 M			
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5	90.2			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			.	.	.			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	94.6	94.5	99.3			
Acenaphthene-d10 % recovery**	%	TM218	90.1	90.6	94.1			
Phenanthrene-d10 % recovery**	%	TM218	84.5	85.4	88.4			
Chrysene-d12 % recovery**	%	TM218	75.3	75.9	80.6			
Perylene-d12 % recovery**	%	TM218	77.8	78.2	84.5			
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	20.2 M			
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	31.5 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	18.4 M			
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	18.9 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	20.4 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			.	.	.			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100			
Isophorone	<100 µg/kg	TM157	<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100			
Carbazole	<100 µg/kg	TM157	<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100			
Azobenzene	<100 µg/kg	TM157	<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			-	-	-			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100			
Anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100	<100			
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Fluorene	<100 µg/kg	TM157	<100	<100	<100			
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100			
Pyrene	<100 µg/kg	TM157	<100	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100	<100			
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH107	BH108	BH113			
Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			.	.	.			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
GRO Surrogate % recovery**	%	TM089	101	128	99.9			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	2770 #	<1000 #	67000 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	10600			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	77900			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	81100			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	1790 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	77900			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			.	.	.			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	114	109	125			
Toluene-d8**	%	TM116	98.6	97.2	97.9			
4-Bromofluorobenzene**	%	TM116	84.9	83.9	93.1			
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #	<6 #			
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #	<7 #			
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<6 @ M			
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M			
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M			
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M			
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #	<10 #			
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M	<7 M			
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #	<10 #			
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M			
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M	<10 M			
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M	<8 M			
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M			
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10	<10			
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M			
Chloroform	<3 µg/kg	TM116	<8 M	<8 M	<8 M			
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M	<7 M			
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M			
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M			
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M	<5 M			
Benzene	<1 µg/kg	TM116	<9 M	<9 M	<9 M			
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #	<9 #			
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M			
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M	<9 M			
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M	<7 M			
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M			
Toluene	<1 µg/kg	TM116	<7 M	<7 M	<7 M			
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10	<10			
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M			
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M	<7 M			

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH107	BH108	BH113			
Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			-	-	-			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M	<5 M			
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M			
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M			
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M	<5 M			
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M			
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M	<4 M			
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #	<10 #			
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M	<10 M			
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #			
Bromoform	<2 µg/kg	TM116	<10 M	<10 M	<10 M			
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #	<5 #			
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #	<10 #			
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M	<16 M			
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M			
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M			
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M	<9 M			
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M	<8 M			
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M	<10 M			
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #	<14 #			
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #	<9 #			
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10	<10			
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10	<10			
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M	<8 M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M			
n-Butylbenzene	<3 µg/kg	TM116	<11	<11	<11			
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M	<10 M			
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M	<14 M			
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #	<10 #			
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20			
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20	<20			
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M	<13 M			
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #	<20 #			
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH107	BH108	BH113			
Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			-	-	-			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02			
Sum of BTEX	<7 µg/kg	TM116	<40	<40	<40			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH107ES1 1.50 - 1.50 SOLID 25/04/2023 00:00:00 02/05/2023 10:00:00 230502-27 27929156 TM048	09/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH108ES1 1.00 - 1.00 SOLID 25/04/2023 00:00:00 02/05/2023 10:00:00 230502-27 27929162 TM048	09/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH113ES1 2.00 - 2.00 SOLID 25/04/2023 00:00:00 02/05/2023 10:00:00 230502-27 27929167 TM048	09/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.108	**Natural Moisture Content (%)**	20.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	83.1
Particle Size <4mm	>95%		

Case	
SDG	230502-27
Lab Sample Number(s)	27929156
Sampled Date	25-Apr-2023
Customer Sample Ref.	BH107 ES1
Depth (m)	1.50 - 1.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.285	3	5	6
Loss on Ignition (%)	2.31	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.35	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0713	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00166	<0.0002	0.0166	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000987	<0.0003	0.00987	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000756	<0.0004	0.00756	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00147	<0.001	0.0147	<0.01	4	50	200
Chloride	2	<2	20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	70.4	<10	704	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.44	<3	54.4	<30	500	800	1000

Leach Test Information

Date Prepared	02-May-2023
pH (pH Units)	7.95
Conductivity (µS/cm)	93
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	21.1
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.6
Particle Size <4mm	>95%		

Case	
SDG	230502-27
Lab Sample Number(s)	27929162
Sampled Date	25-Apr-2023
Customer Sample Ref.	BH108 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.462	3	5	6
Loss on Ignition (%)	2.73	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.59	-	>6	-
ANC to pH 6 (mol/kg)	0.0328	-	-	-
ANC to pH 4 (mol/kg)	0.316	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00188	<0.0002	0.0188	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00102	<0.001	0.0102	<0.01	0.5	10	70
Copper	0.000567	<0.0003	0.00567	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000666	<0.0004	0.00666	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0034	<0.001	0.034	<0.01	4	50	200
Chloride	2.4	<2	24	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	87.5	<10	875	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.54	<3	45.4	<30	500	800	1000

Leach Test Information

Date Prepared	02-May-2023
pH (pH Units)	8.10
Conductivity (µS/cm)	116
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	18.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84.4
Particle Size <4mm	>95%		

Case	
SDG	230502-27
Lab Sample Number(s)	27929167
Sampled Date	25-Apr-2023
Customer Sample Ref.	BH113 ES1
Depth (m)	2.00 - 2.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	1.45	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	90.2	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.65	-	>6	-
ANC to pH 6 (mol/kg)	0.048	-	-	-
ANC to pH 4 (mol/kg)	0.305	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0016	<0.0002	0.016	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000401	<0.0003	0.00401	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000136	<0.00001	0.000136	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00353	<0.001	0.0353	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	58	<10	580	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	02-May-2023
pH (pH Units)	7.97
Conductivity (µS/cm)	77
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 16:06:48

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM224	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	27929156	27929162	27929167
Customer Sample Ref.	BH107	BH108	BH113
AGS Ref.	ES1	ES1	ES1
Depth	1.50 - 1.50	1.00 - 1.00	2.00 - 2.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Alkali Metals by iCap-OES (Soil)	05-May-2023	05-May-2023	05-May-2023
ANC at pH4 and ANC at pH 6	09-May-2023	09-May-2023	09-May-2023
Anions by Kone (soil)	05-May-2023	05-May-2023	05-May-2023
Anions by Kone (w)	05-May-2023	05-May-2023	05-May-2023
Asbestos ID in Solid Samples	09-May-2023	09-May-2023	09-May-2023
CEN 10:1 Leachate (1 Stage)	03-May-2023	09-May-2023	09-May-2023
CEN Readings	11-May-2023	11-May-2023	11-May-2023
Chromium III	05-May-2023	06-May-2023	06-May-2023
Coronene	03-May-2023	03-May-2023	03-May-2023
Cyanide Comp/Free/Total/Thiocyanate	04-May-2023	04-May-2023	04-May-2023
Dissolved Metals by ICP-MS	09-May-2023	09-May-2023	09-May-2023
Dissolved Organic/Inorganic Carbon	05-May-2023	05-May-2023	05-May-2023
EPH	04-May-2023	04-May-2023	04-May-2023
EPH by GCxGC-FID	04-May-2023	04-May-2023	04-May-2023
EPH CWG GC (S)	05-May-2023	05-May-2023	05-May-2023
Fluoride	05-May-2023	05-May-2023	05-May-2023
GRO by GC-FID (S)	04-May-2023	04-May-2023	04-May-2023
Hexavalent Chromium (s)	05-May-2023	05-May-2023	05-May-2023
Loss on Ignition in soils	09-May-2023	09-May-2023	09-May-2023
Mercury Dissolved	09-May-2023	10-May-2023	10-May-2023
Metals in solid samples by OES	05-May-2023	05-May-2023	05-May-2023
Moisture at 105C	02-May-2023	02-May-2023	02-May-2023
NO3, NO2 and TON by KONE (s)	09-May-2023	09-May-2023	09-May-2023
PAH 16 & 17 Calc	03-May-2023	06-May-2023	06-May-2023
PAH by GCMS	03-May-2023	03-May-2023	03-May-2023
PCBs by GCMS	04-May-2023	04-May-2023	04-May-2023
pH	10-May-2023	10-May-2023	10-May-2023
pH Value of Filtered Water	11-May-2023	11-May-2023	11-May-2023
Phenols by HPLC (S)	04-May-2023	04-May-2023	04-May-2023
Phenols by HPLC (W)	09-May-2023	09-May-2023	09-May-2023
Sample description	02-May-2023	02-May-2023	02-May-2023
Semi Volatile Organic Compounds	10-May-2023	09-May-2023	04-May-2023
Total Organic Carbon	09-May-2023	09-May-2023	10-May-2023
Total Sulphur	05-May-2023	09-May-2023	09-May-2023
TPH CWG GC (S)	05-May-2023	05-May-2023	05-May-2023
VOC MS (S)	04-May-2023	04-May-2023	04-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230502-27	N/A	N/A	01/06/2023	Client Reference Change	2023WH101	2023OY104	688434

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230502-30
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691204
Order Number:	12380

This report has been revised and directly supersedes 691203 in its entirety.

We received 1 sample on Tuesday May 02, 2023 and 1 of these samples were scheduled for analysis which was completed on Thursday May 11, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27929291	BH110	ES1	1.00 - 1.00	27/04/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27929291		
Customer Sample Reference			BH110		
AGS Reference			ES1		
Depth (m)			1.00 - 1.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
Alkali Metals by iCap-OES (Soil)	All	NDPs: 0 Tests: 1		X	
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 1		X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X		
CEN Readings	All	NDPs: 0 Tests: 1	X		
Coronene	All	NDPs: 0 Tests: 1		X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1		X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X		
EPH	All	NDPs: 0 Tests: 1		X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
Fluoride	All	NDPs: 0 Tests: 1	X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27929291		
Customer Sample Reference			BH110		
AGS Reference			ES1		
Depth (m)			1.00 - 1.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
Loss on Ignition in soils	All	NDPs: 0 Tests: 1		X	
Mercury Dissolved	All	NDPs: 0 Tests: 1	X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X	
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 1		X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1		X	
PAH by GCMS	All	NDPs: 0 Tests: 1		X	
PCBs by GCMS	All	NDPs: 0 Tests: 1		X	
pH	All	NDPs: 0 Tests: 1		X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X		
Sample description	All	NDPs: 0 Tests: 1		X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X	
Total Organic Carbon	All	NDPs: 0 Tests: 1		X	
Total Sulphur	All	NDPs: 0 Tests: 1		X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27929291		
Customer Sample Reference			BH110		
AGS Reference			ES1		
Depth (m)			1.00 - 1.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
VOC MS (S)	All	NDPs: 0 Tests: 1			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27929291	BH110	1.00 - 1.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.	BH110
Depth (m)	1.00 - 1.00
Sample Type	Soil/Solid (S)
Date Sampled	27/04/2023
Sample Time	.
Date Received	02/05/2023
SDG Ref	230502-30
Lab Sample No.(s)	27929291
AGS Reference	ES1

Component	LOD/Units	Method	BH110
Moisture Content Ratio (% of as received sample)	%	PM024	12
Loss on ignition	<0.7 %	TM018	1.08 M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M
Organic Carbon, Total	<0.2 %	TM132	<0.2 M
Sulphur, Total	<0.02 %	TM132	0.0366 #
Organic Matter, Total	<0.35 %	TM132	<0.35 #
pH	1 pH Units	TM133	8.65 M
Cyanide, Total	<1 mg/kg	TM153	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21
PCB congener 81	<3 µg/kg	TM168	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36
Antimony	<0.6 mg/kg	TM181	<0.6 #
Arsenic	<0.6 mg/kg	TM181	5.03 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			-					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Barium	<0.6 mg/kg	TM181	23.2 #					
Beryllium	<0.01 mg/kg	TM181	0.256 M					
Boron	<0.7 mg/kg	TM181	2.46 #					
Cadmium	<0.02 mg/kg	TM181	0.961 M					
Chromium	<0.9 mg/kg	TM181	6.68 M					
Copper	<1.4 mg/kg	TM181	12.3 M					
Lead	<0.7 mg/kg	TM181	9.72 M					
Mercury	<0.1 mg/kg	TM181	<0.1 M					
Molybdenum	<0.1 mg/kg	TM181	0.401 #					
Nickel	<0.2 mg/kg	TM181	26.6 M					
Selenium	<1 mg/kg	TM181	<1 #					
Vanadium	<0.2 mg/kg	TM181	11.1 #					
Zinc	<1.9 mg/kg	TM181	61.2 M					
ANC @ pH 4	<0.03 mol/kg	TM182	1.81					
ANC @ pH 6	<0.03 mol/kg	TM182	0.088					
Magnesium	<8 mg/kg	TM224	2910					
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0114 M					
Nitrate as NO3, 2:1 water soluble	<1 mg/kg	TM243	4.2					
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318					
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10					
Coronene	<200 µg/kg	TM410	<200					
EPH (C5-C40)	<35 mg/kg	TM415	<35					
EPH Surrogate % recovery**	%	TM415	99.2					
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	<35 M					
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	90.1					
Acenaphthene-d10 % recovery**	%	TM218	87.4					
Phenanthrene-d10 % recovery**	%	TM218	83.4					
Chrysene-d12 % recovery**	%	TM218	74.5					
Perylene-d12 % recovery**	%	TM218	78					
Naphthalene	<9 µg/kg	TM218	<9 M					
Acenaphthylene	<12 µg/kg	TM218	<12 M					
Acenaphthene	<8 µg/kg	TM218	<8 M					
Fluorene	<10 µg/kg	TM218	<10 M					
Phenanthrene	<15 µg/kg	TM218	<15 M					
Anthracene	<16 µg/kg	TM218	<16 M					
Fluoranthene	<17 µg/kg	TM218	<17 M					
Pyrene	<15 µg/kg	TM218	<15 M					
Benz(a)anthracene	<14 µg/kg	TM218	<14 M					
Chrysene	<10 µg/kg	TM218	<10 M					
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M					
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M					
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M					
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M					
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M					
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M					
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100					
Pentachlorophenol	<100 µg/kg	TM157	<100					
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100					
Nitrobenzene	<100 µg/kg	TM157	<100					
Isophorone	<100 µg/kg	TM157	<100					
Hexachloroethane	<100 µg/kg	TM157	<100					
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100					
Hexachlorobutadiene	<100 µg/kg	TM157	<100					
Hexachlorobenzene	<100 µg/kg	TM157	<100					
n-Dioctyl phthalate	<100 µg/kg	TM157	<100					
Dimethyl phthalate	<100 µg/kg	TM157	<100					
Diethyl phthalate	<100 µg/kg	TM157	<100					
n-Dibutyl phthalate	<100 µg/kg	TM157	<100					
Dibenzofuran	<100 µg/kg	TM157	<100					
Carbazole	<100 µg/kg	TM157	<100					
Butylbenzyl phthalate	<100 µg/kg	TM157	<100					
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100					
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100					
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100					
Azobenzene	<100 µg/kg	TM157	<100					
4-Nitrophenol	<100 µg/kg	TM157	<100					
4-Nitroaniline	<100 µg/kg	TM157	<100					
4-Methylphenol	<100 µg/kg	TM157	<100					
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100					
4-Chloroaniline	<100 µg/kg	TM157	<100					
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100					
4-Bromophenylphenylether	<100 µg/kg	TM157	<100					
3-Nitroaniline	<100 µg/kg	TM157	<100					
2-Nitrophenol	<100 µg/kg	TM157	<100					
2-Nitroaniline	<100 µg/kg	TM157	<100					
2-Methylphenol	<100 µg/kg	TM157	<100					
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100					
2-Chlorophenol	<100 µg/kg	TM157	<100					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dimethylphenol	<100 µg/kg	TM157	<100					
2,4-Dichlorophenol	<100 µg/kg	TM157	<100					
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100					
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100					
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100					
2-Chloronaphthalene	<100 µg/kg	TM157	<100					
2-Methylnaphthalene	<100 µg/kg	TM157	<100					
Acenaphthylene	<100 µg/kg	TM157	<100					
Acenaphthene	<100 µg/kg	TM157	<100					
Anthracene	<100 µg/kg	TM157	<100					
Benzo(a)anthracene	<100 µg/kg	TM157	<100					
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100					
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100					
Benzo(a)pyrene	<100 µg/kg	TM157	<100					
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100					
Chrysene	<100 µg/kg	TM157	<100					
Fluoranthene	<100 µg/kg	TM157	<100					
Fluorene	<100 µg/kg	TM157	<100					
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100					
Phenanthrene	<100 µg/kg	TM157	<100					
Pyrene	<100 µg/kg	TM157	<100					
Naphthalene	<100 µg/kg	TM157	<100					
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100					
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	116					
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10					
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10					
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10					
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000					
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000					
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000					
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10					
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10					
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10					
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000					
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000					
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000					
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000					
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50					
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50					
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	115					
Toluene-d8**	%	TM116	100					
4-Bromofluorobenzene**	%	TM116	96.1					
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #					
Chloromethane	<2 µg/kg	TM116	<7 #					
Vinyl Chloride	<0.5 µg/kg	TM116	<6 M					
Bromomethane	<1 µg/kg	TM116	<10 M					
Chloroethane	<1 µg/kg	TM116	<10 M					
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M					
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #					
Carbon Disulphide	<1 µg/kg	TM116	<7 M					
Dichloromethane	<5 µg/kg	TM116	<10 #					
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M					
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M					
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M					
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M					
2,2-Dichloropropane	<1 µg/kg	TM116	<10					
Bromochloromethane	<2 µg/kg	TM116	<10 M					
Chloroform	<3 µg/kg	TM116	<8 M					
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M					
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M					
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M					
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M					
Benzene	<1 µg/kg	TM116	<9 M					
Trichloroethene	<1 µg/kg	TM116	<9 #					
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M					
Dibromomethane	<1 µg/kg	TM116	<9 M					
Bromodichloromethane	<2 µg/kg	TM116	<7 M					
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M					
Toluene	<1 µg/kg	TM116	<7 M					
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10					
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M					
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M					

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<5 M					
Dibromochloromethane	<2 µg/kg	TM116	<10 M					
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M					
Chlorobenzene	<2 µg/kg	TM116	<5 M					
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M					
Ethylbenzene	<1 µg/kg	TM116	<4 M					
p/m-Xylene	<2 µg/kg	TM116	<10 #					
o-Xylene	<2 µg/kg	TM116	<10 M					
Styrene	<2 µg/kg	TM116	<10 #					
Bromoform	<2 µg/kg	TM116	<10 M					
Isopropylbenzene	<2 µg/kg	TM116	<5 #					
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #					
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M					
Bromobenzene	<2 µg/kg	TM116	<10 M					
Propylbenzene	<2 µg/kg	TM116	<10 M					
2-Chlorotoluene	<3 µg/kg	TM116	<9 M					
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M					
4-Chlorotoluene	<3 µg/kg	TM116	<10 M					
tert-Butylbenzene	<2 µg/kg	TM116	<14 #					
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #					
sec-Butylbenzene	<1 µg/kg	TM116	<10					
4-Isopropyltoluene	<2 µg/kg	TM116	<10					
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M					
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M					
n-Butylbenzene	<3 µg/kg	TM116	<11					
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M					
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M					
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #					
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20					
Hexachlorobutadiene	<4 µg/kg	TM116	<20					
Naphthalene	<8 µg/kg	TM116	<13 M					
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #					
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02					
Sum of BTEX	<7 µg/kg	TM116	<40					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref.	BH110ES1	09/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.00 - 1.00										
Sample Type	SOLID										
Date Sampled	27/04/2023 00:00:00										
Date Receieved	02/05/2023 10:00:00										
SDG	230502-30										
Original Sample	27929291										
Method Number	TM048										

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.102	**Natural Moisture Content (%)**	13.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88
Particle Size <4mm	>95%		

Case	
SDG	230502-30
Lab Sample Number(s)	27929291
Sampled Date	27-Apr-2023
Customer Sample Ref.	BH110 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	1.08	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.65	-	>6	-
ANC to pH 6 (mol/kg)	0.088	-	-	-
ANC to pH 4 (mol/kg)	1.81	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00172	<0.0002	0.0172	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000822	<0.0003	0.00822	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000651	<0.0004	0.00651	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	61.2	<10	612	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.9	<3	39	<30	500	800	1000

Leach Test Information

Date Prepared	02-May-2023
pH (pH Units)	7.91
Conductivity (µS/cm)	71
Volume Leachant (Litres)	0.888

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

05/06/2023 09:15:40

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM224	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	27929291
Customer Sample Ref.	BH110
AGS Ref.	ES1
Depth	1.00 - 1.00
Type	Soil/Solid (S)
Alkali Metals by iCap-OES (Soil)	05-May-2023
ANC at pH4 and ANC at pH 6	09-May-2023
Anions by Kone (soil)	05-May-2023
Anions by Kone (w)	05-May-2023
Asbestos ID in Solid Samples	09-May-2023
CEN 10:1 Leachate (1 Stage)	03-May-2023
CEN Readings	11-May-2023
Coronene	03-May-2023
Cyanide Comp/Free/Total/Thiocyanate	04-May-2023
Dissolved Metals by ICP-MS	09-May-2023
Dissolved Organic/Inorganic Carbon	05-May-2023
EPH	04-May-2023
EPH by GCxGC-FID	04-May-2023
EPH CWG GC (S)	05-May-2023
Fluoride	05-May-2023
GRO by GC-FID (S)	04-May-2023
Loss on Ignition in soils	09-May-2023
Mercury Dissolved	10-May-2023
Metals in solid samples by OES	05-May-2023
Moisture at 105C	02-May-2023
NO3, NO2 and TON by KONE (s)	09-May-2023
PAH 16 & 17 Calc	03-May-2023
PAH by GCMS	03-May-2023
PCBs by GCMS	04-May-2023
pH	10-May-2023
pH Value of Filtered Water	11-May-2023
Phenols by HPLC (S)	04-May-2023
Phenols by HPLC (W)	09-May-2023
Sample description	02-May-2023
Semi Volatile Organic Compounds	04-May-2023
Total Organic Carbon	10-May-2023
Total Sulphur	09-May-2023
TPH CWG GC (S)	05-May-2023
VOC MS (S)	04-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230502-30	N/A	N/A	05/06/2023	Client Reference Change	2023WH101	2023OY104	688435

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230510-54
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691268
Order Number:	12380

This report has been revised and directly supersedes 689213 in its entirety.

We received 3 samples on Wednesday May 10, 2023 and 3 of these samples were scheduled for analysis which was completed on Wednesday May 17, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27969487	BH111	ES1	1.50 - 1.50	27/04/2023
27969493	BHSS04	ES1	3.50 - 3.50	03/05/2023
27969498	BHSS05	ES1	2.50 - 2.50	03/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27969487			27969493			27969498	
Customer Sample Reference					BH111			BHSS04			BHSS05	
AGS Reference					ES1			ES1			ES1	
Depth (m)					1.50 - 1.50			3.50 - 3.50			2.50 - 2.50	
Container					1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type					S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 3				X			X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 3				X			X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 3			X			X			X		
Anions in soil by IC	All	NDPs: 0 Tests: 3				X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3			X			X			X		
CEN Readings	All	NDPs: 0 Tests: 3			X			X			X		
Chromium III	All	NDPs: 0 Tests: 3				X			X			X	
Coronene	All	NDPs: 0 Tests: 3				X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3				X			X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3			X			X			X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3			X			X			X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3				X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3				X			X			X	
Fluoride	All	NDPs: 0 Tests: 3			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3					X			X			X

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
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LE - Land Leachate
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SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27969487			27969493			27969498
Customer Sample Reference					BH111			BHSS04			BHSS05
AGS Reference					ES1			ES1			ES1
Depth (m)					1.50 - 1.50			3.50 - 3.50			2.50 - 2.50
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3			X			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 3			X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 3			X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 3		X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 3			X			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 3			X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 3			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 3			X			X			X	
pH	All	NDPs: 0 Tests: 3			X			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 3		X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3			X			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 3		X			X			X		
Sample description	All	NDPs: 0 Tests: 3			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3			X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 3			X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27969487			27969493			27969498
Customer Sample Reference					BH111			BHSS04			BHSS05
AGS Reference					ES1			ES1			ES1
Depth (m)					1.50 - 1.50			3.50 - 3.50			2.50 - 2.50
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S
Total Sulphate	All	NDPs: 0 Tests: 3			X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 3			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 3				X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27969487	BH111	1.50 - 1.50	Light Brown	Sandy Clay Loam	Stones	None
27969493	BHSS04	3.50 - 3.50	Light Brown	Sandy Clay Loam	Stones	None
27969498	BHSS05	2.50 - 2.50	Grey	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			.	.	.			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	15	19	12			
Loss on ignition	<0.7 %	TM018	2.99 M	2.99 M	1.26 M			
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00465	0.000344	0.000243			
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0158	0.0129	0.0117			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 @ M	<0.015 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 @ M	<0.035 M	<0.035 M			
Organic Carbon, Total	<0.2 %	TM132	0.3 M	0.532 M	0.255 M			
Sulphur, Total	<0.02 %	TM132	<0.02 #	0.0283 #	0.0206 #			
Organic Matter, Total	<0.35 %	TM132	0.517 #	0.917 #	0.44 #			
Sulphate, Total potential	<0.06 %	TM132	0.06	0.0849	0.0618			
pH	1 pH Units	TM133	8.53 M	8.34 M	8.59 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M			
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 M	<1 M			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21			
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			-	-	-			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36			
Chromium, Trivalent	<0.9 mg/kg	TM181	19.2	11.4	8.04			
Arsenic	<0.6 mg/kg	TM181	13.9 M	3.59 M	2.45 M			
Barium	<0.6 mg/kg	TM181	44.8 #	25.1 #	18.1 #			
Beryllium	<0.01 mg/kg	TM181	0.887 M	0.469 M	0.368 M			
Cadmium	<0.02 mg/kg	TM181	2.74 M	0.834 M	1.83 M			
Chromium	<0.9 mg/kg	TM181	19.2 M	11.4 M	8.04 M			
Copper	<1.4 mg/kg	TM181	22 M	9.89 M	9.44 M			
Lead	<0.7 mg/kg	TM181	27.4 M	12.9 M	8.89 M			
Mercury	<0.1 mg/kg	TM181	<1 M	<0.1 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181	75.4 M	29.6 M	20.9 M			
Selenium	<1 mg/kg	TM181	<10 #	<1 #	<1 #			
Vanadium	<0.2 mg/kg	TM181	29.7 #	15.3 #	12 #			
Zinc	<1.9 mg/kg	TM181	157 M	76.1 M	70.4 M			
ANC @ pH 4	<0.03 mol/kg	TM182	0.0836	0.906	1.28			
ANC @ pH 6	<0.03 mol/kg	TM182	<0.03	0.0303	0.0479			
Sulphate, acid soluble (total)	<0.0048 %	TM221	<0.0048 M	0.0204 M	0.021 M			
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0038 M	0.0047 M	0.0036 M			
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10			
Coronene	<200 µg/kg	TM410	<200	<200	<200			
EPH Surrogate % recovery**	%	TM415	96.4	97.2	95.2			
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5	<5			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			.	.	.			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	107	100	103			
Acenaphthene-d10 % recovery**	%	TM218	100	99.9	103			
Phenanthrene-d10 % recovery**	%	TM218	95.1	99.5	94			
Chrysene-d12 % recovery**	%	TM218	97.7	91.1	106			
Perylene-d12 % recovery**	%	TM218	99.4	94.8	110			
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			.	.	.			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100			
Isophorone	<100 µg/kg	TM157	<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100			
Carbazole	<100 µg/kg	TM157	<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100			
Azobenzene	<100 µg/kg	TM157	<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157	<200	<200	<200			
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			-	-	-			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100			
Anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100	<100			
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Fluorene	<100 µg/kg	TM157	<100	<100	<100			
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100			
Pyrene	<100 µg/kg	TM157	<100	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100	<100			
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			.	.	.			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	106 @	107	100			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10	<10			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10	<10			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10	<10			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 #	<1000 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 #	<1000 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 #	<1000 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	3560 @ #	<1000 #	<1000 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000	<1000			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000 @	<5000	<5000			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10	<10			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10	<10			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10	<10			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 #	<1000 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 #	<1000 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 #	<1000 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1020 @ #	1410 #	1040 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000	<1000			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000	<1000			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 @	<50	<50			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 @	<50	<50			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 @	<20	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			.	.	.			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	113 @	107	108			
Toluene-d8**	%	TM116	106 @	101	99.6			
4-Bromofluorobenzene**	%	TM116	98.5 @	89.4	83.2			
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 @ #	<6 #	<6 #			
Chloromethane	<2 µg/kg	TM116	<7 @ #	<7 #	<7 #			
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<6 @ M			
Bromomethane	<1 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Chloroethane	<1 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 @ M	<6 M	<6 M			
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 @ #	<10 #	<10 #			
Carbon Disulphide	<1 µg/kg	TM116	<7 @ M	<7 M	<7 M			
Dichloromethane	<5 µg/kg	TM116	<10 @ #	<10 #	<10 #			
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 @ M	<10 M	<10 M			
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 @ M	<10 M	<10 M			
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 @ M	<8 M	<8 M			
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 @ M	<6 M	<6 M			
2,2-Dichloropropane	<1 µg/kg	TM116	<10 @	<10	<10			
Bromochloromethane	<2 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Chloroform	<3 µg/kg	TM116	<8 @ M	<8 M	<8 M			
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 @ M	<7 M	<7 M			
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Carbontetrachloride	<0.5 µg/kg	TM116	<10 @ M	<10 M	<10 M			
1,2-Dichloroethane	<1 µg/kg	TM116	<5 @ M	<5 M	<5 M			
Benzene	<1 µg/kg	TM116	<9 @ M	<9 M	<9 M			
Trichloroethene	<1 µg/kg	TM116	<9 @ #	<9 #	<9 #			
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Dibromomethane	<1 µg/kg	TM116	<9 @ M	<9 M	<9 M			
Bromodichloromethane	<2 µg/kg	TM116	<7 @ M	<7 M	<7 M			
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Toluene	<1 µg/kg	TM116	<7 @ M	<7 M	<7 M			
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10 @	<10	<10			
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 @ M	<10 M	<10 M			
1,3-Dichloropropane	<1 µg/kg	TM116	<7 @ M	<7 M	<7 M			

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			-	-	-			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<5 @ M	<5 M	<5 M			
Dibromochloromethane	<2 µg/kg	TM116	<10 @ M	<10 M	<10 M			
1,2-Dibromoethane	<1 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Chlorobenzene	<2 µg/kg	TM116	<5 @ M	<5 M	<5 M			
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Ethylbenzene	<1 µg/kg	TM116	<4 @ M	<4 M	<4 M			
p/m-Xylene	<2 µg/kg	TM116	<10 @ #	<10 #	<10 #			
o-Xylene	<2 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #			
Bromoform	<2 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Isopropylbenzene	<2 µg/kg	TM116	<5 @ #	<5 #	<5 #			
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 @ #	<10 #	<10 #			
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 @ M	<16 M	<16 M			
Bromobenzene	<2 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Propylbenzene	<2 µg/kg	TM116	<10 @ M	<10 M	<10 M			
2-Chlorotoluene	<3 µg/kg	TM116	<9 @ M	<9 M	<9 M			
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 @ M	<8 M	<8 M			
4-Chlorotoluene	<3 µg/kg	TM116	<10 @ M	<10 M	<10 M			
tert-Butylbenzene	<2 µg/kg	TM116	<14 @ #	<14 #	<14 #			
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 @ #	<9 #	<9 #			
sec-Butylbenzene	<1 µg/kg	TM116	<10 @	<10	<10			
4-Isopropyltoluene	<2 µg/kg	TM116	<10 @	<10	<10			
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 @ M	<8 M	<8 M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 M	<5 M			
n-Butylbenzene	<3 µg/kg	TM116	<11 @	<11	<11			
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 @ M	<10 M	<10 M			
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 @ M	<14 M	<14 M			
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 @ #	<10 #	<10 #			
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20 @	<20	<20			
Hexachlorobutadiene	<4 µg/kg	TM116	<20 @	<20	<20			
Naphthalene	<8 µg/kg	TM116	<13 @ M	<13 M	<13 M			
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 @ #	<20 #	<20 #			
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			.	.	.			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02 @	<0.02	<0.02			
Sum of BTEX	<7 µg/kg	TM116	<40 @	<40	<40			

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH111ES1 1.50 - 1.50 SOLID 27/04/2023 00:00:00 10/05/2023 09:00:00 230510-54 27969487 TM048	16/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS04ES1 3.50 - 3.50 SOLID 03/05/2023 00:00:00 10/05/2023 09:00:00 230510-54 27969493 TM048	17/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS05ES1 2.50 - 2.50 SOLID 03/05/2023 00:00:00 10/05/2023 09:00:00 230510-54 27969498 TM048	17/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	15.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86.3
Particle Size <4mm	>95%		

Case	
SDG	230510-54
Lab Sample Number(s)	27969487
Sampled Date	27-Apr-2023
Customer Sample Ref.	BH111 ES1
Depth (m)	1.50 - 1.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.3	3	5	6
Loss on Ignition (%)	2.99	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.53	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0836	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.000844	<0.0002	0.00844	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00093	<0.0004	0.0093	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00125	<0.001	0.0125	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	76	<10	760	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.69	<3	66.9	<30	500	800	1000

Leach Test Information

Date Prepared	11-May-2023
pH (pH Units)	8.12
Conductivity (µS/cm)	100
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	21.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.3
Particle Size <4mm	>95%		

Case	
SDG	230510-54
Lab Sample Number(s)	27969493
Sampled Date	03-May-2023
Customer Sample Ref.	BHSS04 ES1
Depth (m)	3.50 - 3.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.532	3	5	6
Loss on Ignition (%)	2.99	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.34	-	>6	-
ANC to pH 6 (mol/kg)	0.0303	-	-	-
ANC to pH 4 (mol/kg)	0.906	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00315	<0.0005	0.0315	<0.005	0.5	2	25
Barium	0.00551	<0.0002	0.0551	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00811	<0.003	0.0811	<0.03	0.5	10	30
Nickel	0.000743	<0.0004	0.00743	<0.004	0.4	10	40
Lead	0.000201	<0.0002	0.00201	<0.002	0.5	10	50
Antimony	0.00534	<0.001	0.0534	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	138	<10	1380	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	9.05	<3	90.5	<30	500	800	1000

Leach Test Information

Date Prepared	11-May-2023
pH (pH Units)	8.28
Conductivity (µS/cm)	180
Volume Leachant (Litres)	0.880

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.108	**Natural Moisture Content (%)**	19.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	83.4
Particle Size <4mm	>95%		

Case	
SDG	230510-54
Lab Sample Number(s)	27969498
Sampled Date	03-May-2023
Customer Sample Ref.	BHSS05 ES1
Depth (m)	2.50 - 2.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.255	3	5	6
Loss on Ignition (%)	1.26	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.59	-	>6	-
ANC to pH 6 (mol/kg)	0.0479	-	-	-
ANC to pH 4 (mol/kg)	1.28	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00368	<0.0005	0.0368	<0.005	0.5	2	25
Barium	0.00409	<0.0002	0.0409	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00154	<0.0003	0.0154	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.01	<0.003	0.1	<0.03	0.5	10	30
Nickel	0.002	<0.0004	0.02	<0.004	0.4	10	40
Lead	0.00111	<0.0002	0.0111	<0.002	0.5	10	50
Antimony	0.00743	<0.001	0.0743	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00255	<0.001	0.0255	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	98.8	<10	988	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	10.4	<3	104	<30	500	800	1000

Leach Test Information

Date Prepared	11-May-2023
pH (pH Units)	8.22
Conductivity (µS/cm)	130
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	27969487	27969493	27969498
Customer Sample Ref.	BH111	BHSS04	BHSS05
AGS Ref.	ES1	ES1	ES1
Depth	1.50 - 1.50	3.50 - 3.50	2.50 - 2.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	15-May-2023	15-May-2023	15-May-2023
Anions by Kone (soil)	15-May-2023	15-May-2023	15-May-2023
Anions by Kone (w)	15-May-2023	15-May-2023	15-May-2023
Anions in soil by IC	16-May-2023	16-May-2023	16-May-2023
Asbestos ID in Solid Samples	16-May-2023	17-May-2023	17-May-2023
CEN 10:1 Leachate (1 Stage)	12-May-2023	12-May-2023	12-May-2023
CEN Readings	16-May-2023	16-May-2023	16-May-2023
Chromium III	15-May-2023	15-May-2023	15-May-2023
Coronene	15-May-2023	15-May-2023	16-May-2023
Cyanide Comp/Free/Total/Thiocyanate	16-May-2023	16-May-2023	16-May-2023
Dissolved Metals by ICP-MS	15-May-2023	15-May-2023	15-May-2023
Dissolved Organic/Inorganic Carbon	15-May-2023	15-May-2023	15-May-2023
EPH by GCxGC-FID	15-May-2023	15-May-2023	15-May-2023
EPH CWG GC (S)	15-May-2023	15-May-2023	15-May-2023
Fluoride	16-May-2023	16-May-2023	16-May-2023
GRO by GC-FID (S)	12-May-2023	12-May-2023	12-May-2023
Hexavalent Chromium (s)	15-May-2023	15-May-2023	15-May-2023
Loss on Ignition in soils	16-May-2023	16-May-2023	16-May-2023
Magnesium (BRE)	15-May-2023	17-May-2023	15-May-2023
Mercury Dissolved	16-May-2023	16-May-2023	16-May-2023
Metals in solid samples by OES	15-May-2023	15-May-2023	15-May-2023
Moisture at 105C	11-May-2023	11-May-2023	11-May-2023
PAH 16 & 17 Calc	16-May-2023	15-May-2023	17-May-2023
PAH by GCMS	16-May-2023	15-May-2023	17-May-2023
PCBs by GCMS	16-May-2023	16-May-2023	16-May-2023
pH	15-May-2023	15-May-2023	15-May-2023
pH Value of Filtered Water	16-May-2023	16-May-2023	16-May-2023
Phenols by HPLC (S)	15-May-2023	15-May-2023	15-May-2023
Phenols by HPLC (W)	16-May-2023	16-May-2023	16-May-2023
Sample description	11-May-2023	11-May-2023	11-May-2023
Semi Volatile Organic Compounds	17-May-2023	17-May-2023	17-May-2023
Total Organic Carbon	15-May-2023	15-May-2023	15-May-2023
Total Sulphate	16-May-2023	16-May-2023	16-May-2023
Total Sulphur	16-May-2023	16-May-2023	16-May-2023
TPH CWG GC (S)	15-May-2023	15-May-2023	15-May-2023
VOC MS (S)	12-May-2023	14-May-2023	14-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230510-54	N/A	N/A	05/06/2023	Client Reference Change	2023WH101	2023OY104	689213

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230510-55
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691272
Order Number:	12380

This report has been revised and directly supersedes 689214 in its entirety.

We received 8 samples on Wednesday May 10, 2023 and 8 of these samples were scheduled for analysis which was completed on Wednesday May 17, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27969521	TP201	ES1	2.30 - 3.00	02/05/2023
27969529	TP204	ES1	0.80 - 0.85	02/05/2023
27969533	TP205	ES1	2.45 - 2.55	03/05/2023
27969538	TP207	ES1	1.00 - 1.10	03/05/2023
27969545	TP209	ES1	1.00 - 1.10	03/05/2023
27969550	TP218	ES1	1.00 - 1.10	04/05/2023
27969555	TP219	ES1	1.00 - 1.10	03/05/2023
27969561	TP220	ES1	1.00 - 1.10	04/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27969521			27969529			27969533			27969538			27969545			27969550			27969555	
Customer Sample Reference			TP201			TP204			TP205			TP207			TP209			TP218			TP219	
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1	
Depth (m)			2.30 - 3.00			0.80 - 0.85			2.45 - 2.55			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Anions in soil by IC	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 8	X			X		X			X			X			X			X		
Asbestos Quantification - Full	All	NDPs: 0 Tests: 1				X																
Chromium III	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8			X		X			X			X			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
pH	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27969521			27969529			27969533			27969538			27969545			27969550			27969555	
Customer Sample Reference			TP201			TP204			TP205			TP207			TP209			TP218			TP219	
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1	
Depth (m)			2.30 - 3.00			0.80 - 0.85			2.45 - 2.55			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Sample description	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Total Sulphate	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 8			X		X			X			X			X			X			X	

27969561	TP220	ES1	1.00 - 1.10	60g VOC (ALE215)	S																		X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		X						
				1kg TUB with Handle (ALE260)	S																		

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27969521	TP201	2.30 - 3.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27969529	TP204	0.80 - 0.85	Dark Brown	Sandy Loam	Stones	Plastic
27969533	TP205	2.45 - 2.55	Light Brown	Sandy Clay Loam	Stones	None
27969538	TP207	1.00 - 1.10	Light Brown	Sandy Clay Loam	Stones	None
27969545	TP209	1.00 - 1.10	Light Brown	Sandy Clay Loam	Stones	None
27969550	TP218	1.00 - 1.10	Light Brown	Sandy Loam	Stones	None
27969555	TP219	1.00 - 1.10	Light Brown	Sandy Clay Loam	Stones	None
27969561	TP220	1.00 - 1.10	Light Brown	Sandy Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP201	TP204	TP205	TP207	TP209	TP218
Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			.	.	.	.	.	.
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	26	21	19	19	13	11
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000681	0.00134	0.000541	0.00087	0.000585	0.00223
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0273	0.0203	0.0207	0.0113	0.00866	0.00875
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0739 #	0.059 #	0.0398 #	0.0208 #	<0.02 #	0.0236 #
Organic Matter, Total	<0.35 %	TM132	1.44 #	14.5 #	0.965 #	0.652 #	<0.35 #	<0.35 #
Sulphate, Total potential	<0.06 %	TM132	0.222	0.177	0.119	0.0624	0.06	0.0708
pH	1 pH Units	TM133	8.16 M	8.12 M	5.52 M	8.46 M	8.74 M	8.98 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP201	TP204	TP205	TP207	TP209	TP218
Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			-	-	-	-	-	-
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Chromium, Trivalent	<0.9 mg/kg	TM181	15.8	8.4	17.9	19	11.8	5.79
Arsenic	<0.6 mg/kg	TM181	10.6 M	5.73 M	8.56 M	14.2 M	11.7 M	19.1 M
Barium	<0.6 mg/kg	TM181	26.6 #	61.9 #	19.1 #	28.3 #	31.3 #	18.6 #
Beryllium	<0.01 mg/kg	TM181	0.595 M	0.295 M	0.194 M	0.832 M	0.7 M	0.882 M
Cadmium	<0.02 mg/kg	TM181	1.82 M	0.776 M	2.03 M	1.86 M	1.26 M	2.51 M
Chromium	<0.9 mg/kg	TM181	15.8 M	8.4 M	17.9 M	19 M	11.8 M	5.79 M
Copper	<1.4 mg/kg	TM181	12.1 M	15.3 M	13.6 M	21.4 M	17.3 M	14.7 M
Lead	<0.7 mg/kg	TM181	17.4 M	35.2 M	23.2 M	18.5 M	18.7 M	9.46 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	40 M	19.8 M	25.3 M	51.3 M	40.6 M	61.1 M
Selenium	<1 mg/kg	TM181	6.77 #	1.13 #	3.22 #	1.07 #	1.01 #	1.32 #
Vanadium	<0.2 mg/kg	TM181	17.4 #	8.67 #	13 #	19.6 #	17.8 #	14.8 #
Zinc	<1.9 mg/kg	TM181	105 M	58.9 M	70.5 M	94.6 M	94.7 M	135 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0384 M	0.0523 M	0.00527 M	0.00484 M	<0.0048 M	<0.0048 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0053 M	0.0098 M	0.0039 M	0.0027 M	0.0046 M	0.0026 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304		<0.001 #				
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304		<0.001 #				
Additional Asbestos Components (Using TM048)		TM304		None #				
Analysts Comments		TM304		N/A				
Asbestos Quantification - Total - %	<0.001 %	TM304		<0.001 #				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	9.4	13				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000667	0.000648				
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00812	0.00757				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Sulphur, Total	<0.02 %	TM132	0.0214 #	<0.02 #				
Organic Matter, Total	<0.35 %	TM132	<0.35 #	<0.35 #				
Sulphate, Total potential	<0.06 %	TM132	0.0642	0.06				
pH	1 pH Units	TM133	8.76 M	8.86 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP219	TP220				
Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Chromium, Trivalent	<0.9 mg/kg	TM181	8.3	9.17				
Arsenic	<0.6 mg/kg	TM181	5.76 M	5.52 M				
Barium	<0.6 mg/kg	TM181	21.8 #	22.4 #				
Beryllium	<0.01 mg/kg	TM181	0.417 M	0.479 M				
Cadmium	<0.02 mg/kg	TM181	0.938 M	1.45 M				
Chromium	<0.9 mg/kg	TM181	8.3 M	9.17 M				
Copper	<1.4 mg/kg	TM181	11.7 M	15.2 M				
Lead	<0.7 mg/kg	TM181	10.4 M	13.6 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181	30.8 M	32.4 M				
Selenium	<1 mg/kg	TM181	<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	13.3 #	14.4 #				
Zinc	<1.9 mg/kg	TM181	57.6 M	78.1 M				
Sulphate, acid soluble (total)	<0.0048 %	TM221	<0.0048 M	0.0101 M				
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0041 M	0.0028 M				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			.	.	.	.	.	.
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	110	107	108	98.9	98.7	99.9
Acenaphthene-d10 % recovery**	%	TM218	98.2	109	103	98	106	98.9
Phenanthrene-d10 % recovery**	%	TM218	93.6	117	111	99	106	98.8
Chrysene-d12 % recovery**	%	TM218	91.9	127	104	86.5	111	89
Perylene-d12 % recovery**	%	TM218	91.1	105	94.3	90	106	92.6
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	99.8	106				
Acenaphthene-d10 % recovery**	%	TM218	106	101				
Phenanthrene-d10 % recovery**	%	TM218	106	93.9				
Chrysene-d12 % recovery**	%	TM218	115	90				
Perylene-d12 % recovery**	%	TM218	108	85.5				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M				
Pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M				
Chrysene	<10 µg/kg	TM218	<10 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			.	.	.	.	.	.
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<200	<200	<200	<200	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			-	-	-	-	-	-
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Acenaphthylene	<100 µg/kg	TM157	<100	<100				
Acenaphthene	<100 µg/kg	TM157	<100	<100				
Anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Fluoranthene	<100 µg/kg	TM157	<100	<100				
Fluorene	<100 µg/kg	TM157	<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100				
Phenanthrene	<100 µg/kg	TM157	<100	<100				
Pyrene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP201	TP204	TP205	TP207	TP209	TP218
Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			.	.	.	.	.	.
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM089	96.2	66.1 4 @	104	106	110	106
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	30.5 4 @	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	52.1 4 @	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	216 4 @	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	16300 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	31800 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	80200 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	163000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	41900	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	333000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	1650000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4 @	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4 @	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	144 4 @	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	8340 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	23900 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	41200 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	2090 #	891000 #	2420 #	<1000 #	1070 #	<1000 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	348000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	88600	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	1310000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	1650000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	298 4 @	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	144 4 @	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	442 4 @	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	106	107				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP201	TP204	TP205	TP207	TP209	TP218
Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			.	.	.	.	.	.
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Dibromofluoromethane**	%	TM116	104	106 2	105	105	100	110
Toluene-d8**	%	TM116	91.2	95.7 2	100	108	99.9	101
4-Bromofluorobenzene**	%	TM116	71.4	88.7 2	92.2	100	97.5	94.6
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<120 2 #	<6 #	<6 #	<6 #	<6 #
Chloromethane	<2 µg/kg	TM116	<7 #	<140 2 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<120 2 M	<6 @ M	<6 @ M	<6 @ M	<6 @ M
Bromomethane	<1 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<1 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<120 2 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<200 2 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<140 2 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<5 µg/kg	TM116	<10 #	<200 2 #	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<160 2 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<120 2 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<200 2	<10	<10	<10	<10
Bromochloromethane	<2 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<3 µg/kg	TM116	<8 M	<160 2 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<140 2 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<100 2 M	<5 M	<5 M	<5 M	<5 M
Benzene	<1 µg/kg	TM116	<9 M	<180 2 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 #	<180 2 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 M	<180 2 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<140 2 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Toluene	<1 µg/kg	TM116	<7 M	<140 2 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<200 2	<10	<10	<10	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<140 2 M	<7 M	<7 M	<7 M	<7 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP201	TP204	TP205	TP207	TP209	TP218
Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			-	-	-	-	-	-
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<100 2 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 M	<100 2 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 M	<80 2 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 #	<200 2 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<2 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Styrene	<2 µg/kg	TM116	<10 @ #	<200 2 #	<10 @ #	<10 @ #	<10 @ #	<10 @ #
Bromoform	<2 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<100 2 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<200 2 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<320 2 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<180 2 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<160 2 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<280 2 #	<14 #	<14 #	<14 #	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<180 2 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<200 2	<10	<10	<10	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<200 2	<10	<10	<10	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<160 2 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<100 2 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11	<220 2	<11	<11	<11	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<280 2 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<200 2 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<400 2	<20	<20	<20	<20
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<400 2	<20	<20	<20	<20
Naphthalene	<8 µg/kg	TM116	<13 M	<260 2 M	<13 M	<13 M	<13 M	<13 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<400 2 #	<20 #	<20 #	<20 #	<20 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<400 2	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP201	TP204	TP205	TP207	TP209	TP218
Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			-	-	-	-	-	-
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.4 2	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40	<800 2	<40	<40	<40	<40

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	111	104				
Toluene-d8**	%	TM116	99.6	97.4				
4-Bromofluorobenzene**	%	TM116	93.4	97.9				
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #				
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #				
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M				
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M				
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M				
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M				
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #				
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M				
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M				
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M				
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M				
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M				
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10				
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M				
Chloroform	<3 µg/kg	TM116	<8 M	<8 M				
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M				
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M				
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M				
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M				
Benzene	<1 µg/kg	TM116	<9 M	<9 M				
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #				
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M				
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M				
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M				
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M				
Toluene	<1 µg/kg	TM116	<7 M	<7 M				
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10				
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M				
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M				

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			-	-				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M				
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M				
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M				
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M				
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M				
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M				
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #				
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M				
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #				
Bromoform	<2 µg/kg	TM116	<10 M	<10 M				
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #				
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #				
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M				
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M				
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M				
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M				
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M				
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M				
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #				
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #				
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10				
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10				
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
n-Butylbenzene	<3 µg/kg	TM116	<11	<11				
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M				
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M				
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #				
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20				
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20				
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M				
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #				
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP219	TP220				
			Depth (m)	1.00 - 1.10	1.00 - 1.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	03/05/2023	04/05/2023				
			Sample Time	.	.				
			Date Received	10/05/2023	10/05/2023				
			SDG Ref	230510-55	230510-55				
			Lab Sample No.(s)	27969555	27969561				
			AGS Reference	ES1	ES1				
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.02	<0.02				
Sum of BTEX	<7 µg/kg	TM116		<40	<40				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP201ES1 2.30 - 3.00 SOLID 02/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969521 TM048	17/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP204ES1 0.80 - 0.85 SOLID 02/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969529 TM048	16/05/2023	Renata Bozhkov	Loose fibres in soil.	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP205ES1 2.45 - 2.55 SOLID 03/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969533 TM048	16/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP207ES1 1.00 - 1.10 SOLID 03/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969538 TM048	16/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP209ES1 1.00 - 1.10 SOLID 03/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969545 TM048	16/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP218ES1 1.00 - 1.10 SOLID 04/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969550 TM048	16/05/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP219ES1 1.00 - 1.10 SOLID 03/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969555 TM048	17/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP220ES1 1.00 - 1.10 SOLID 04/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969561 TM048	17/05/2023	Paul Poynton	Loose fibres in soil	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Asbestos Quantification - Full

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Additional Asbestos Components	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM	Asbestos Quantification - Total - %
Cust. Sample Ref.	TP204ES1	None (#)	N/A	<0.001 (#)	<0.001 (#)	<0.001 (#)
Depth (m)	0.80 - 0.85					
Sample Type	SOLID					
Date Sampled	02/05/2023 00:00:00					
Date Receieved	10/05/2023 09:00:00					
SDG	230510-55					
Original Sample	27969529					
Method Number	TM304					

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM304	Asbestos Quantification in Soil: Fibres identified by morphology only
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	27969521	27969529	27969533	27969538	27969545	27969550	27969555	27969561
Customer Sample Ref.	TP201	TP204	TP205	TP207	TP209	TP218	TP219	TP220
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	15-May-2023	17-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
Anions in soil by IC	16-May-2023	17-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023
Asbestos ID in Solid Samples	17-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	17-May-2023	17-May-2023
Asbestos Quantification - Full		16-May-2023						
Chromium III	15-May-2023	16-May-2023	15-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	15-May-2023
Cyanide Comp/Free/Total/Thiocyanate	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023
EPH CWG GC (S)	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
GRO by GC-FID (S)	12-May-2023	16-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023
Hexavalent Chromium (s)	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
Magnesium (BRE)	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
Metals in solid samples by OES	15-May-2023	16-May-2023	15-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	15-May-2023
PAH by GCMS	16-May-2023	16-May-2023	16-May-2023	15-May-2023	17-May-2023	15-May-2023	17-May-2023	16-May-2023
PCBs by GCMS	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023
pH	15-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	15-May-2023	16-May-2023	15-May-2023
Phenols by HPLC (S)	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
Sample description	11-May-2023	11-May-2023	11-May-2023	11-May-2023	11-May-2023	11-May-2023	11-May-2023	11-May-2023
Semi Volatile Organic Compounds	17-May-2023	17-May-2023	17-May-2023	17-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
Total Organic Carbon	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
Total Sulphate	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023
Total Sulphur	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023
TPH CWG GC (S)	15-May-2023	16-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
VOC MS (S)	16-May-2023	17-May-2023	15-May-2023	12-May-2023	16-May-2023	14-May-2023	14-May-2023	15-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230510-55	N/A	N/A	05/06/2023	Client Reference Change	2023WH101	2023OY104	689214

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230511-90
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691279
Order Number:	12380

This report has been revised and directly supersedes 689250 in its entirety.

We received 1 sample on Wednesday May 10, 2023 and 1 of these samples were scheduled for analysis which was completed on Wednesday May 17, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27976844	TP217	ES1	1.10 - 1.20	05/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27976844
Customer Sample Reference					TP217
AGS Reference					ES1
Depth (m)					1.10 - 1.20
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X	
Anions in soil by IC	All	NDPs: 0 Tests: 1		X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X		
Chromium III	All	NDPs: 0 Tests: 1		X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1		X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X	
Magnesium (BRE)	All	NDPs: 0 Tests: 1		X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X	
PAH by GCMS	All	NDPs: 0 Tests: 1		X	
PCBs by GCMS	All	NDPs: 0 Tests: 1		X	
pH	All	NDPs: 0 Tests: 1		X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X	
Sample description	All	NDPs: 0 Tests: 1		X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27976844
Customer Sample Reference					TP217
AGS Reference					ES1
Depth (m)					1.10 - 1.20
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X	
Total Organic Carbon	All	NDPs: 0 Tests: 1		X	
Total Sulphate	All	NDPs: 0 Tests: 1		X	
Total Sulphur	All	NDPs: 0 Tests: 1		X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
VOC MS (S)	All	NDPs: 0 Tests: 1			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27976844	TP217	1.10 - 1.20	Dark Brown	Silty Clay Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.	TP217
Depth (m)	1.10 - 1.20
Sample Type	Soil/Solid (S)
Date Sampled	05/05/2023
Sample Time	.
Date Received	10/05/2023
SDG Ref	230511-90
Lab Sample No.(s)	27976844
AGS Reference	ES1

Component	LOD/Units	Method	TP217
Moisture Content Ratio (% of as received sample)	%	PM024	19
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00222
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0204
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0299 #
Organic Matter, Total	<0.35 %	TM132	2.1 #
Sulphate, Total potential	<0.06 %	TM132	0.0897
pH	1 pH Units	TM133	7.61 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21
PCB congener 81	<3 µg/kg	TM168	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217					
Depth (m)			1.10 - 1.20					
Sample Type			Soil/Solid (S)					
Date Sampled			05/05/2023					
Sample Time			.					
Date Received			10/05/2023					
SDG Ref			230511-90					
Lab Sample No.(s)			27976844					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	13.9					
Arsenic	<0.6 mg/kg	TM181	8.36 M					
Barium	<0.6 mg/kg	TM181	50 #					
Beryllium	<0.01 mg/kg	TM181	0.684 M					
Cadmium	<0.02 mg/kg	TM181	1.51 M					
Chromium	<0.9 mg/kg	TM181	13.9 M					
Copper	<1.4 mg/kg	TM181	12.1 M					
Lead	<0.7 mg/kg	TM181	23.6 M					
Mercury	<0.1 mg/kg	TM181	<0.1 M					
Nickel	<0.2 mg/kg	TM181	40.7 M					
Selenium	<1 mg/kg	TM181	<1 #					
Vanadium	<0.2 mg/kg	TM181	23 #					
Zinc	<1.9 mg/kg	TM181	105 M					
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.021 M					
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0037 M					
Magnesium (BRE)	<0.008 g/l	TM282	<0.008					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217					
Depth (m)			1.10 - 1.20					
Sample Type			Soil/Solid (S)					
Date Sampled			05/05/2023					
Sample Time			.					
Date Received			10/05/2023					
SDG Ref			230511-90					
Lab Sample No.(s)			27976844					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	106					
Acenaphthene-d10 % recovery**	%	TM218	102					
Phenanthrene-d10 % recovery**	%	TM218	100					
Chrysene-d12 % recovery**	%	TM218	101					
Perylene-d12 % recovery**	%	TM218	100					
Naphthalene	<9 µg/kg	TM218	<9 M					
Acenaphthylene	<12 µg/kg	TM218	<12 M					
Acenaphthene	<8 µg/kg	TM218	<8 M					
Fluorene	<10 µg/kg	TM218	<10 M					
Phenanthrene	<15 µg/kg	TM218	<15 M					
Anthracene	<16 µg/kg	TM218	<16 M					
Fluoranthene	<17 µg/kg	TM218	<17 M					
Pyrene	<15 µg/kg	TM218	<15 M					
Benz(a)anthracene	<14 µg/kg	TM218	<14 M					
Chrysene	<10 µg/kg	TM218	<10 M					
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M					
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M					
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M					
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M					
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M					
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M					
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217					
Depth (m)			1.10 - 1.20					
Sample Type			Soil/Solid (S)					
Date Sampled			05/05/2023					
Sample Time			.					
Date Received			10/05/2023					
SDG Ref			230511-90					
Lab Sample No.(s)			27976844					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100					
Pentachlorophenol	<100 µg/kg	TM157	<100					
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100					
Nitrobenzene	<100 µg/kg	TM157	<100					
Isophorone	<100 µg/kg	TM157	<100					
Hexachloroethane	<100 µg/kg	TM157	<100					
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100					
Hexachlorobutadiene	<100 µg/kg	TM157	<100					
Hexachlorobenzene	<100 µg/kg	TM157	<100					
n-Dioctyl phthalate	<100 µg/kg	TM157	<100					
Dimethyl phthalate	<100 µg/kg	TM157	<100					
Diethyl phthalate	<100 µg/kg	TM157	<100					
n-Dibutyl phthalate	<100 µg/kg	TM157	<100					
Dibenzofuran	<100 µg/kg	TM157	<100					
Carbazole	<100 µg/kg	TM157	<100					
Butylbenzyl phthalate	<100 µg/kg	TM157	<100					
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100					
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100					
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100					
Azobenzene	<100 µg/kg	TM157	<100					
4-Nitrophenol	<100 µg/kg	TM157	<200					
4-Nitroaniline	<100 µg/kg	TM157	<100					
4-Methylphenol	<100 µg/kg	TM157	<100					
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100					
4-Chloroaniline	<100 µg/kg	TM157	<100					
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100					
4-Bromophenylphenylether	<100 µg/kg	TM157	<100					
3-Nitroaniline	<100 µg/kg	TM157	<100					
2-Nitrophenol	<100 µg/kg	TM157	<100					
2-Nitroaniline	<100 µg/kg	TM157	<100					
2-Methylphenol	<100 µg/kg	TM157	<100					
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100					
2-Chlorophenol	<100 µg/kg	TM157	<100					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217					
Depth (m)			1.10 - 1.20					
Sample Type			Soil/Solid (S)					
Date Sampled			05/05/2023					
Sample Time			.					
Date Received			10/05/2023					
SDG Ref			230511-90					
Lab Sample No.(s)			27976844					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dimethylphenol	<100 µg/kg	TM157	<100					
2,4-Dichlorophenol	<100 µg/kg	TM157	<100					
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100					
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100					
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100					
2-Chloronaphthalene	<100 µg/kg	TM157	<100					
2-Methylnaphthalene	<100 µg/kg	TM157	<100					
Acenaphthylene	<100 µg/kg	TM157	<100					
Acenaphthene	<100 µg/kg	TM157	<100					
Anthracene	<100 µg/kg	TM157	<100					
Benzo(a)anthracene	<100 µg/kg	TM157	<100					
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100					
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100					
Benzo(a)pyrene	<100 µg/kg	TM157	<100					
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100					
Chrysene	<100 µg/kg	TM157	<100					
Fluoranthene	<100 µg/kg	TM157	<100					
Fluorene	<100 µg/kg	TM157	<100					
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100					
Phenanthrene	<100 µg/kg	TM157	<100					
Pyrene	<100 µg/kg	TM157	<100					
Naphthalene	<100 µg/kg	TM157	<100					
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100					
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217					
Depth (m)			1.10 - 1.20					
Sample Type			Soil/Solid (S)					
Date Sampled			05/05/2023					
Sample Time			.					
Date Received			10/05/2023					
SDG Ref			230511-90					
Lab Sample No.(s)			27976844					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	92					
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10					
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10					
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10					
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	8010 #					
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000					
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	8570					
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	17700					
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10					
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10					
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10					
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	6950 #					
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1650					
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000					
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	9150					
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	17700					
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50					
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50					
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.	TP217
Depth (m)	1.10 - 1.20
Sample Type	Soil/Solid (S)
Date Sampled	05/05/2023
Sample Time	.
Date Received	10/05/2023
SDG Ref	230511-90
Lab Sample No.(s)	27976844
AGS Reference	ES1

Component	LOD/Units	Method	TP217
Dibromofluoromethane**	%	TM116	121
Toluene-d8**	%	TM116	96.9
4-Bromofluorobenzene**	%	TM116	85.1
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #
Chloromethane	<2 µg/kg	TM116	<7 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M
Bromomethane	<1 µg/kg	TM116	<10 M
Chloroethane	<1 µg/kg	TM116	<10 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<6 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 M
Dichloromethane	<5 µg/kg	TM116	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10
Bromochloromethane	<2 µg/kg	TM116	<10 M
Chloroform	<3 µg/kg	TM116	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M
Benzene	<1 µg/kg	TM116	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M
Toluene	<1 µg/kg	TM116	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.	TP217
Depth (m)	1.10 - 1.20
Sample Type	Soil/Solid (S)
Date Sampled	05/05/2023
Sample Time	.
Date Received	10/05/2023
SDG Ref	230511-90
Lab Sample No.(s)	27976844
AGS Reference	ES1

Component	LOD/Units	Method	TP217
Tetrachloroethene	<2 µg/kg	TM116	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 #
o-Xylene	<2 µg/kg	TM116	<10 M
Styrene	<2 µg/kg	TM116	<10 @ #
Bromoform	<2 µg/kg	TM116	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20
Hexachlorobutadiene	<4 µg/kg	TM116	<20
Naphthalene	<8 µg/kg	TM116	<13 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217
Depth (m)			1.10 - 1.20
Sample Type			Soil/Solid (S)
Date Sampled			05/05/2023
Sample Time			.
Date Received			10/05/2023
SDG Ref			230511-90
Lab Sample No.(s)			27976844
AGS Reference			ES1
Component	**LOD/Units**	**Method**	
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref.	TP217ES1	17/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.10 - 1.20										
Sample Type	SOLID										
Date Sampled	05/05/2023 00:00:00										
Date Receieved	10/05/2023 09:00:00										
SDG	230511-90										
Original Sample	27976844										
Method Number	TM048										

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	27976844
Customer Sample Ref.	TP217
AGS Ref.	ES1
Depth	1.10 - 1.20
Type	Soil/Solid (S)
Anions by Kone (soil)	16-May-2023
Anions in soil by IC	17-May-2023
Asbestos ID in Solid Samples	17-May-2023
Chromium III	17-May-2023
Cyanide Comp/Free/Total/Thiocyanate	16-May-2023
EPH CWG GC (S)	16-May-2023
GRO by GC-FID (S)	16-May-2023
Hexavalent Chromium (s)	15-May-2023
Magnesium (BRE)	17-May-2023
Metals in solid samples by OES	17-May-2023
PAH by GCMS	17-May-2023
PCBs by GCMS	17-May-2023
pH	16-May-2023
Phenols by HPLC (S)	15-May-2023
Sample description	12-May-2023
Semi Volatile Organic Compounds	17-May-2023
Total Organic Carbon	16-May-2023
Total Sulphate	17-May-2023
Total Sulphur	16-May-2023
TPH CWG GC (S)	16-May-2023
VOC MS (S)	15-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230511-90	N/A	N/A	05/06/2023	Client Reference Change	2023WH101	2023OY104	689250

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230515-35
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691283
Order Number:	12380

This report has been revised and directly supersedes 689863 in its entirety.

We received 12 samples on Monday May 15, 2023 and 12 of these samples were scheduled for analysis which was completed on Tuesday May 23, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27994031	TP206	ES1	1.00 - 1.10	08/05/2023
27994018	TP210	ES1	1.00 - 1.10	08/05/2023
27994023	TP211	ES1	1.00 - 1.10	09/05/2023
27994026	TP212	ES1	1.10 - 1.20	09/05/2023
27993982	TP213	ES1	1.00 - 1.10	10/05/2023
27993960	TP214	ES1	1.00 - 1.10	10/05/2023
27993970	TP215	ES1	1.00 - 1.10	10/05/2023
27993976	TP216	ES1	1.10 - 1.20	08/05/2023
27994007	TPSS02	ES1	1.90 - 2.00	10/05/2023
27994013	TPSS02	ES1	3.40 - 3.60	10/05/2023
27993996	TPSS03	ES1	1.10 - 1.20	10/05/2023
27994001	TPSS03	ES1	2.00 - 2.20	10/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27994031			27994018			27994023			27994026			27993982			27993960			27993970			27993976
Customer Sample Reference			TP206			TP210			TP211			TP212			TP213			TP214			TP215			TP216
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10			1.10 - 1.20			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10			1.10 - 1.20
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Anions in soil by IC	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 12	X			X			X		X			X			X		X					X
Chromium III	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
EPH CWG GC (S)	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 12			X			X		X			X			X		X			X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Magnesium (BRE)	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Metals in solid samples by OES	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
PAH by GCMS	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
PCBs by GCMS	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
pH	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Phenols by HPLC (S)	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Sample description	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27994031			27994018			27994023			27994026			27993982			27993960			27993970			27993976
Customer Sample Reference			TP206			TP210			TP211			TP212			TP213			TP214			TP215			TP216
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10			1.10 - 1.20			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10			1.10 - 1.20
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Total Organic Carbon	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Total Sulphate	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Total Sulphur	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
TPH CWG GC (S)	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
VOC MS (S)	All	NDPs: 0 Tests: 12			X			X		X			X			X		X			X			

27994001	TPSS03	ES1	2.00 - 2.20	60g VOC (ALE215)	S																		X
				1kg TUB with Handle (ALE260)	S		X		X		X		X		X								
27993996	TPSS03	ES1	1.10 - 1.20	60g VOC (ALE215)	S																		X
				1kg TUB with Handle (ALE260)	S		X		X		X		X		X								
27994013	TPSS02	ES1	3.40 - 3.60	60g VOC (ALE215)	S																		X
				1kg TUB with Handle (ALE260)	S		X		X		X		X		X								
27994007	TPSS02	ES1	1.90 - 2.00	60g VOC (ALE215)	S																		X
				1kg TUB with Handle (ALE260)	S		X		X		X		X		X								
27993976	TP216	ES1	1.10 - 1.20	60g VOC (ALE215)	S																		X
				250g Amber Jar (ALE210)	S		X		X		X		X		X								

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27994031	TP206	1.00 - 1.10	Dark Brown	Sandy Clay	Stones	Vegetation
27994018	TP210	1.00 - 1.10	Dark Brown	Clay Loam	Stones	None
27994023	TP211	1.00 - 1.10	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27994026	TP212	1.10 - 1.20	Dark Brown	Sandy Loam	Stones	None
27993982	TP213	1.00 - 1.10	Light Brown	Sandy Loam	Stones	None
27993960	TP214	1.00 - 1.10	Light Brown	Clay Loam	Stones	Vegetation
27993970	TP215	1.00 - 1.10	Light Brown	Sandy Clay Loam	Stones	None
27993976	TP216	1.10 - 1.20	Light Brown	Sandy Clay Loam	Stones	None
27994007	TPSS02	1.90 - 2.00	Dark Brown	Silt Loam	Stones	Vegetation
27994013	TPSS02	3.40 - 3.60	Grey	Sandy Silt Loam	Stones	None
27993996	TPSS03	1.10 - 1.20	Dark Brown	Sandy Clay	Stones	Vegetation
27994001	TPSS03	2.00 - 2.20	Grey	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP206	TP210	TP211	TP212	TP213	TP214
Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	18	15	8.1	12	7.8	19
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000264	0.00149	0.000452	0.000272	0.00216	0.000988
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0151	0.0678	0.00993	0.00867	0.0127	0.0151
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0437 #	0.039 #	0.02 #	0.0206 #	0.0368 #	0.0242 #
Organic Matter, Total	<0.35 %	TM132	1.47 #	<0.35 #	<0.35 #	<0.35 #	<0.35 #	0.921 #
Sulphate, Total potential	<0.06 %	TM132	0.131	0.117	0.06	0.0618	0.11	0.0726
pH	1 pH Units	TM133	8.32 M	8.86 M	9.06 M	8.74 M	8.89 M	5.59 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	9.66	8.24	7.8	5.84	6.75	9.18
Arsenic	<0.6 mg/kg	TM181	10 M	10.5 M	7.11 M	4.89 M	2.55 M	1.17 M
Barium	<0.6 mg/kg	TM181	44.9 #	36.4 #	23.9 #	20.9 #	16.3 #	14.6 #
Beryllium	<0.01 mg/kg	TM181	0.836 M	2.19 M	0.669 M	0.389 M	0.327 M	0.0335 M
Cadmium	<0.02 mg/kg	TM181	1.92 M	4.06 M	0.816 M	0.803 M	1.17 M	0.311 M
Chromium	<0.9 mg/kg	TM181	9.66 M	8.24 M	7.8 M	5.84 M	6.75 M	9.01 M
Copper	<1.4 mg/kg	TM181	13 M	18.5 M	13.2 M	11.7 M	8.15 M	2.69 M
Lead	<0.7 mg/kg	TM181	16.4 M	11.6 M	12.7 M	11 M	7.69 M	12.9 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	64.4 M	89.5 M	48.3 M	25.7 M	20.6 M	12.4 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	18.5 #	18.2 #	14.5 #	9.77 #	9.29 #	9.31 #
Zinc	<1.9 mg/kg	TM181	129 M	194 M	98.9 M	60.2 M	44.9 M	49.1 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.03 M	0.00839 M	0.0149 M	0.014 M	0.0208 M	0.0081 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0037 M	0.0035 M	<0.0025 M	0.0026 M	<0.0025 M	0.0026 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

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- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	9.3	6.8	29	8.9	15	10
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	<0.0002	0.000264	0.000234	0.00082	0.000428	0.000421
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00541	0.00837	0.0143	0.0129	0.0245	0.0179
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0312 #	0.0374 #	0.0271 #	0.0265 #	<0.02 #	0.0293 #
Organic Matter, Total	<0.35 %	TM132	<0.35 #	0.352 #	3.24 #	<0.35 #	0.631 #	<0.35 #
Sulphate, Total potential	<0.06 %	TM132	0.0936	0.112	0.0813	0.0795	0.06	0.0879
pH	1 pH Units	TM133	9 M	8.85 M	6.05 M	8.49 M	5.77 M	8.86 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	4.97	5.08	13.7	4.73	10.4	5.53
Arsenic	<0.6 mg/kg	TM181	4.29 M	7.94 M	1.49 M	1.24 M	1.99 M	1.44 M
Barium	<0.6 mg/kg	TM181	17.5 #	14 #	26.4 #	23.9 #	15.1 #	21.1 #
Beryllium	<0.01 mg/kg	TM181	0.271 M	0.375 M	0.182 M	0.265 M	0.125 M	0.321 M
Cadmium	<0.02 mg/kg	TM181	0.691 M	1.17 M	0.557 M	0.625 M	0.374 M	0.708 M
Chromium	<0.9 mg/kg	TM181	4.97 M	5.08 M	13.7 M	4.73 M	10.4 M	5.53 M
Copper	<1.4 mg/kg	TM181	9.25 M	12.2 M	4.7 M	8.74 M	4.3 M	9.57 M
Lead	<0.7 mg/kg	TM181	7.01 M	5.05 M	20.5 M	7.29 M	18.9 M	8.24 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	20.5 M	40 M	14.5 M	17.7 M	17 M	18.4 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	8.65 #	11.6 #	15.5 #	8.99 #	11.5 #	9.12 #
Zinc	<1.9 mg/kg	TM181	48.5 M	68.7 M	58 M	50.6 M	72.4 M	53.8 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0182 M	0.0165 M	0.0147 M	0.0191 M	0.0101 M	0.0219 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	<0.0025 M	<0.0025 M	0.0041 M	0.0033 M	0.0054 M	0.0049 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Naphthalene-d8 % recovery**	%	TM218	87	89.1	89.3	88.6	95.8	94.7
Acenaphthene-d10 % recovery**	%	TM218	88	92.2	91.9	94.2	88.6	89.2
Phenanthrene-d10 % recovery**	%	TM218	89.7	92.4	91.1	97.6	80.2	83.3
Chrysene-d12 % recovery**	%	TM218	97.7	105	100	93.3	81.4	86.8
Perylene-d12 % recovery**	%	TM218	97.9	104	98.7	91.3	81.2	82.6
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Naphthalene-d8 % recovery**	%	TM218	95.2	95.1	92.1	94.7	92.4	87.6
Acenaphthene-d10 % recovery**	%	TM218	89	88.8	89.7	87.7	86.1	90.3
Phenanthrene-d10 % recovery**	%	TM218	81.5	80.9	92.1	80.6	86.3	92.6
Chrysene-d12 % recovery**	%	TM218	83	82.7	95.5	82.1	94.7	102
Perylene-d12 % recovery**	%	TM218	82.4	81.9	93.9	82.4	94	101
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP206	TP210	TP211	TP212	TP213	TP214
Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM089	97.2	101	105	102	101	91
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	49.6	<10	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	103	<10	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	6680 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	8020 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	11500 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1090	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	27400	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	37600	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	69	<10	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1010 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	8160 #	<1000 #	<1000 #	<1000 #	<1000 #	2280 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	10200	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	37800	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	152	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	69	<50	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	221	<20	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM089	101	98	88.4	105	93.7	99.3
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	3630 #	<1000 #	1790 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	1000	<1000	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	15900	<10000	14500	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	9230 #	<1000 #	9870 #	<1000 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	1320	<1000	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	11100	<5000	12000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	11100	<10000	12000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP206	TP210	TP211	TP212	TP213	TP214
Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Dibromofluoromethane**	%	TM116	103	106	103	112	110	111
Toluene-d8**	%	TM116	98.2	102	100	100	99.8	97.8
4-Bromofluorobenzene**	%	TM116	80.9	96.7	95.3	98.4	96.6	84.9
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #	<6 #	<6 #	<6 #	<6 #
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<6 @ M	<6 @ M	<6 M	<6 M
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10	<10	<10	<10	<10
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<3 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP206	TP210	TP211	TP212	TP213	TP214
Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #	<10 #	<10 #
Bromoform	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #	<14 #	<14 #	<14 #	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10	<10	<10	<10	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20	<20	<20	<20	<20
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M	<13 M	<13 M	<13 M	<13 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #	<20 #	<20 #	<20 #	<20 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP206	TP210	TP211	TP212	TP213	TP214
Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40	<40	<40	<40	<40	<40

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Dibromofluoromethane**	%	TM116	105	109	115	113	107	112
Toluene-d8**	%	TM116	101	99.5	95.3	101	97.1	100
4-Bromofluorobenzene**	%	TM116	97	96.7	76.3	97.2	82.4	95.8
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #	<6 #	<6 #	<6 #	<6 #
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 M	<6 @ M	<6 M	<6 M	<6 M	<6 M
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10	<10	<10	<10	<10
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<3 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<2 µg/kg	TM116	<10 #	<10 @ #	<10 #	<10 #	<10 #	<10 #
Bromoform	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #	<14 #	<14 #	<14 #	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10	<10	<10	<10	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20	<20	<20	<20	<20
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M	<13 M	<13 M	<13 M	<13 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #	<20 #	<20 #	<20 #	<20 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40	<40	<40	<40	<40	<40

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend
- # ISO17025 accredited.
- M *m*CERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&♦§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP206ES1 1.00 - 1.10 SOLID 08/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994031 TM048	19/05/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP210ES1 1.00 - 1.10 SOLID 08/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994018 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP211ES1 1.00 - 1.10 SOLID 09/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994023 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP212ES1 1.10 - 1.20 SOLID 09/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994026 TM048	19/05/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP213ES1 1.00 - 1.10 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27993982 TM048	19/05/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP214ES1 1.00 - 1.10 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27993960 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP215ES1 1.00 - 1.10 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27993970 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP216ES1 1.10 - 1.20 SOLID 08/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27993976 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863

Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS02ES1 1.90 - 2.00 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994007 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS02ES1 3.40 - 3.60 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994013 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS03ES1 1.10 - 1.20 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27993996 TM048	19/05/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS03ES1 2.00 - 2.20 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994001 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	27994031	27994018	27994023	27994026	27993982	27993960	27993970	27993976	27994007	27994013
Customer Sample Ref.	TP206	TP210	TP211	TP212	TP213	TP214	TP215	TP216	TPSS02	TPSS02
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	18-May-2023	18-May-2023	18-May-2023	18-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	18-May-2023	22-May-2023
Anions in soil by IC	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023
Asbestos ID in Solid Samples	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023
Chromium III	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023
Cyanide Comp/Free/Total/Thiocyanate	18-May-2023	18-May-2023	18-May-2023	18-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	18-May-2023	19-May-2023
EPH CWG GC (S)	18-May-2023	19-May-2023	18-May-2023	18-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	18-May-2023	19-May-2023
GRO by GC-FID (S)	19-May-2023	19-May-2023	17-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023
Hexavalent Chromium (s)	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023
Magnesium (BRE)	18-May-2023	18-May-2023	18-May-2023	18-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	18-May-2023	19-May-2023
Metals in solid samples by OES	19-May-2023	19-May-2023	19-May-2023	19-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	19-May-2023	22-May-2023
PAH by GCMS	18-May-2023	18-May-2023	18-May-2023	18-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	18-May-2023	19-May-2023
PCBs by GCMS	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023
pH	17-May-2023	17-May-2023	17-May-2023	17-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	17-May-2023	18-May-2023
Phenols by HPLC (S)	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	19-May-2023	19-May-2023	19-May-2023	18-May-2023	19-May-2023
Sample description	16-May-2023	16-May-2023	16-May-2023	16-May-2023	17-May-2023	17-May-2023	17-May-2023	17-May-2023	16-May-2023	17-May-2023
Semi Volatile Organic Compounds	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023
Total Organic Carbon	19-May-2023	19-May-2023	19-May-2023	22-May-2023	19-May-2023	22-May-2023	22-May-2023	19-May-2023	19-May-2023	19-May-2023
Total Sulphate	22-May-2023	19-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023
Total Sulphur	22-May-2023	22-May-2023	18-May-2023	18-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	18-May-2023	22-May-2023
TPH CWG GC (S)	19-May-2023	19-May-2023	18-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023
VOC MS (S)	17-May-2023	17-May-2023	17-May-2023	17-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	17-May-2023	18-May-2023

Lab Sample No(s)	27993996	27994001
Customer Sample Ref.	TPSS03	TPSS03
AGS Ref.	ES1	ES1
Depth	1.10 - 1.20	2.00 - 2.20
Type	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	18-May-2023	18-May-2023
Anions in soil by IC	23-May-2023	23-May-2023
Asbestos ID in Solid Samples	19-May-2023	19-May-2023
Chromium III	23-May-2023	23-May-2023
Cyanide Comp/Free/Total/Thiocyanate	18-May-2023	18-May-2023
EPH CWG GC (S)	18-May-2023	18-May-2023
GRO by GC-FID (S)	19-May-2023	19-May-2023
Hexavalent Chromium (s)	23-May-2023	23-May-2023
Magnesium (BRE)	18-May-2023	18-May-2023
Metals in solid samples by OES	19-May-2023	19-May-2023
PAH by GCMS	18-May-2023	18-May-2023
PCBs by GCMS	22-May-2023	22-May-2023
pH	17-May-2023	17-May-2023
Phenols by HPLC (S)	18-May-2023	18-May-2023
Sample description	16-May-2023	16-May-2023
Semi Volatile Organic Compounds	18-May-2023	18-May-2023
Total Organic Carbon	19-May-2023	19-May-2023
Total Sulphate	22-May-2023	22-May-2023
Total Sulphur	18-May-2023	22-May-2023
TPH CWG GC (S)	19-May-2023	19-May-2023
VOC MS (S)	17-May-2023	17-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230515-35	N/A	N/A	05/06/2023	Client Reference Change	2023WH101	2023OY104	689863

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	06 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230515-36
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691427
Order Number:	12380

This report has been revised and directly supersedes 689862 in its entirety.

We received 3 samples on Monday May 15, 2023 and 3 of these samples were scheduled for analysis which was completed on Tuesday May 23, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27994045	BH117	ES1	4.50 - 4.50	10/05/2023
27994051	BHSS02	ES1	8.00 - 8.00	05/05/2023
27994040	BHSS03	ES1	4.00 - 4.00	10/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27994045				27994051			27994040	
Customer Sample Reference			BH117				BHSS02			BHSS03	
AGS Reference			ES1				ES1			ES1	
Depth (m)			4.50 - 4.50				8.00 - 8.00			4.00 - 4.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X	
Anions in soil by IC	All	NDPs: 0 Tests: 3		X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X		
Chromium III	All	NDPs: 0 Tests: 3		X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 3		X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
pH	All	NDPs: 0 Tests: 3		X			X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3		X			X			X	
Sample description	All	NDPs: 0 Tests: 3		X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27994045			27994051			27994040
Customer Sample Reference					BH117			BHSS02			BHSS03
AGS Reference					ES1			ES1			ES1
Depth (m)					4.50 - 4.50			8.00 - 8.00			4.00 - 4.00
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3			X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 3			X			X			X	
Total Sulphate	All	NDPs: 0 Tests: 3			X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 3			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 3				X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27994045	BH117	4.50 - 4.50	Light Brown	Sandy Silt Loam	Stones	None
27994051	BHSS02	8.00 - 8.00	Dark Brown	Sandy Silt Loam	Stones	Vegetation
27994040	BHSS03	4.00 - 4.00	Light Brown	Sandy Silt Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			.	.	.			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	13	15	9.2			
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000587	0.000298	0.000755			
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0167	0.125	0.016			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M			
Sulphur, Total	<0.02 %	TM132	<0.02 #	1.87 #	0.0265 #			
Organic Matter, Total	<0.35 %	TM132	<0.35 #	6.48 #	<0.35 #			
Sulphate, Total potential	<0.06 %	TM132	0.06	5.61	0.0795			
pH	1 pH Units	TM133	8.74 M	7.18 M	8.51 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	4.35 M	<0.6 M			
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21			
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH117	BHSS02	BHSS03			
Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			-	-	-			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Chromium, Trivalent	<0.9 mg/kg	TM181	9.62	93.2	6.29			
Arsenic	<0.6 mg/kg	TM181	1.2 M	34.6 M	1.25 M			
Barium	<0.6 mg/kg	TM181	49.7 #	20.6 #	16.4 #			
Beryllium	<0.01 mg/kg	TM181	1.18 M	0.335 M	0.274 M			
Cadmium	<0.02 mg/kg	TM181	0.853 M	67 M	0.723 M			
Chromium	<0.9 mg/kg	TM181	9.62 M	97.6 M	6.29 M			
Copper	<1.4 mg/kg	TM181	7.15 M	23.5 M	10.3 M			
Lead	<0.7 mg/kg	TM181	9.65 M	49.3 M	7.32 M			
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181	7.95 M	315 M	17.7 M			
Selenium	<1 mg/kg	TM181	<1 #	23.7 #	<1 #			
Vanadium	<0.2 mg/kg	TM181	4.87 #	246 #	9.02 #			
Zinc	<1.9 mg/kg	TM181	24.2 M	646 M	39 M			
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.00504 M	0.0318 M	0.0301 M			
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0031 M	0.0049 M	0.0035 M			
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			.	.	.			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	96	94.4	94.9			
Acenaphthene-d10 % recovery**	%	TM218	91.4	90	88.9			
Phenanthrene-d10 % recovery**	%	TM218	85	84.9	81.9			
Chrysene-d12 % recovery**	%	TM218	92.8	89	84.5			
Perylene-d12 % recovery**	%	TM218	88.1	78.6	77.5			
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			.	.	.			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100			
Isophorone	<100 µg/kg	TM157	<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100			
Carbazole	<100 µg/kg	TM157	<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100			
Azobenzene	<100 µg/kg	TM157	<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			-	-	-			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100			
Anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100	<100			
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Fluorene	<100 µg/kg	TM157	<100	<100	<100			
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100			
Pyrene	<100 µg/kg	TM157	<100	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100	<100			
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH117	BHSS02	BHSS03			
Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			.	.	.			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
GRO Surrogate % recovery**	%	TM089	107	30.9 4	98.1			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 4	<10			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 4	<10			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 4	<10			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	10200 #	<1000 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	10600	<5000			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	13200	<10000			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4	<10			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4	<10			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4	<10			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	1530 #	<1000 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	10600	<10000			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50 4	<50			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50 4	<50			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20 4	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			.	.	.			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	104	103	123			
Toluene-d8**	%	TM116	100	99.4	101			
4-Bromofluorobenzene**	%	TM116	97.9	98	97.6			
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<1200 #	<6 #			
Chloromethane	<2 µg/kg	TM116	<7 #	<1400 #	<7 #			
Vinyl Chloride	<0.5 µg/kg	TM116	<6 M	<1200 @ M	<6 @ M			
Bromomethane	<1 µg/kg	TM116	<10 M	<2000 M	<10 M			
Chloroethane	<1 µg/kg	TM116	<10 M	<2000 M	<10 M			
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<1200 M	<6 M			
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<2000 #	<10 #			
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<1400 M	<7 M			
Dichloromethane	<5 µg/kg	TM116	<10 #	<2000 #	<10 #			
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<2000 M	<10 M			
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<2000 M	<10 M			
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<1600 M	<8 M			
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<1200 M	<6 M			
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<2000	<10			
Bromochloromethane	<2 µg/kg	TM116	<10 M	<2000 M	<10 M			
Chloroform	<3 µg/kg	TM116	<8 M	<1600 M	<8 M			
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<1400 M	<7 M			
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<2000 M	<10 M			
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<2000 M	<10 M			
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<1000 M	<5 M			
Benzene	<1 µg/kg	TM116	<9 M	<1800 M	<9 M			
Trichloroethene	<1 µg/kg	TM116	<9 #	<1800 #	<9 #			
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<2000 M	<10 M			
Dibromomethane	<1 µg/kg	TM116	<9 M	<1800 M	<9 M			
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<1400 M	<7 M			
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<2000 M	<10 M			
Toluene	<1 µg/kg	TM116	<7 M	<1400 M	<7 M			
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<2000	<10			
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<2000 M	<10 M			
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<1400 M	<7 M			

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH117	BHSS02	BHSS03			
Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			-	-	-			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<1000 M	<5 M			
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<2000 M	<10 M			
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<2000 M	<10 M			
Chlorobenzene	<2 µg/kg	TM116	<5 M	<1000 M	<5 M			
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<2000 M	<10 M			
Ethylbenzene	<1 µg/kg	TM116	<4 M	<800 M	<4 M			
p/m-Xylene	<2 µg/kg	TM116	<10 #	<2000 #	<10 #			
o-Xylene	<2 µg/kg	TM116	<10 M	<2000 M	<10 M			
Styrene	<2 µg/kg	TM116	<10 #	<2000 @ #	<10 @ #			
Bromoform	<2 µg/kg	TM116	<10 M	<2000 M	<10 M			
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<1000 #	<5 #			
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<2000 #	<10 #			
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<3200 M	<16 M			
Bromobenzene	<2 µg/kg	TM116	<10 M	<2000 M	<10 M			
Propylbenzene	<2 µg/kg	TM116	<10 M	<2000 M	<10 M			
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<1800 M	<9 M			
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<1600 M	<8 M			
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<2000 M	<10 M			
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<2800 #	<14 #			
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<1800 #	<9 #			
sec-Butylbenzene	<1 µg/kg	TM116	<10	<2000	<10			
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<2000	<10			
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<1600 M	<8 M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<1000 M	<5 M			
n-Butylbenzene	<3 µg/kg	TM116	<11	<2200	<11			
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<2000 M	<10 M			
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<2800 M	<14 M			
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<2000 #	<10 #			
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<4000	<20			
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<4000	<20			
Naphthalene	<8 µg/kg	TM116	<13 M	<2600 M	<13 M			
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<4000 #	<20 #			
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<4000	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			-	-	-			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<4	<0.02			
Sum of BTEX	<7 µg/kg	TM116	<40	<8000	<40			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH117ES1 4.50 - 4.50 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-36 27994045 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS02ES1 8.00 - 8.00 SOLID 05/05/2023 00:00:00 15/05/2023 10:00:00 230515-36 27994051 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS03ES1 4.00 - 4.00 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-36 27994040 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	27994045	27994051	27994040
Customer Sample Ref.	BH117	BHSS02	BHSS03
AGS Ref.	ES1	ES1	ES1
Depth	4.50 - 4.50	8.00 - 8.00	4.00 - 4.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	22-May-2023	22-May-2023	22-May-2023
Anions in soil by IC	23-May-2023	23-May-2023	23-May-2023
Asbestos ID in Solid Samples	19-May-2023	19-May-2023	19-May-2023
Chromium III	23-May-2023	23-May-2023	23-May-2023
Cyanide Comp/Free/Total/Thiocyanate	19-May-2023	19-May-2023	19-May-2023
EPH CWG GC (S)	19-May-2023	19-May-2023	19-May-2023
GRO by GC-FID (S)	19-May-2023	19-May-2023	19-May-2023
Hexavalent Chromium (s)	23-May-2023	23-May-2023	23-May-2023
Magnesium (BRE)	19-May-2023	19-May-2023	19-May-2023
Metals in solid samples by OES	22-May-2023	22-May-2023	22-May-2023
PAH by GCMS	19-May-2023	19-May-2023	19-May-2023
PCBs by GCMS	22-May-2023	22-May-2023	22-May-2023
pH	18-May-2023	18-May-2023	18-May-2023
Phenols by HPLC (S)	18-May-2023	19-May-2023	18-May-2023
Sample description	17-May-2023	17-May-2023	17-May-2023
Semi Volatile Organic Compounds	18-May-2023	18-May-2023	18-May-2023
Total Organic Carbon	22-May-2023	19-May-2023	19-May-2023
Total Sulphate	22-May-2023	22-May-2023	22-May-2023
Total Sulphur	22-May-2023	23-May-2023	22-May-2023
TPH CWG GC (S)	19-May-2023	19-May-2023	19-May-2023
VOC MS (S)	18-May-2023	18-May-2023	18-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230515-36	N/A	N/A	06/06/2023	Client Reference Change	2023WH101	2023OY104	689862

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	06 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230518-59
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691429
Order Number:	12380

This report has been revised and directly supersedes 690424 in its entirety.

We received 14 samples on Thursday May 18, 2023 and 14 of these samples were scheduled for analysis which was completed on Friday May 26, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28014279	BH116	ES1	7.00 - 7.00	11/05/2023
28014212	BH118	ES1	3.50 - 3.50	12/05/2023
28014234	BHSS01	ES1	7.50 - 7.50	16/05/2023
28014206	TPSS01	ES1	1.00 - 1.10	11/05/2023
28014240	TPSS01	ES2	3.25 - 3.35	11/05/2023
28014246	TPSS04	ES1	2.10 - 2.20	11/05/2023
28014252	TPSS04	ES2	4.10 - 4.20	11/05/2023
28014257	TPSS05	ES1	2.60 - 2.70	11/05/2023
28014263	TPSS05	ES2	3.50 - 3.70	11/05/2023
28014269	TPSS06	ES1	1.20 - 1.30	11/05/2023
28014274	TPSS06	ES2	3.00 - 3.20	11/05/2023
28014222	TPT16	ES1	0.80 - 0.90	15/05/2023
28014229	TPT17	ES1	2.10 - 2.20	15/05/2023
28014217	TPT18	ES1	1.30 - 1.40	15/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28014279			28014212			28014234			28014206			28014240			28014246			28014252	
Customer Sample Reference			BH116			BH118			BHSS01			TPSS01			TPSS01			TPSS04			TPSS04	
AGS Reference			ES1			ES1			ES1			ES1			ES2			ES1			ES2	
Depth (m)			7.00 - 7.00			3.50 - 3.50			7.50 - 7.50			1.00 - 1.10			3.25 - 3.35			2.10 - 2.20			4.10 - 4.20	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 2 Tests: 12											N									
				X			X			X						X			X			X
Anions in soil by IC	All	NDPs: 2 Tests: 12											N									
				X			X			X						X			X			X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 14	X			X			X			X			X			X			X	
Chromium III	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
EPH CWG GC (S)	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 14																				
					X			X			X			X			X			X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
Magnesium (BRE)	All	NDPs: 2 Tests: 12											N									
				X			X			X						X			X			X
Metals in solid samples by OES	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
PAH by GCMS	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
PCBs by GCMS	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
pH	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
Sample description	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X

28014217	TPT18	ES1	1.30 - 1.40	1kg TUB with Handle (ALE260)	S			X												
28014229	TPT17	ES1	2.10 - 2.20	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28014222	TPT16	ES1	0.80 - 0.90	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28014274	TPSS06	ES2	3.00 - 3.20	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28014269	TPSS06	ES1	1.20 - 1.30	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	N	N		X	X	X		X	N	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28014263	TPSS05	ES2	3.50 - 3.70	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28014257	TPSS05	ES1	2.60 - 2.70	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28014252	TPSS04	ES2	4.10 - 4.20	60g VOC (ALE215)	S							X								

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
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SA - Saline Water
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DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28014279			28014212			28014234			28014206			28014240			28014246			28014252	
Customer Sample Reference			BH116			BH118			BHSS01			TPSS01			TPSS01			TPSS04			TPSS04	
AGS Reference			ES1			ES1			ES1			ES1			ES2			ES1			ES2	
Depth (m)			7.00 - 7.00			3.50 - 3.50			7.50 - 7.50			1.00 - 1.10			3.25 - 3.35			2.10 - 2.20			4.10 - 4.20	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 14		X			X			X			X			X			X			X
Total Organic Carbon	All	NDPs: 0 Tests: 14		X			X			X			X			X			X			X
Total Sulphate	All	NDPs: 0 Tests: 14		X			X			X			X			X			X			X
Total Sulphur	All	NDPs: 0 Tests: 14		X			X			X			X			X			X			X
TPH CWG GC (S)	All	NDPs: 0 Tests: 14		X			X			X			X			X			X			X
VOC MS (S)	All	NDPs: 0 Tests: 14			X			X			X			X			X			X		

28014217	TPT18	ES1	1.30 - 1.40	1kg TUB with Handle (ALE260)	S						
28014229	TPT17	ES1	2.10 - 2.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28014222	TPT16	ES1	0.80 - 0.90	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28014274	TPSS06	ES2	3.00 - 3.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28014269	TPSS06	ES1	1.20 - 1.30	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28014263	TPSS05	ES2	3.50 - 3.70	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28014257	TPSS05	ES1	2.60 - 2.70	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28014252	TPSS04	ES2	4.10 - 4.20	60g VOC (ALE215)	S						X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
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DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28014217	
Customer Sample Reference			TPT18	
AGS Reference			ES1	
Depth (m)			1.30 - 1.40	
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S
Anions by Kone (soil)	All	NDPs: 2 Tests: 12	X	
Anions in soil by IC	All	NDPs: 2 Tests: 12	X	
Chromium III	All	NDPs: 0 Tests: 14	X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 14	X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 14	X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 14		X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 14	X	
Magnesium (BRE)	All	NDPs: 2 Tests: 12	X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 14	X	
PAH by GCMS	All	NDPs: 0 Tests: 14	X	
PCBs by GCMS	All	NDPs: 0 Tests: 14	X	
pH	All	NDPs: 0 Tests: 14	X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 14	X	
Sample description	All	NDPs: 0 Tests: 14	X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 14	X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
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Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28014217	
Customer Sample Reference			TPT18	
AGS Reference			ES1	
Depth (m)			1.30 - 1.40	
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S
Total Organic Carbon	All	NDPs: 0 Tests: 14	X	
Total Sulphate	All	NDPs: 0 Tests: 14	X	
Total Sulphur	All	NDPs: 0 Tests: 14	X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 14	X	
VOC MS (S)	All	NDPs: 0 Tests: 14		X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28014279	BH116	7.00 - 7.00	Light Brown	Clay	None	None
28014212	BH118	3.50 - 3.50	Light Brown	Sandy Clay	Stones	Vegetation
28014234	BHSS01	7.50 - 7.50	Dark Brown	Sandy Clay Loam	Stones	None
28014206	TPSS01	1.00 - 1.10	Dark Brown	Silt Loam	Vegetation	None
28014240	TPSS01	3.25 - 3.35	Grey	Sandy Silt Loam	Stones	None
28014246	TPSS04	2.10 - 2.20	Dark Brown	Sandy Clay Loam	Stones	Vegetation
28014252	TPSS04	4.10 - 4.20	Grey	Sandy Silt Loam	Stones	None
28014257	TPSS05	2.60 - 2.70	Light Brown	Sandy Silt Loam	Stones	Vegetation
28014263	TPSS05	3.50 - 3.70	Grey	Sandy Clay Loam	Stones	None
28014269	TPSS06	1.20 - 1.30	Dark Brown	Silt Loam	Stones	Vegetation
28014274	TPSS06	3.00 - 3.20	Dark Brown	Stone/Soil	Tar	None
28014222	TPT16	0.80 - 0.90	Dark Brown	Sandy Silt Loam	Stones	None
28014229	TPT17	2.10 - 2.20	Dark Brown	Sand	Stones	Oil/Petroleum
28014217	TPT18	1.30 - 1.40	Light Brown	Sandy Silt Loam	Stones	Oil/Petroleum

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	19	18	9.1	87	19	29
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000496	0.00112	0.000331		0.000463	0.000788
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.013	0.0195	0.0194		0.0277	0.0252
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	0.115 #	0.0636 #	0.0322 #	0.0341 #
Organic Matter, Total	<0.35 %	TM132	<0.35 #	<0.35 #	0.355 #	47.8 #	<0.35 #	5.72 #
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06	0.345	0.191	0.0966	0.102
pH	1 pH Units	TM133	8.51 M	8.38 M	8.67 M	4.4 M	8.63 M	5.97 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Chromium, Trivalent	<0.9 mg/kg	TM181	35.9	16.3	11.4	<0.9	7.97	8.18
Arsenic	<0.6 mg/kg	TM181	2.62 M	13.3 M	3.7 M	<0.6 M	3.43 M	1.28 M
Barium	<0.6 mg/kg	TM181	26.4 #	13.7 #	39 #	4.22 #	17.6 #	12 #
Beryllium	<0.01 mg/kg	TM181	0.91 M	1.61 M	0.392 M	<0.01 M	0.352 M	0.0749 M
Cadmium	<0.02 mg/kg	TM181	0.425 M	3.44 M	1.27 M	<0.02 M	0.548 M	0.33 M
Chromium	<0.9 mg/kg	TM181	35.9 M	17.1 M	11.4 M	<0.9 M	7.97 M	8.18 M
Copper	<1.4 mg/kg	TM181	23.4 M	46.1 M	15 M	<1.4 M	7.64 M	3.17 M
Lead	<0.7 mg/kg	TM181	20.3 M	84.4 M	8.76 M	<0.7 M	10.4 M	10.4 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	10.5 M	124 M	39.5 M	0.498 M	21.5 M	9.41 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	1.34 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	16.9 #	19.6 #	17.7 #	0.591 #	10.3 #	8.98 #
Zinc	<1.9 mg/kg	TM181	20.4 M	328 M	89.3 M	4.66 M	42.3 M	30.9 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	<0.0048 M	0.00514 M	0.0314 M	0.0412 M	0.0461 M	0.0206 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0028 M	0.0039 M	0.0037 M		0.0051 M	0.0057 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008		<0.008	<0.008

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	11	22	10	79	13	41
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0005	0.0015	0.000562		0.000334	0.0231
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0145	0.0251	0.0218		0.0151	0.0587
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 #	0.0169 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 #	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 #	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 #	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0239 #	0.0378 #	0.032 #	0.0343 #	0.138 #	0.0715 #
Organic Matter, Total	<0.35 %	TM132	<0.35 #	0.969 #	<0.35 #	70 #	1.17 #	6.84 #
Sulphate, Total potential	<0.06 %	TM132	0.0717	0.113	0.096	0.103	0.414	0.215
pH	1 pH Units	TM133	8.82 M	7.78 M	8.58 M	4.93 M	7.62 #	6.82 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 #	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 #	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Chromium, Trivalent	<0.9 mg/kg	TM181	4.73	17.6	14.2	<0.9	104	15.1
Arsenic	<0.6 mg/kg	TM181	1.18 M	4.69 M	1.44 M	8.36 M	14.1 #	4.47 M
Barium	<0.6 mg/kg	TM181	19 #	35.8 #	27.6 #	21.1 #	7.61 #	41.1 #
Beryllium	<0.01 mg/kg	TM181	0.259 M	0.647 M	0.38 M	0.0436 M	0.0457 #	0.529 M
Cadmium	<0.02 mg/kg	TM181	0.653 M	0.769 M	0.922 M	0.239 M	2.76 #	0.93 M
Chromium	<0.9 mg/kg	TM181	4.73 M	17.6 M	14.2 M	<0.9 M	100 #	15.1 M
Copper	<1.4 mg/kg	TM181	9.28 M	10.2 M	13.9 M	5.04 M	27.5 #	11.5 M
Lead	<0.7 mg/kg	TM181	7.31 M	17.8 M	7.12 M	1.65 M	45.1 #	17.9 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 #	<0.1 M
Nickel	<0.2 mg/kg	TM181	17.6 M	35.9 M	34 M	3.99 M	8.6 #	27.3 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	4.82 #	<1 #
Vanadium	<0.2 mg/kg	TM181	8.54 #	22 #	18.5 #	1.22 #	158 #	18.9 #
Zinc	<1.9 mg/kg	TM181	47.2 M	105 M	59.5 M	3.35 M	33 #	51.5 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0267 M	0.0391 M	0.0375 M	0.0516 M	0.00674 #	0.0505 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0028 M	0.0061 M	0.0032 M		0.0051 #	0.0048 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008		<0.008	<0.008

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	18	27				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000257	0.000573				
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0217	0.021				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Sulphur, Total	<0.02 %	TM132	0.0354 #	0.0273 #				
Organic Matter, Total	<0.35 %	TM132	<0.35 #	1.2 #				
Sulphate, Total potential	<0.06 %	TM132	0.106	0.0819				
pH	1 pH Units	TM133	8.46 M	7.62 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	2.57	14.7				
Arsenic	<0.6 mg/kg	TM181	2.89 M	4.11 M				
Barium	<0.6 mg/kg	TM181	13.6 #	58.5 #				
Beryllium	<0.01 mg/kg	TM181	0.132 M	0.496 M				
Cadmium	<0.02 mg/kg	TM181	0.379 M	0.85 M				
Chromium	<0.9 mg/kg	TM181	2.57 M	14.7 M				
Copper	<1.4 mg/kg	TM181	3.53 M	6.47 M				
Lead	<0.7 mg/kg	TM181	4.46 M	16.5 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181	7.81 M	32.1 M				
Selenium	<1 mg/kg	TM181	<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	3.94 #	19.7 #				
Zinc	<1.9 mg/kg	TM181	24.3 M	83 M				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.042 M	0.0101 M				
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0071 M	0.004 M				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	93.2	93.3	90.4	94.4	96.4	93.4
Acenaphthene-d10 % recovery**	%	TM218	94	91.4	93.9	102	98.8	90.8
Phenanthrene-d10 % recovery**	%	TM218	93.5	86.3	93.8	114	103	93
Chrysene-d12 % recovery**	%	TM218	101	79.3	95.8	111	112	98.8
Perylene-d12 % recovery**	%	TM218	93.1	86.1	83.7	92.3	102	92
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Naphthalene-d8 % recovery**	%	TM218	93.2	93.7	91.3	93.3	93.1	91.9
Acenaphthene-d10 % recovery**	%	TM218	94.3	94.8	94.7	98.3	91.9	94.9
Phenanthrene-d10 % recovery**	%	TM218	94	91.4	91.1	104	86.5	98.9
Chrysene-d12 % recovery**	%	TM218	100	87.8	99.2	109	80.2	106
Perylene-d12 % recovery**	%	TM218	96.7	95	95.7	87.6	87.6	91.4
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 #	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 #	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 #	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 #	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 #	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 #	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 #	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 #	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 #	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 #	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 #	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 #	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 #	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 #	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 #	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 #	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	92.3	93.3				
Acenaphthene-d10 % recovery**	%	TM218	94.2	91.3				
Phenanthrene-d10 % recovery**	%	TM218	94.7	86				
Chrysene-d12 % recovery**	%	TM218	101	76.7				
Perylene-d12 % recovery**	%	TM218	91.2	81.7				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M				
Pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M				
Chrysene	<10 µg/kg	TM218	<10 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Acenaphthylene	<100 µg/kg	TM157	<100	<100				
Acenaphthene	<100 µg/kg	TM157	<100	<100				
Anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Fluoranthene	<100 µg/kg	TM157	<100	<100				
Fluorene	<100 µg/kg	TM157	<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100				
Phenanthrene	<100 µg/kg	TM157	<100	<100				
Pyrene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424

Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
GRO Surrogate % recovery**	%	TM089	108	104	122	67.2	148	142
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	1880 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	10800 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	20000 #	158000 #	<1000 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	3230	57100	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	23300	228000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	26300	1070000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	2110 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	4570 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	1650 #	656000 #	<1000 #	3880 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	182000	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	101000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	845000	<5000	5780
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	23300	1070000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424

Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
GRO Surrogate % recovery**	%	TM089	133	103	103	61.3	95.4	88.7
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	7730 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	154000 #	<1000 #	6050 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	23700	<1000	1290
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	186000	<5000	7340
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	524000	<10000	23700
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	26300 #	<1000 #	1650 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	1190 #	<1000 #	247000 #	<1000 #	9970 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	65600	<1000	4770
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	3660	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	339000	<5000	16400
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	524000	<10000	23700
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.						
			TPT17	TPT18					
		Depth (m)	2.10 - 2.20	1.30 - 1.40					
		Sample Type	Soil/Solid (S)	Soil/Solid (S)					
		Date Sampled	15/05/2023	15/05/2023					
		Sample Time	.	.					
		Date Received	18/05/2023	18/05/2023					
		SDG Ref	230518-59	230518-59					
		Lab Sample No.(s)	28014229	28014217					
		AGS Reference	ES1	ES1					
GRO Surrogate % recovery**	%	TM089	105	106					
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10					
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10					
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10					
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000					
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000					
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000					
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10					
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10					
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10					
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1070 #	<1000 #					
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000					
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000					
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000					
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000					
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50					
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50					
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Dibromofluoromethane**	%	TM116	98.8	104	96.1	103	100	102
Toluene-d8**	%	TM116	101	99.9	94.8	96.1	99.5	89.2
4-Bromofluorobenzene**	%	TM116	98.6	99.5	72.4	85.9	88.8	70.1
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #	<6 #	<120 #	<6 #	<6 #
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #	<7 #	<140 #	<7 #	<7 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 M	<6 M	<120 @ M	<6 @ M	<6 @ M
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<120 M	<6 M	<6 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<7 M
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 M	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<120 M	<6 M	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10	<10	<200	<10	<10
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Chloroform	<3 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 M	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 M	<5 M
Benzene	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 M	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #	<9 #	<180 #	<9 #	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 M	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Toluene	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10	<10	<200	<10	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<7 M

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 M	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M	<4 M	<80 M	<4 M	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Styrene	<2 µg/kg	TM116	<10 @ #	<10 #	<10 #	<200 @ #	<10 @ #	<10 @ #
Bromoform	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #	<5 #	<100 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M	<16 M	<320 M	<16 M	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 M	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #	<14 #	<280 #	<14 #	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #	<9 #	<180 #	<9 #	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10	<10	<200	<10	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10	<10	<200	<10	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11	<11	<11	<220	<11	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M	<14 M	<280 M	<14 M	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<400	<20	<200
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20	<20	<400	<20	<20
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M	<13 M	<260 M	<13 M	<130 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #	<20 #	<400 #	<20 #	<200 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<400	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424

Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.4	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40	<40	<40	<800	<40	<40

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
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- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
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- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	114	97.8	102	104	96.3	106
Toluene-d8**	%	TM116	100	99.3	100	95.4	93.1	95.8
4-Bromofluorobenzene**	%	TM116	98.1	90.8	96.4	87.5	70.3	70.6
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #	<6 #	<120 #	<6 #	<6 #
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #	<7 #	<140 #	<7 #	<7 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<6 @ M	<120 @ M	<6 @ #	<6 M
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<120 M	<6 #	<6 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 #	<7 M
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 #	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<120 M	<6 #	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10	<10	<200	<10	<10
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Chloroform	<3 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 #	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 #	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 #	<5 M
Benzene	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 #	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #	<9 #	<180 #	<9 #	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 #	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 #	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Toluene	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 #	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10	<10	<200	<10	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 #	<7 M

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 #	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 #	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M	<4 M	<80 M	<4 #	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<200 @ #	<10 @ #	<10 #
Bromoform	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #	<5 #	<100 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M	<16 M	<320 M	<16 #	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 #	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 #	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #	<14 #	<280 #	<14 #	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #	<9 #	<180 #	<9 #	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10	<10	<200	<10	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10	<10	<200	<10	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 #	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 #	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11	<11	<11	<220	<11	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M	<14 M	<280 M	<14 #	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<400	<20	<20
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20	<20	<400	<20	<20
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M	<13 M	<260 M	<13 #	<13 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #	<20 #	<400 #	<20 #	<20 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<400	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424

Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.4	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40	<40	<40	<800	<40	<40

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	99.8	98.6				
Toluene-d8**	%	TM116	99.5	98.9				
4-Bromofluorobenzene**	%	TM116	88.9	86				
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #				
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #				
Vinyl Chloride	<0.5 µg/kg	TM116	<6 M	<6 M				
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M				
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M				
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M				
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #				
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M				
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M				
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M				
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M				
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M				
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10				
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M				
Chloroform	<3 µg/kg	TM116	<8 M	<8 M				
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M				
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M				
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M				
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M				
Benzene	<1 µg/kg	TM116	<9 M	<9 M				
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #				
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M				
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M				
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M				
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M				
Toluene	<1 µg/kg	TM116	<7 M	<7 M				
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10				
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M				
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M				

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			-	-				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M				
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M				
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M				
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M				
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M				
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M				
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #				
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M				
Styrene	<2 µg/kg	TM116	<10 #	<10 #				
Bromoform	<2 µg/kg	TM116	<10 M	<10 M				
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #				
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #				
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M				
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M				
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M				
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M				
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M				
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M				
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #				
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #				
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10				
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10				
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
n-Butylbenzene	<3 µg/kg	TM116	<11	<11				
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M				
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M				
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #				
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20				
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20				
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M				
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #				
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02				
Sum of BTEX	<7 µg/kg	TM116	<40	<40				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend
- # ISO17025 accredited.
- M *m*CERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&♦§@ Sample deviation (see appendix)

Cust. Sample Ref. / Depth (m) / Sample Type / Date Sampled / Date Receieved / SDG / Original Sample / Method Number	Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
BH116ES1 7.00 - 7.00 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014279 TM048	24/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
BH118ES1 3.50 - 3.50 SOLID 12/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014212 TM048	24/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
BHSS01ES1 7.50 - 7.50 SOLID 16/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014234 TM048	24/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
TPSS01ES1 1.00 - 1.10 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014206 TM048	24/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
TPSS01ES2 3.25 - 3.35 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014240 TM048	24/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
TPSS04ES1 2.10 - 2.20 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014246 TM048	24/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
TPSS04ES2 4.10 - 4.20 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014252 TM048	24/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
TPSS05ES1 2.60 - 2.70 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014257 TM048	24/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424

Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS05ES2 3.50 - 3.70 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014263 TM048	24/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS06ES1 1.20 - 1.30 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014269 TM048	25/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS06ES2 3.00 - 3.20 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014274 TM048	24/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT16ES1 0.80 - 0.90 SOLID 15/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014222 TM048	24/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT17ES1 2.10 - 2.20 SOLID 15/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014229 TM048	24/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT18ES1 1.30 - 1.40 SOLID 15/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014217 TM048	24/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Notification of NDPs (No determination possible)

Date Received : 18/05/2023 10:49:17

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
28014206	TPSS01	1.00 - 1.10	Magnesium (BRE)	Sample unsuitable for extraction
28014206	TPSS01 ES1	1.00 - 1.10	Anions in soil by IC	Sample unsuitable for extraction
28014206	TPSS01 ES1	1.00 - 1.10	Anions by Kone (soil)	Sample unsuitable for extraction
28014269	TPSS06	1.20 - 1.30	Magnesium (BRE)	Sample unsuitable for extraction
28014269	TPSS06 ES1	1.20 - 1.30	Anions in soil by IC	Sample unsuitable for extraction
28014269	TPSS06 ES1	1.20 - 1.30	Anions by Kone (soil)	Sample unsuitable for extraction

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	28014279	28014212	28014234	28014206	28014240	28014246	28014252	28014257	28014263	28014269
Customer Sample Ref.	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04	TPSS04	TPSS05	TPSS05	TPSS06
AGS Ref.	ES1	ES1	ES1	ES1	ES2	ES1	ES2	ES1	ES2	ES1
Depth	7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20	4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	23-May-2023	24-May-2023	24-May-2023		24-May-2023	24-May-2023	23-May-2023	24-May-2023	24-May-2023	
Anions in soil by IC	26-May-2023	26-May-2023	26-May-2023		26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	
Asbestos ID in Solid Samples	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	25-May-2023
Chromium III	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	24-May-2023	25-May-2023
Cyanide Comp/Free/Total/Thiocyanate	25-May-2023	24-May-2023	24-May-2023	25-May-2023	25-May-2023	24-May-2023	25-May-2023	25-May-2023	24-May-2023	25-May-2023
EPH CWG GC (S)	25-May-2023	23-May-2023	22-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023
GRO by GC-FID (S)	25-May-2023	22-May-2023	22-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	22-May-2023	22-May-2023	26-May-2023
Hexavalent Chromium (s)	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	23-May-2023	25-May-2023
Magnesium (BRE)	24-May-2023	24-May-2023	24-May-2023		24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	
Metals in solid samples by OES	24-May-2023	23-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023
PAH by GCMS	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	24-May-2023	25-May-2023	24-May-2023	25-May-2023
PCBs by GCMS	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023
pH	23-May-2023	23-May-2023	19-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	19-May-2023	23-May-2023	23-May-2023
Phenols by HPLC (S)	25-May-2023	23-May-2023	24-May-2023	25-May-2023	24-May-2023	23-May-2023	24-May-2023	24-May-2023	23-May-2023	24-May-2023
Sample description	18-May-2023	19-May-2023	18-May-2023	18-May-2023	18-May-2023	19-May-2023	18-May-2023	18-May-2023	19-May-2023	18-May-2023
Semi Volatile Organic Compounds	25-May-2023	23-May-2023	24-May-2023	24-May-2023	23-May-2023	23-May-2023	22-May-2023	23-May-2023	23-May-2023	23-May-2023
Total Organic Carbon	24-May-2023	24-May-2023	25-May-2023	25-May-2023	25-May-2023	24-May-2023	24-May-2023	25-May-2023	25-May-2023	26-May-2023
Total Sulphate	24-May-2023	23-May-2023	24-May-2023	24-May-2023	24-May-2023	23-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023
Total Sulphur	25-May-2023	25-May-2023	23-May-2023	25-May-2023	23-May-2023	23-May-2023	25-May-2023	23-May-2023	25-May-2023	25-May-2023
TPH CWG GC (S)	25-May-2023	23-May-2023	22-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	23-May-2023	23-May-2023	26-May-2023
VOC MS (S)	25-May-2023	22-May-2023	19-May-2023	23-May-2023	19-May-2023	23-May-2023	19-May-2023	19-May-2023	22-May-2023	23-May-2023

Lab Sample No(s)	28014274	28014222	28014229	28014217
Customer Sample Ref.	TPSS06	TPT16	TPT17	TPT18
AGS Ref.	ES2	ES1	ES1	ES1
Depth	3.00 - 3.20	0.80 - 0.90	2.10 - 2.20	1.30 - 1.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	24-May-2023	23-May-2023	23-May-2023	24-May-2023
Anions in soil by IC	26-May-2023	26-May-2023	26-May-2023	26-May-2023
Asbestos ID in Solid Samples	24-May-2023	24-May-2023	24-May-2023	24-May-2023
Chromium III	23-May-2023	25-May-2023	25-May-2023	25-May-2023
Cyanide Comp/Free/Total/Thiocyanate	24-May-2023	24-May-2023	25-May-2023	24-May-2023
EPH CWG GC (S)	23-May-2023	23-May-2023	22-May-2023	22-May-2023
GRO by GC-FID (S)	22-May-2023	22-May-2023	22-May-2023	22-May-2023
Hexavalent Chromium (s)	23-May-2023	25-May-2023	25-May-2023	25-May-2023
Magnesium (BRE)	24-May-2023	25-May-2023	24-May-2023	24-May-2023
Metals in solid samples by OES	23-May-2023	24-May-2023	24-May-2023	24-May-2023
PAH by GCMS	25-May-2023	25-May-2023	25-May-2023	25-May-2023
PCBs by GCMS	25-May-2023	25-May-2023	25-May-2023	25-May-2023
pH	23-May-2023	19-May-2023	19-May-2023	19-May-2023
Phenols by HPLC (S)	23-May-2023	24-May-2023	24-May-2023	24-May-2023
Sample description	19-May-2023	18-May-2023	18-May-2023	18-May-2023
Semi Volatile Organic Compounds	23-May-2023	23-May-2023	23-May-2023	23-May-2023
Total Organic Carbon	25-May-2023	24-May-2023	25-May-2023	25-May-2023
Total Sulphate	24-May-2023	24-May-2023	24-May-2023	23-May-2023
Total Sulphur	23-May-2023	23-May-2023	23-May-2023	25-May-2023
TPH CWG GC (S)	23-May-2023	23-May-2023	22-May-2023	22-May-2023
VOC MS (S)	22-May-2023	22-May-2023	19-May-2023	19-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230518-59	N/A	N/A	06/06/2023	Client Reference Change	2023WH101	2023OY104	690424

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	12 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230526-70
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	692165
Order Number:	12380

We received 16 samples on Friday May 26, 2023 and 16 of these samples were scheduled for analysis which was completed on Monday June 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28060279	BHT15	ES1	7.00 - 7.00	19/05/2023
28060350	BHT17	ES1	5.50 - 5.50	17/05/2023
28060320	TP301	ES1	0.70 - 0.80	16/05/2023
28060331	TP302	ES1	0.90 - 1.00	16/05/2023
28060259	TP303	ES1	2.20 - 2.30	16/05/2023
28060270	TP304	ES1	2.30 - 2.40	17/05/2023
28060265	TP305	ES1	0.80 - 0.90	17/05/2023
28060344	TP306	ES1	1.50 - 1.60	17/05/2023
28060300	TP308	ES1	1.30 - 1.40	22/05/2023
28060284	TP309	ES1	0.30 - 0.40	22/05/2023
28060294	TP310	ES1	3.10 - 3.20	22/05/2023
28060289	TP311	ES1	3.90 - 4.00	22/05/2023
28060337	TP307A	ES1	1.00 - 1.10	17/05/2023
28060315	TPT13	ES1	0.20 - 0.30	16/05/2023
28060326	TPT14	ES1	0.15 - 0.30	16/05/2023
28060307	TPT15	ES1	0.40 - 0.50	16/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28060279			28060350			28060320			28060331			28060259			28060270			28060265
Customer Sample Reference			BHT15			BHT17			TP301			TP302			TP303			TP304			TP305
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			7.00 - 7.00			5.50 - 5.50			0.70 - 0.80			0.90 - 1.00			2.20 - 2.30			2.30 - 2.40			0.80 - 0.90
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Anions in soil by IC	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 16	X			X			X			X			X			X			X
Chromium III	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 16			X			X			X			X			X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Magnesium (BRE)	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Sample description	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		

12:33:26 12/06/2023

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28060279			28060350			28060320			28060331			28060259			28060270			28060265
Customer Sample Reference			BHT15			BHT17			TP301			TP302			TP303			TP304			TP305
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			7.00 - 7.00			5.50 - 5.50			0.70 - 0.80			0.90 - 1.00			2.20 - 2.30			2.30 - 2.40			0.80 - 0.90
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 16			X			X			X			X			X			X	

28060315	TPT13	ES1	0.20 - 0.30	1kg TUB with Handle (ALE260)	S							
28060337	TP307A	ES1	1.00 - 1.10	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28060289	TP311	ES1	3.90 - 4.00	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28060294	TP310	ES1	3.10 - 3.20	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28060284	TP309	ES1	0.30 - 0.40	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28060300	TP308	ES1	1.30 - 1.40	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28060344	TP306	ES1	1.50 - 1.60	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28060265	TP305	ES1	0.80 - 0.90	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28060315			28060326			28060307	
Customer Sample Reference			TPT13			TPT14			TPT15	
AGS Reference			ES1			ES1			ES1	
Depth (m)			0.20 - 0.30			0.15 - 0.30			0.40 - 0.50	
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 16	X			X			X	
Anions in soil by IC	All	NDPs: 0 Tests: 16	X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 16			X			X		
Chromium III	All	NDPs: 0 Tests: 16	X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 16	X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 16	X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 16		X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 16	X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 16	X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 16	X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 16	X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 16	X			X			X	
pH	All	NDPs: 0 Tests: 16	X			X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 16	X			X			X	
Sample description	All	NDPs: 0 Tests: 16	X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28060315			28060326			28060307		
Customer Sample Reference			TPT13			TPT14			TPT15		
AGS Reference			ES1			ES1			ES1		
Depth (m)			0.20 - 0.30			0.15 - 0.30			0.40 - 0.50		
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	S	S	S	S	S	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 16	X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 16	X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 16	X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 16	X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 16	X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 16		X			X			X	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28060279	BHT15	7.00 - 7.00	Grey	Sandy Silt Loam	Stones	None
28060350	BHT17	5.50 - 5.50	Grey	Sandy Silt Loam	Stones	None
28060320	TP301	0.70 - 0.80	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28060331	TP302	0.90 - 1.00	Dark Brown	Sandy Loam	Stones	Vegetation
28060259	TP303	2.20 - 2.30	Dark Brown	Silt Loam	Vegetation	None
28060270	TP304	2.30 - 2.40	Dark Brown	Sandy Silt Loam	Stones	None
28060265	TP305	0.80 - 0.90	Dark Brown	Sandy Clay Loam	Stones	None
28060344	TP306	1.50 - 1.60	Light Brown	Sandy Clay Loam	Stones	None
28060300	TP308	1.30 - 1.40	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28060284	TP309	0.30 - 0.40	Light Brown	Sandy Loam	Stones	None
28060294	TP310	3.10 - 3.20	Dark Brown	Sandy Clay Loam	Stones	None
28060289	TP311	3.90 - 4.00	Dark Brown	Sandy Silt Loam	Stones	None
28060337	TP307A	1.00 - 1.10	Light Brown	Sandy Silt Loam	Stones	None
28060315	TPT13	0.20 - 0.30	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28060326	TPT14	0.15 - 0.30	Light Brown	Sandy Silt Loam	Stones	Vegetation
28060307	TPT15	0.40 - 0.50	Dark Brown	Sandy Silt Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	9.3	11	17	52	54	19
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	<0.0002	<0.0002	0.000799	0.000838	0.000296	<0.0002
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.011	0.0112	0.0199	0.0654	0.376	0.0308
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0494 #	0.034 #	<0.02 #	0.0688 #	0.567 #	0.0261 #
Organic Matter, Total	<0.35 %	TM132	8.57 #	<0.35 #	7.22 #	10.9 #	14.5 #	6.88 #
Sulphate, Total potential	<0.06 %	TM132	0.148	0.102	0.06	0.206	1.7	0.0783
pH	1 pH Units	TM133	8.61 M	8.77 M	8.27 M	5.5 M	6.19 M	8.32 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 @ M	<1 @ M	<1 @ M	<1 @ M	<1 @ M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	4.5	4.95	9.9	31.8	27.1	6.54
Arsenic	<0.6 mg/kg	TM181	2.04 M	1.13 M	2.78 M	4.28 M	7.09 M	2.41 M
Barium	<0.6 mg/kg	TM181	38 #	20.9 #	47.1 #	137 #	62.7 #	25.9 #
Beryllium	<0.01 mg/kg	TM181	0.331 M	0.262 M	0.48 M	0.582 M	0.689 M	0.289 M
Cadmium	<0.02 mg/kg	TM181	0.696 M	0.618 M	0.569 M	1.01 M	2.01 M	0.483 M
Chromium	<0.9 mg/kg	TM181	4.5 M	4.95 M	9.9 M	31.8 M	27.1 M	6.54 M
Copper	<1.4 mg/kg	TM181	9.17 M	7.52 M	8.09 M	3.7 M	25.5 M	5.14 M
Lead	<0.7 mg/kg	TM181	6.87 M	4.69 M	8.9 M	25 M	15.3 M	6.08 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	18.1 M	14.7 M	17.9 M	24.5 M	43 M	10.9 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	1.89 #	<1 #
Vanadium	<0.2 mg/kg	TM181	9.33 #	8.45 #	15.3 #	30.2 #	22.5 #	8.24 #
Zinc	<1.9 mg/kg	TM181	49.4 M	37.3 M	33.5 M	109 M	117 M	27 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0242 M	0.0318 M	0.0259 M	0.0428 M	0.264 M	0.028 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	<0.0025 M	0.0033 M	0.0031 M	0.0526 M	0.0461 M	0.0091 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

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CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	23	17	28	9.5	25	21
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0226	0.000341	<0.0002	<0.0002	0.000676	0.000316
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.015	0.014	0.0319	0.0118	0.0146	0.0331
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	0.0506 #	<0.02 #	<0.02 #	0.0386 #
Organic Matter, Total	<0.35 %	TM132	1.62 #	0.755 #	3.6 #	3.22 #	2.34 #	2.59 #
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06	0.152	0.06	0.06	0.116
pH	1 pH Units	TM133	8.3 M	8.25 M	8.15 M	8.88 M	7.09 M	7.08 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	27.5	2.96	6.85	7.43	29.8	15.8
Arsenic	<0.6 mg/kg	TM181	4.96 M	13.6 M	2.89 M	2.07 M	3.81 M	9.13 M
Barium	<0.6 mg/kg	TM181	130 #	49 #	32.2 #	22.5 #	40.3 #	29.7 #
Beryllium	<0.01 mg/kg	TM181	0.789 M	0.478 M	0.312 M	0.331 M	0.765 M	1.42 M
Cadmium	<0.02 mg/kg	TM181	0.499 M	0.385 M	0.488 M	0.795 M	0.728 M	3.54 M
Chromium	<0.9 mg/kg	TM181	27.5 M	2.96 M	6.85 M	7.43 M	29.8 M	15.8 M
Copper	<1.4 mg/kg	TM181	5.73 M	5.22 M	8.03 M	10.4 M	13.8 M	14.3 M
Lead	<0.7 mg/kg	TM181	16.2 M	5.53 M	11.4 M	6.94 M	19.4 M	17.8 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	34.8 M	10.9 M	14.6 M	20.7 M	54 M	92.7 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	27.8 #	11.3 #	8.19 #	9.72 #	33.9 #	15.8 #
Zinc	<1.9 mg/kg	TM181	52.9 M	24.2 M	38.8 M	49.5 M	127 M	265 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0152 M	0.0142 M	0.0358 M	0.0216 M	0.0128 M	0.03 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.004 M	0.0036 M	0.0037 M	0.0028 M	0.0053 M	0.0051 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

12:33:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			-	-	-	-		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	24	14	15	23		
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	<0.0002	0.00317	0.000714	<0.0002		
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0389	0.013	0.0135	0.0217		
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	<0.01 @ M	<0.01 @ M		
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	<0.01 @ M	<0.01 @ M		
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 @ M	<0.015 @ M	<0.015 @ M		
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 @ M	<0.035 @ M	<0.035 @ M		
Sulphur, Total	<0.02 %	TM132	<0.02 #	0.0272 #	<0.02 #	<0.02 #		
Organic Matter, Total	<0.35 %	TM132	1.14 #	3.09 #	1.59 #	3.74 #		
Sulphate, Total potential	<0.06 %	TM132	0.06	0.0816	0.06	0.06		
pH	1 pH Units	TM133	8.33 M	8.57 M	8.55 M	8.45 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M		
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 @ M	<1 @ M		
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21		
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			.	.	.	.		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	12.4	4.57	9.74	6.17		
Arsenic	<0.6 mg/kg	TM181	2.25 M	2.31 M	2.44 M	1.12 M		
Barium	<0.6 mg/kg	TM181	46.4 #	19.6 #	41.4 #	23.4 #		
Beryllium	<0.01 mg/kg	TM181	0.456 M	0.242 M	0.442 M	0.3 M		
Cadmium	<0.02 mg/kg	TM181	0.444 M	0.483 M	0.567 M	0.382 M		
Chromium	<0.9 mg/kg	TM181	12.4 M	4.57 M	9.74 M	6.17 M		
Copper	<1.4 mg/kg	TM181	3.97 M	3.71 M	6.63 M	4.86 M		
Lead	<0.7 mg/kg	TM181	8.29 M	4.19 M	7.18 M	5.34 M		
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M		
Nickel	<0.2 mg/kg	TM181	15.6 M	8.85 M	16.9 M	10.5 M		
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #		
Vanadium	<0.2 mg/kg	TM181	12 #	6.44 #	12.9 #	7.85 #		
Zinc	<1.9 mg/kg	TM181	29.8 M	26.1 M	32.3 M	25 M		
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0305 M	0.0245 M	0.0228 M	0.0277 M		
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0035 M	0.0059 M	0.0031 M	0.0031 M		
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008		

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CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	96.2	96.9	94.6	92.4	95.3	96.3
Acenaphthene-d10 % recovery**	%	TM218	90.9	92.6	96.4	94.5	96.8	91.3
Phenanthrene-d10 % recovery**	%	TM218	83.5	87.5	97.8	95.4	98	84.9
Chrysene-d12 % recovery**	%	TM218	76.6	78.4	97.7	94.6	91.1	77.4
Perylene-d12 % recovery**	%	TM218	76.3	80.2	97.4	92.3	87.9	79.7
Naphthalene	<9 µg/kg	TM218	<9 M	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 M	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	88.2	95	98.1	98.3	101	92.3
Acenaphthene-d10 % recovery**	%	TM218	87.1	96.7	94.4	93.1	95.8	94.1
Phenanthrene-d10 % recovery**	%	TM218	87.9	98	90.2	86.9	90	96.1
Chrysene-d12 % recovery**	%	TM218	84	93.2	83	77.4	96.2	92
Perylene-d12 % recovery**	%	TM218	79.5	90.7	84.5	80.9	95	87
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

12:33:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			-	-	-	-		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	93.7	96.8	93.8	94.4		
Acenaphthene-d10 % recovery**	%	TM218	94.5	91.8	94.3	97.9		
Phenanthrene-d10 % recovery**	%	TM218	94.5	86.4	95	99.6		
Chrysene-d12 % recovery**	%	TM218	91	74.9	91	93.1		
Perylene-d12 % recovery**	%	TM218	88.4	76.3	87.5	86.4		
Naphthalene	<9 µg/kg	TM218	<9 M	<9 @ M	<9 @ M	<9 @ M		
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 @ M	<12 @ M	<12 @ M		
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 @ M	<8 @ M	<8 @ M		
Fluorene	<10 µg/kg	TM218	<10 M	<10 @ M	<10 @ M	<10 @ M		
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M		
Anthracene	<16 µg/kg	TM218	<16 M	<16 @ M	<16 @ M	<16 @ M		
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 @ M	<17 @ M	<17 @ M		
Pyrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M		
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 @ M	<14 @ M	<14 @ M		
Chrysene	<10 µg/kg	TM218	<10 M	<10 @ M	<10 @ M	<10 @ M		
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M		
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 @ M	<14 @ M	<14 @ M		
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 @ M	<18 @ M	<18 @ M		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 @ M	<23 @ M	<23 @ M		
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 @ M	<24 @ M	<24 @ M		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<200	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<200	<100	<100	<200
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

12:33:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			-	-	-	-		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100		
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100		
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100		
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100		
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<200	<200	<100	<100		
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100		
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100		
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100		
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100		
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100		
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100		
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100		
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

		Customer Sample Ref.	TP307A	TPT13	TPT14	TPT15		
		Depth (m)	1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
		Date Sampled	17/05/2023	16/05/2023	16/05/2023	16/05/2023		
		Sample Time	.	.	.	.		
		Date Received	26/05/2023	26/05/2023	26/05/2023	26/05/2023		
		SDG Ref	230526-70	230526-70	230526-70	230526-70		
		Lab Sample No.(s)	28060337	28060315	28060326	28060307		
		AGS Reference	ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100		
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100		
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100		
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100		
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100		
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100		
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100		
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100		
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100		
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100		
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100		
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100		
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100		
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100		
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100		
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100		
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100		
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100		
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100		
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100		
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100		

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	79.4	80.7 @	103 @	82.9 @	70.1 @	96.8 @
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10 @	<10 @	<10 @	<10 @
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10 @	<10 @	<10 @	<10 @
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10 @	<10 @	<10 @	<10 @
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	1390 @ #	1180 @ #	9060 @ #	<1000 @ #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	2540 @ #	24600 @ #	46700 @ #	<1000 @ #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000 @	1290 @	6130 @	14800 @	<1000 @
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000 @	5220 @	32300 @	70500 @	<5000 @
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	29400	111000	250000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	4140 @ #	1100 @ #	19700 @ #	<1000 @ #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	17800 @ #	66000 @ #	134000 @ #	1630 @ #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000 @	2290 @	12000 @	24900 @	<1000 @
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000 @	1160 @	<1000 @	6430 @	<1000 @
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	24200	79100	179000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	29400	111000	250000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50 @	<50 @	<50 @	<50 @	<50 @
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50 @	<50 @	<50 @	<50 @	<50 @
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20 @	<20 @	<20 @	<20 @	<20 @

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	86.8 @	96.8 @	105	111	88	92.1
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	2560 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	8880 #	<1000 #	<1000 #	1100 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	3320	<1000	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	14800	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	53200	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	6720 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	1230 #	23400 #	<1000 #	2250 #	3620 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	8280	<1000	<1000	1460
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	2200	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	38400	<5000	<5000	5620
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	53200	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 @	<20 @	<20	<20	<20	<20

12:33:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			-	-	-	-		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	88.3 @	91.7 @	97.3 @	109 @		
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @		
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @		
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @		
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #		
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #		
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #		
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	3910 @ #	3820 @ #	<1000 @ #	2130 @ #		
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @		
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000 @	<5000 @	<5000 @	<5000 @		
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	16800	12600	<10000	23800		
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @		
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @		
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @		
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #		
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #		
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1260 @ #	1050 @ #	<1000 @ #	<1000 @ #		
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	9350 @ #	5410 @ #	1630 @ #	16000 @ #		
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	1140 @	<1000 @	4100 @		
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @		
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	11900	7750	<5000	20800		
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	11900	<10000	<10000	20800		
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50 @		
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50 @		
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 @	<20 @	<20 @	<20 @		

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	129 @	97.5 @	114 @	113 @	106 @	97.1 @
Toluene-d8**	%	TM116	98.6 @	95.1 @	101 @	92.1 @	99.4 @	97.8 @
4-Bromofluorobenzene**	%	TM116	100 @	72.2 @	87.9 @	70.6 @	98.1 @	83.9 @
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<10 @ #	<6 @ #	<6 @ #	<6 @ #	<10 @ #	<6 @ #
Chloromethane	<2 µg/kg	TM116	<40 @ #	<7 3 @ #	<7 @ #	<7 3 @ #	<40 @ #	<7 3 @ #
Vinyl Chloride	<0.5 µg/kg	TM116	<10 @ M	<6 @ M	<6 @ M	<6 @ M	<10 @ M	<6 @ M
Bromomethane	<1 µg/kg	TM116	<20 @ M	<10 @ M	<10 @ M	<10 @ M	<20 @ M	<10 @ M
Chloroethane	<1 µg/kg	TM116	<20 @ M	<10 @ M	<10 @ M	<10 @ M	<20 @ M	<10 @ M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<10 @ M	<6 3 @ M	<6 @ M	<6 3 @ M	<10 @ M	<6 3 @ M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #	<10 @ #	<10 @ #
Carbon Disulphide	<1 µg/kg	TM116	<20 @ M	<7 @ M	<7 @ M	<7 @ M	103 @ M	<7 @ M
Dichloromethane	<5 µg/kg	TM116	<100 @ #	<10 @ #	<10 @ #	<10 @ #	<100 @ #	<10 @ #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<20 @ M	<10 @ M	<10 @ M	<10 @ M	<20 @ M	<10 @ M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<10 @ M	<8 @ M	<8 @ M	<8 @ M	<10 @ M	<8 @ M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<10 @ M	<6 @ M	<6 @ M	<6 @ M	<10 @ M	<6 @ M
2,2-Dichloropropane	<1 µg/kg	TM116	<20 @	<10 @	<10 3 @	<10 @	<20 @	<10 @
Bromochloromethane	<2 µg/kg	TM116	<40 @ M	<10 @ M	<10 @ M	<10 @ M	<40 @ M	<10 @ M
Chloroform	<3 µg/kg	TM116	<60 @ M	<8 @ M	<8 @ M	<8 @ M	<60 @ M	<8 @ M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<10 @ M	<7 @ M	<7 @ M	<7 @ M	<10 @ M	<7 @ M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
1,2-Dichloroethane	<1 µg/kg	TM116	<20 @ M	<5 @ M	<5 3 @ M	<5 @ M	<20 @ M	<5 @ M
Benzene	<1 µg/kg	TM116	<20 @ M	<9 @ M	<9 @ M	<9 @ M	<20 @ M	<9 @ M
Trichloroethene	<1 µg/kg	TM116	<20 @ #	<9 @ #	<9 @ #	<9 @ #	<20 @ #	<9 @ #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Dibromomethane	<1 µg/kg	TM116	<20 @ M	<9 @ M	<9 @ M	<9 @ M	<20 @ M	<9 @ M
Bromodichloromethane	<2 µg/kg	TM116	<40 @ M	<7 @ M	<7 @ M	<7 @ M	<40 @ M	<7 @ M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 3 @ M	<10 @ M	<10 @ M	<10 @ M
Toluene	<1 µg/kg	TM116	<20 @ M	<7 @ M	<7 @ M	<7 @ M	<20 @ M	<7 @ M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<20 @	<10 @	<10 3 @	<10 @	<20 @	<10 @
1,1,2-Trichloroethane	<1 µg/kg	TM116	<20 @ M	<10 @ M	<10 @ M	<10 @ M	<20 @ M	<10 @ M
1,3-Dichloropropane	<1 µg/kg	TM116	<20 @ M	<7 @ M	<7 @ M	<7 @ M	<20 @ M	<7 @ M

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT15	BHT17	TP301	TP302	TP303	TP304
Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<40 @ M	<5 @ M	<5 @ M	<5 @ M	<40 @ M	<5 @ M
Dibromochloromethane	<2 µg/kg	TM116	<40 @ M	<10 @ M	<10 @ M	<10 @ M	<40 @ M	<10 @ M
1,2-Dibromoethane	<1 µg/kg	TM116	<20 @ M	<10 @ M	<10 @ M	<10 @ M	<20 @ M	<10 @ M
Chlorobenzene	<2 µg/kg	TM116	<40 @ M	<5 @ M	<5 @ M	<5 @ M	<40 @ M	<5 @ M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<20 @ M	<10 @ M	<10 @ M	<10 @ M	<20 @ M	<10 @ M
Ethylbenzene	<1 µg/kg	TM116	<20 @ M	<4 @ M	<4 @ M	<4 @ M	<20 @ M	<4 @ M
p/m-Xylene	<2 µg/kg	TM116	<40 @ #	<10 @ #	<10 @ #	<10 @ #	<40 @ #	<10 @ #
o-Xylene	<2 µg/kg	TM116	<40 @ M	<10 @ M	<10 @ M	<10 @ M	<40 @ M	<10 @ M
Styrene	<2 µg/kg	TM116	<40 @ #	<10 @ #	<10 @ #	<10 @ #	<40 @ #	<10 @ #
Bromoform	<2 µg/kg	TM116	<40 @ M	<10 @ M	<10 @ M	<10 @ M	<40 @ M	<10 @ M
Isopropylbenzene	<2 µg/kg	TM116	<40 @ #	<5 @ #	<5 @ #	<5 @ #	<40 @ #	<5 @ #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<40 @ #	<10 @ #	<10 @ #	<10 @ #	<40 @ #	<10 @ #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<40 @ M	<16 @ M	<16 @ M	<16 @ M	<40 @ M	<16 @ M
Bromobenzene	<2 µg/kg	TM116	<40 @ M	<10 @ M	<10 @ M	<10 @ M	<40 @ M	<10 @ M
Propylbenzene	<2 µg/kg	TM116	<40 @ M	<10 @ M	<10 @ M	<10 @ M	<40 @ M	<10 @ M
2-Chlorotoluene	<3 µg/kg	TM116	<60 @ M	<9 @ M	<9 @ M	<9 @ M	<60 @ M	<9 @ M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<40 @ M	<8 @ M	<8 @ M	<8 @ M	<40 @ M	<8 @ M
4-Chlorotoluene	<3 µg/kg	TM116	<60 @ M	<10 @ M	<10 @ M	<10 @ M	<60 @ M	<10 @ M
tert-Butylbenzene	<2 µg/kg	TM116	<40 @ #	<14 @ #	<14 @ #	<14 @ #	<40 @ #	<14 @ #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<60 @ #	<9 @ #	<9 @ #	<9 @ #	<60 @ #	<9 @ #
sec-Butylbenzene	<1 µg/kg	TM116	<20 @	<10 @	<10 @	<10 @	<20 @	<10 @
4-Isopropyltoluene	<2 µg/kg	TM116	<40 @	<10 @	<10 @	<10 @	<40 @	<10 @
1,3-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<8 @ M	<8 @ M	<8 @ M	<100 @ M	<8 @ M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<5 @ M	<5 @ M	<100 @ M	<5 @ M
n-Butylbenzene	<3 µg/kg	TM116	<60 @	<11 @	<11 @	<11 @	<60 @	<11 @
1,2-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<10 @ M	<10 @ M	<10 @ M	<100 @ M	<10 @ M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<40 @ M	<14 @ M	<14 3 @ M	<14 @ M	<40 @ M	<14 @ M
Tert-amyl methyl ether	<1 µg/kg	TM116	<20 @ #	<10 @ #	<10 @ #	<10 @ #	<20 @ #	<10 @ #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<140 @	<20 @	<20 @	<20 @	<140 @	<20 @
Hexachlorobutadiene	<4 µg/kg	TM116	<80 @	<20 @	<20 @	<20 @	<80 @	<20 @
Naphthalene	<8 µg/kg	TM116	<160 @ M	<13 @ M	<13 @ M	<13 @ M	<160 @ M	<13 @ M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<200 @ #	<20 @ #	<20 @ #	<20 @ #	<200 @ #	<20 @ #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<140	<20	<20	<20	<140	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4 @	<0.02 @	<0.02 @	<0.02 @	<0.4 @	<0.02 @
Sum of BTEX	<7 µg/kg	TM116	<140 @	<40 @	<40 @	<40 @	<140 @	<40 @

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CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP305	TP306	TP308	TP309	TP310	TP311
Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Dibromofluoromethane**	%	TM116	104 @	110 @	105	99.2	109	114
Toluene-d8**	%	TM116	95.3 @	98.8 @	95.7	100	94.9	98.9
4-Bromofluorobenzene**	%	TM116	76.2 @	81.4 @	76	100	77.1	83.8
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 @ #	<6 @ #	<0.5 #	<6 #	<6 #	<6 #
Chloromethane	<2 µg/kg	TM116	<7 3 @ #	<7 3 @ #	<2 #	<7 3 #	<7 3 #	<7 3 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<0.5 @ M	<6 @ M	<6 @ M	<6 @ M
Bromomethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<1 M	<10 M	<10 M	<10 M
Chloroethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<1 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 3 @ M	<6 3 @ M	<0.5 3 M	<6 3 M	<6 3 M	<6 3 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 @ #	<10 @ #	<0.5 #	<10 #	<10 #	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 @ M	<7 @ M	6.38 M	<7 M	<7 M	17 M
Dichloromethane	<5 µg/kg	TM116	<10 @ #	<10 @ #	<5 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<0.5 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 @ M	<10 @ M	<1 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 @ M	<8 @ M	<0.5 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<0.5 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10 @	<10 @	<1	<10	<10	<10
Bromochloromethane	<2 µg/kg	TM116	<10 @ M	<10 @ M	<2 M	<10 M	<10 M	<10 M
Chloroform	<3 µg/kg	TM116	<8 @ M	<8 @ M	<3 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 @ M	<7 @ M	<0.5 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<0.5 M	<10 M	<10 M	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<0.5 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 @ M	<5 @ M	<1 3 M	<5 M	<5 M	<5 M
Benzene	<1 µg/kg	TM116	<9 @ M	<9 @ M	<1 M	<9 M	<9 M	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 @ #	<9 @ #	<1 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<0.5 M	<10 M	<10 M	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 @ M	<9 @ M	<1 M	<9 M	<9 M	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 @ M	<7 @ M	<2 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<0.5 M	<10 M	<10 M	<10 M
Toluene	<1 µg/kg	TM116	<7 @ M	<7 @ M	<1 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10 @	<10 @	<1	<10	<10	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<1 M	<10 M	<10 M	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 @ M	<7 @ M	<1 M	<7 M	<7 M	<7 M

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP305	TP306	TP308	TP309	TP310	TP311
Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<5 @ M	<5 @ M	<2 M	<5 M	<5 M	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 @ M	<10 @ M	<2 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<1 M	<10 M	<10 M	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 @ M	<5 @ M	<2 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<1 M	<10 M	<10 M	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 @ M	<4 @ M	<1 M	<4 M	<4 M	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<2 #	<10 #	<10 #	<10 #
o-Xylene	<2 µg/kg	TM116	<10 @ M	<10 @ M	<2 M	<10 M	<10 M	<10 M
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<2 @ #	<10 @ #	<10 @ #	<10 @ #
Bromoform	<2 µg/kg	TM116	<10 @ M	<10 @ M	<2 M	<10 M	<10 M	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 @ #	<5 @ #	<2 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 @ #	<10 @ #	<2 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 @ M	<16 @ M	<2 M	<16 M	<16 M	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 @ M	<10 @ M	<2 M	<10 M	<10 M	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 @ M	<10 @ M	<2 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 @ M	<9 @ M	<3 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 @ M	<8 @ M	<2 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 @ M	<10 @ M	<3 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 @ #	<14 @ #	<2 #	<14 #	<14 #	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 @ #	<9 @ #	<3 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10 @	<10 @	<1	<10	<10	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10 @	<10 @	<2	<10	<10	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 @ M	<8 @ M	<5 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 @ M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11 @	<11 @	<3	<11	<11	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 @ M	<10 @ M	<5 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 @ M	<14 @ M	<2 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 @ #	<10 @ #	<1 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20 @	<20 @	<7	<20	<20	<20
Hexachlorobutadiene	<4 µg/kg	TM116	<20 @	<20 @	<4	<20	<20	<20
Naphthalene	<8 µg/kg	TM116	<13 @ M	<13 @ M	<8 M	<13 M	<13 M	<13 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 @ #	<20 @ #	<10 #	<20 #	<20 #	<20 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<7	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02 @	<0.02 @	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40 @	<40 @	<7	<40	<40	<40

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CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			-	-	-	-		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	101 @	105 @	110 @	102 @		
Toluene-d8**	%	TM116	96.3 @	97 @	98.3 @	97.5 @		
4-Bromofluorobenzene**	%	TM116	78.6 @	80.3 @	94.4 @	80.2 @		
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 @ #	<6 @ #	<6 @ #	<6 @ #		
Chloromethane	<2 µg/kg	TM116	<7 3 @ #	<7 3 @ #	<7 @ #	<7 @ #		
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<6 @ M	<6 @ M		
Bromomethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Chloroethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Trichlorofluorormethane	<0.5 µg/kg	TM116	<6 3 @ M	<6 3 @ M	<6 @ M	<6 3 @ M		
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #		
Carbon Disulphide	<1 µg/kg	TM116	<7 @ M	<7 @ M	<7 @ M	<7 @ M		
Dichloromethane	<5 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 3 @ #		
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 @ M	<8 @ M	<8 @ M	<8 @ M		
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<6 @ M	<6 @ M		
2,2-Dichloropropane	<1 µg/kg	TM116	<10 @	<10 @	<10 3 @	<10 @		
Bromochloromethane	<2 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Chloroform	<3 µg/kg	TM116	<8 @ M	<8 @ M	<8 @ M	<8 @ M		
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 @ M	<7 @ M	<7 @ M	<7 @ M		
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Carbontetrachloride	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
1,2-Dichloroethane	<1 µg/kg	TM116	<5 @ M	<5 @ M	<5 3 @ M	<5 3 @ M		
Benzene	<1 µg/kg	TM116	<9 @ M	<9 @ M	<9 @ M	<9 @ M		
Trichloroethene	<1 µg/kg	TM116	<9 @ #	<9 @ #	<9 @ #	<9 @ #		
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Dibromomethane	<1 µg/kg	TM116	<9 @ M	<9 @ M	<9 @ M	<9 @ M		
Bromodichloromethane	<2 µg/kg	TM116	<7 @ M	<7 @ M	<7 @ M	<7 @ M		
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 3 @ M	<10 @ M		
Toluene	<1 µg/kg	TM116	<7 @ M	<7 @ M	<7 @ M	<7 @ M		
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10 @	<10 @	<10 3 @	<10 @		
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
1,3-Dichloropropane	<1 µg/kg	TM116	<7 @ M	<7 @ M	<7 @ M	<7 @ M		

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP307A	TPT13	TPT14	TPT15		
Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			.	.	.	.		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Tetrachloroethene	<2 µg/kg	TM116	<5 @ M	<5 @ M	<5 @ M	<5 @ M		
Dibromochloromethane	<2 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
1,2-Dibromoethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Chlorobenzene	<2 µg/kg	TM116	<5 @ M	<5 @ M	<5 @ M	<5 @ M		
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Ethylbenzene	<1 µg/kg	TM116	<4 @ M	<4 @ M	<4 @ M	<4 @ M		
p/m-Xylene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #		
o-Xylene	<2 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #		
Bromoform	<2 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Isopropylbenzene	<2 µg/kg	TM116	<5 @ #	<5 @ #	<5 @ #	<5 @ #		
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #		
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 @ M	<16 @ M	<16 @ M	<16 @ M		
Bromobenzene	<2 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Propylbenzene	<2 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
2-Chlorotoluene	<3 µg/kg	TM116	<9 @ M	<9 @ M	<9 @ M	<9 @ M		
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 @ M	<8 @ M	<8 @ M	<8 @ M		
4-Chlorotoluene	<3 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
tert-Butylbenzene	<2 µg/kg	TM116	<14 @ #	<14 @ #	<14 @ #	<14 @ #		
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 @ #	<9 @ #	<9 @ #	<9 @ #		
sec-Butylbenzene	<1 µg/kg	TM116	<10 @	<10 @	<10 @	<10 @		
4-Isopropyltoluene	<2 µg/kg	TM116	<10 @	<10 @	<10 @	<10 @		
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 @ M	<8 @ M	<8 @ M	<8 @ M		
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 @ M	<5 @ M	<5 @ M		
n-Butylbenzene	<3 µg/kg	TM116	<11 @	<11 @	<11 @	<11 @		
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 @ M	<14 @ M	<14 3 @ M	<14 3 @ M		
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #		
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20 @	<20 @	<20 @	<20 @		
Hexachlorobutadiene	<4 µg/kg	TM116	<20 @	<20 @	<20 @	<20 @		
Naphthalene	<8 µg/kg	TM116	<13 @ M	<13 @ M	<13 @ M	<13 @ M		
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 @ #	<20 @ #	<20 @ #	<20 @ #		
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<20		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			.	.	.	.		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02 @	<0.02 @	<0.02 @	<0.02 @		
Sum of BTEX	<7 µg/kg	TM116	<40 @	<40 @	<40 @	<40 @		

12:33:26 12/06/2023

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦$@	Sample deviation (see appendix)

Cust. Sample Ref. / Depth (m) / Sample Type / Date Sampled / Date Received / SDG / Original Sample / Method Number	Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. BHT15ES1 Depth (m) 7.00 - 7.00 Sample Type SOLID Date Sampled 19/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060279 Method Number TM048	06/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. BHT17ES1 Depth (m) 5.50 - 5.50 Sample Type SOLID Date Sampled 17/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060350 Method Number TM048	06/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. TP301ES1 Depth (m) 0.70 - 0.80 Sample Type SOLID Date Sampled 16/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060320 Method Number TM048	05/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. TP302ES1 Depth (m) 0.90 - 1.00 Sample Type SOLID Date Sampled 16/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060331 Method Number TM048	5/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. TP303ES1 Depth (m) 2.20 - 2.30 Sample Type SOLID Date Sampled 16/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060259 Method Number TM048	06/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. TP304ES1 Depth (m) 2.30 - 2.40 Sample Type SOLID Date Sampled 17/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060270 Method Number TM048	05/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. TP305ES1 Depth (m) 0.80 - 0.90 Sample Type SOLID Date Sampled 17/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060265 Method Number TM048	5/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. TP306ES1 Depth (m) 1.50 - 1.60 Sample Type SOLID Date Sampled 17/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060344 Method Number TM048	5/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP308ES1 1.30 - 1.40 SOLID 22/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060300 TM048	06/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP309ES1 0.30 - 0.40 SOLID 22/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060284 TM048	5/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP310ES1 3.10 - 3.20 SOLID 22/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060294 TM048	06/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP311ES1 3.90 - 4.00 SOLID 22/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060289 TM048	5/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP307AES1 1.00 - 1.10 SOLID 17/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060337 TM048	05/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT13ES1 0.20 - 0.30 SOLID 16/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060315 TM048	05/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT14ES1 0.15 - 0.30 SOLID 16/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060326 TM048	05/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT15ES1 0.40 - 0.50 SOLID 16/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060307 TM048	06/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	28060279	28060350	28060320	28060331	28060259	28060270	28060265	28060344	28060300	28060284
Customer Sample Ref.	BHT15	BHT17	TP301	TP302	TP303	TP304	TP305	TP306	TP308	TP309
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40	0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	03-Jun-2023	03-Jun-2023	03-Jun-2023	05-Jun-2023	05-Jun-2023	03-Jun-2023	03-Jun-2023	03-Jun-2023	03-Jun-2023	03-Jun-2023
Anions in soil by IC	05-Jun-2023	05-Jun-2023	05-Jun-2023	06-Jun-2023	06-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023
Asbestos ID in Solid Samples	06-Jun-2023	06-Jun-2023	05-Jun-2023	05-Jun-2023	06-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	06-Jun-2023	05-Jun-2023
Chromium III	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	01-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023
EPH CWG GC (S)	01-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
GRO by GC-FID (S)	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Hexavalent Chromium (s)	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
Magnesium (BRE)	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	05-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Metals in solid samples by OES	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
PAH by GCMS	31-May-2023	31-May-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	31-May-2023	01-Jun-2023	01-Jun-2023	31-May-2023	31-May-2023
PCBs by GCMS	05-Jun-2023	05-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	05-Jun-2023	02-Jun-2023	02-Jun-2023	05-Jun-2023	05-Jun-2023
pH	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023
Phenols by HPLC (S)	01-Jun-2023	01-Jun-2023	01-Jun-2023	31-May-2023	31-May-2023	31-May-2023	31-May-2023	31-May-2023	01-Jun-2023	31-May-2023
Sample description	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023
Semi Volatile Organic Compounds	31-May-2023	31-May-2023	02-Jun-2023	31-May-2023	31-May-2023	31-May-2023	31-May-2023	31-May-2023	02-Jun-2023	31-May-2023
Total Organic Carbon	09-Jun-2023	09-Jun-2023	09-Jun-2023	10-Jun-2023	09-Jun-2023	10-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023
Total Sulphate	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
Total Sulphur	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
TPH CWG GC (S)	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023
VOC MS (S)	05-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	05-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	03-Jun-2023	02-Jun-2023

Lab Sample No(s)	28060294	28060289	28060337	28060315	28060326	28060307
Customer Sample Ref.	TP310	TP311	TP307A	TPT13	TPT14	TPT15
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1
Depth	3.10 - 3.20	3.90 - 4.00	1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	03-Jun-2023	03-Jun-2023	03-Jun-2023	03-Jun-2023	03-Jun-2023	03-Jun-2023
Anions in soil by IC	05-Jun-2023	06-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023
Asbestos ID in Solid Samples	06-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	06-Jun-2023
Chromium III	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	02-Jun-2023
EPH CWG GC (S)	01-Jun-2023	01-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
GRO by GC-FID (S)	01-Jun-2023	01-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023
Hexavalent Chromium (s)	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	01-Jun-2023
Magnesium (BRE)	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Metals in solid samples by OES	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
PAH by GCMS	31-May-2023	31-May-2023	01-Jun-2023	31-May-2023	01-Jun-2023	31-May-2023
PCBs by GCMS	06-Jun-2023	01-Jun-2023	02-Jun-2023	05-Jun-2023	02-Jun-2023	01-Jun-2023
pH	02-Jun-2023	05-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
Phenols by HPLC (S)	31-May-2023	01-Jun-2023	31-May-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Sample description	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023
Semi Volatile Organic Compounds	31-May-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	31-May-2023	31-May-2023
Total Organic Carbon	09-Jun-2023	10-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023
Total Sulphate	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
Total Sulphur	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
TPH CWG GC (S)	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
VOC MS (S)	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	12 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230601-67
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	692166
Order Number:	12380

We received 11 samples on Thursday June 01, 2023 and 11 of these samples were scheduled for analysis which was completed on Monday June 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28084622	TPT01	ES1	2.40 - 2.50	26/05/2023
28084638	TPT02	ES1	2.10 - 2.20	26/05/2023
28084645	TPT03	ES1	1.50 - 1.60	26/05/2023
28084651	TPT04	ES1	0.10 - 0.20	26/05/2023
28084656	TPT05	ES1	1.00 - 1.10	25/05/2023
28084661	TPT06	ES1	0.30 - 0.40	25/05/2023
28084666	TPT07	ES1	0.30 - 0.40	25/05/2023
28084671	TPT09	ES1	0.50 - 0.60	25/05/2023
28084676	TPT10	ES1	0.20 - 0.30	25/05/2023
28084627	TPT11	ES1	0.20 - 0.30	24/05/2023
28084633	TPT12	ES1	0.30 - 0.40	23/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28084622			28084638			28084645			28084651			28084656			28084661			28084666
Customer Sample Reference			TPT01			TPT02			TPT03			TPT04			TPT05			TPT06			TPT07
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			2.40 - 2.50			2.10 - 2.20			1.50 - 1.60			0.10 - 0.20			1.00 - 1.10			0.30 - 0.40			0.30 - 0.40
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Anions in soil by IC	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 11	X			X			X			X			X			X			X
Chromium III	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 11			X			X			X			X			X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Magnesium (BRE)	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Sample description	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28084622			28084638			28084645			28084651			28084656			28084661			28084666
Customer Sample Reference			TPT01			TPT02			TPT03			TPT04			TPT05			TPT06			TPT07
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			2.40 - 2.50			2.10 - 2.20			1.50 - 1.60			0.10 - 0.20			1.00 - 1.10			0.30 - 0.40			0.30 - 0.40
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 10					X			X			X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 11			X			X			X			X			X			X	

28084633	TPT12	ES1	0.30 - 0.40	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		
				1kg TUB with Handle (ALE260)	S												
28084627	TPT11	ES1	0.20 - 0.30	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		
				1kg TUB with Handle (ALE260)	S												
28084676	TPT10	ES1	0.20 - 0.30	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		
				1kg TUB with Handle (ALE260)	S												
28084671	TPT09	ES1	0.50 - 0.60	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		
				1kg TUB with Handle (ALE260)	S												
28084666	TPT07	ES1	0.30 - 0.40	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28084622	TPT01	2.40 - 2.50	Beige	Sandy Silt Loam	Vegetation	None
28084638	TPT02	2.10 - 2.20	Dark Brown	Silt Loam	Stones	Vegetation
28084645	TPT03	1.50 - 1.60	Grey	Loamy Sand	Stones	None
28084651	TPT04	0.10 - 0.20	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28084656	TPT05	1.00 - 1.10	Grey	Silty Sand	None	None
28084661	TPT06	0.30 - 0.40	Dark Brown	Sandy Loam	Stones	Vegetation
28084666	TPT07	0.30 - 0.40	Dark Brown	Clay	Vegetation	None
28084671	TPT09	0.50 - 0.60	Dark Brown	Silty Sand	Stones	Vegetation
28084676	TPT10	0.20 - 0.30	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28084627	TPT11	0.20 - 0.30	Grey	Loamy Sand	Stones	None
28084633	TPT12	0.30 - 0.40	Dark Brown	Silt Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	47	46	22	26	26	16
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0012	0.000374	<0.0002	0.00048	0.000263	0.000318
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0896	0.199	0.0804	0.0125	0.0272	0.0493
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	0.0134 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	0.093 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	0.093 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.495 #	0.402 #	0.0651 #	0.0384 #	<0.02 #	<0.02 #
Organic Matter, Total	<0.35 %	TM132	3.12 #	9.65 #	0.945 #	2.88 #	2.95 #	1.18 #
Sulphate, Total potential	<0.06 %	TM132	1.49	1.21	0.195	0.115	0.06	0.06
pH	1 pH Units	TM133	8.07 M	7.19 M	8.46 M	7.15 M	8.36 M	8.11 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<105	<105	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<180	<180	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	<0.9	36.1	5.73	34.7	5.72	11.6
Arsenic	<0.6 mg/kg	TM181	6.57 M	8 M	3.55 M	3.07 M	3.38 M	3.87 M
Barium	<0.6 mg/kg	TM181	338 #	69.5 #	8.24 #	30 #	14.9 #	49.9 #
Beryllium	<0.01 mg/kg	TM181	0.188 M	0.97 M	0.197 M	0.496 M	0.312 M	0.582 M
Cadmium	<0.02 mg/kg	TM181	0.107 M	1.67 M	0.546 M	1.47 M	0.644 M	0.681 M
Chromium	<0.9 mg/kg	TM181	<0.9 M	36.1 M	5.73 M	34.7 M	5.72 M	11.6 M
Copper	<1.4 mg/kg	TM181	<1.4 M	23.3 M	3.14 M	11.1 M	8.88 M	11.9 M
Lead	<0.7 mg/kg	TM181	<0.7 M	18.3 M	4.06 M	21.2 M	9.71 M	11.5 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	1.95 M	57.8 M	9.91 M	42.8 M	21.9 M	23.4 M
Selenium	<1 mg/kg	TM181	1.09 #	1.61 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	6.13 #	35.4 #	6.2 #	17.5 #	7.95 #	15.4 #
Zinc	<1.9 mg/kg	TM181	6.39 M	129 M	24.9 M	74.6 M	48.9 M	53 M
Sulphate, acid soluble (total)	<0.0048 %	TM221		0.136 M	0.0367 M	0.0152 M	0.0216 M	0.0348 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.007 M	0.0073 M	0.0066 M	0.0054 M	0.0047 M	0.0044 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Moisture Content Ratio (% of as received sample)	%	PM024	35	18	17	8.1	28
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0415	<0.0002	0.00183	0.00153	0.0105
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0262	0.0677	0.0124	0.0125	0.0187
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0203 #	0.0724 #	0.0322 #	<0.02 #	0.0463 #
Organic Matter, Total	<0.35 %	TM132	2.93 #	1.74 #	1.5 #	1.51 #	2.9 #
Sulphate, Total potential	<0.06 %	TM132	0.0609	0.217	0.0966	0.06	0.139
pH	1 pH Units	TM133	4.87 M	8.49 M	8.45 M	9.01 M	7.73 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 @ M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12	
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40	
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023	
Sample Time			.	.	.	.	.	
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633	
AGS Reference			ES1	ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	51.6	8.37	5.05	5.29	21.5	
Arsenic	<0.6 mg/kg	TM181	3.82 M	2.31 M	2.04 M	2.26 M	4.72 M	
Barium	<0.6 mg/kg	TM181	190 #	43.4 #	22.1 #	23.3 #	89.7 #	
Beryllium	<0.01 mg/kg	TM181	0.787 M	0.288 M	0.216 M	0.317 M	0.909 M	
Cadmium	<0.02 mg/kg	TM181	0.257 M	0.482 M	0.571 M	0.436 M	0.644 M	
Chromium	<0.9 mg/kg	TM181	51.6 M	8.37 M	5.05 M	5.29 M	21.5 M	
Copper	<1.4 mg/kg	TM181	2.46 M	5.72 M	3.71 M	6.22 M	11.7 M	
Lead	<0.7 mg/kg	TM181	27.6 M	5.6 M	4.04 M	5.55 M	17.1 M	
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	
Nickel	<0.2 mg/kg	TM181	32.1 M	14.2 M	10.2 M	12.5 M	33.3 M	
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	
Vanadium	<0.2 mg/kg	TM181	36.6 #	7.74 #	5.87 #	8.22 #	29.8 #	
Zinc	<1.9 mg/kg	TM181	91.6 M	35.1 M	21.2 M	32.5 M	48.6 M	
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0205 M	0.0688 M	0.0256 M	0.0155 M	0.0225 M	
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0049 M	0.0052 M	0.0052 M	0.004 M	0.0055 M	
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	85.9	85.8	88.1	89.5	89.1	87.5
Acenaphthene-d10 % recovery**	%	TM218	91	91.8	93.2	97.2	93.7	92.4
Phenanthrene-d10 % recovery**	%	TM218	87.5	90.7	91.3	101	92	92.1
Chrysene-d12 % recovery**	%	TM218	97	103	102	109	99.1	98.6
Perylene-d12 % recovery**	%	TM218	87.1	88.1	90.4	92.1	88.7	89.4
Naphthalene	<9 µg/kg	TM218	<45 M	<18 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<60 M	<24 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<40 M	<16 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<50 M	<20 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<75 M	<30 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<80 M	<32 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<85 M	<34 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<75 M	<30 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<70 M	<28 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<50 M	<20 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<75 M	<30 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<70 M	<28 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<75 M	<30 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<90 M	<36 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<115 M	<46 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<120 M	<48 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<590	<236	<118	<118	<118	<118

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CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Naphthalene-d8 % recovery**	%	TM218	87.8	87.8	88.3	88.2	88.1
Acenaphthene-d10 % recovery**	%	TM218	93.4	93.4	92.3	92.9	93
Phenanthrene-d10 % recovery**	%	TM218	89.6	91.2	91.2	90.9	90.5
Chrysene-d12 % recovery**	%	TM218	97.2	98.1	103	101	100
Perylene-d12 % recovery**	%	TM218	86.3	87.3	93.8	90.2	89.3
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<400	<100	<100	<200	<200	<200
Hexachlorobutadiene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	TPT07	TPT09	TPT10	TPT11	TPT12	
Customer Sample Ref.								
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40	
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023	
Sample Time			-	-	-	-	-	
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633	
AGS Reference			ES1	ES1	ES1	ES1	ES1	
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<400	<200	<200	<100	<100	
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPT07	TPT09	TPT10	TPT11	TPT12	
Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12	
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40	
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023	
Sample Time			.	.	.	.	.	
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633	
AGS Reference			ES1	ES1	ES1	ES1	ES1	
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	

12:34:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	89.7	78.3	91.7	87.3	137 4	93.5
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<2000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<2000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	3400 #	2500 #	<1000 #	<1000 #	<1000 #	1110 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	11300 #	21200 #	<1000 #	5740 #	<1000 #	3120 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1370	<2000	<1000	1500	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	16100	25600	<5000	7240	<5000	5020
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	45000	75800	<10000	58700	<10000	11200
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<2000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<2000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	2280 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	16800 #	33200 #	<1000 #	47000 #	2630 #	4240 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	11400	14700	1080	4070	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	2700	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	28900	50200	<5000	51500	<5000	6170
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	45000	75800	<10000	58700	<10000	11200
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50 4	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50 4	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20 4	<20

12:34:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
GRO Surrogate % recovery**	%	TM089	103	108	89.2	95.5	89 @
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 @
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 @
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 @
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1220 #	15200 #	2320 #	<1000 #	4000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	2710	<1000	<1000	1220
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	18700	<5000	<5000	5230
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	32200	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 @
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 @
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 @
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	2770 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	6500 #	6500 #	3920 #	<1000 #	2310 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	4270	2210	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	8440	13500	6350	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	32200	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50 @
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50 @
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20 @

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	122	112	121	101	118	115
Toluene-d8**	%	TM116	94.7	97.4	100	85.6	101	98.1
4-Bromofluorobenzene**	%	TM116	79.1	98	101	87	109	76.5
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<10 #	<5 #	<0.5 #	<0.5 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<40 #	<20 #	<2 #	<2 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<10 @ M	<5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<10 #	<5 #	<0.5 #	<0.5 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	109 M	38.9 M	31.2 M	<1 M	4.81 M	4.63 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<100 #	<50 #	<5 #	<5 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<20	<10	<1	<1	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<60 M	<30 M	<3 M	<3 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<20 #	<10 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	3.83 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<20	<10	<1	<1	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	<40 #	<20 #	<2 #	<2 #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<40 @ #	<20 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<40 #	<20 #	<2 #	<2 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<40 #	<20 #	<2 #	<2 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<60 M	<30 M	<3 M	<3 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<60 M	<30 M	<3 M	<3 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<40 #	<20 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<60 #	<30 #	<3 #	<3 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<20	<10	<1	<1	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<40	<20	<2	<2	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<100 M	<50 M	<5 M	<5 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<100 M	<50 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<60	<30	<3	<3	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<100 M	<50 M	<5 M	<5 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<20 #	<10 #	<1 #	<1 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<140	<70	<7	<7	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<80	<40	<4	<4	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<160 M	<80 M	<8 M	<8 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<200 #	<100 #	<10 #	<10 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<140	<70	<7	<7	<7

12:34:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.4	<0.2	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	<140	<70	<7	<7	<7

12:34:26 12/06/2023

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Dibromofluoromethane**	%	TM116	112	112	100	114	107
Toluene-d8**	%	TM116	92.7	106	92.6	98.4	91.4
4-Bromofluorobenzene**	%	TM116	73.7	75.7	78.6	93	71.2
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<1 M	11.2 M	<1 M	<1 M	<1 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1	<1	<1	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M	3.73 M	<1 M	1.27 M	2.21 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023
Sample Time			.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #	<3 #	<3 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1	<1	<1	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2	<2	<2	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<3	<3	<3	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4	<4	<4	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7

12:34:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023
Sample Time			.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	<7	<7	<7	<7

12:34:26 12/06/2023

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref.	TPT01ES1	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	2.40 - 2.50										
Sample Type	SOLID										
Date Sampled	26/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084622										
Method Number	TM048										
Cust. Sample Ref.	TPT02ES1	08/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	2.10 - 2.20										
Sample Type	SOLID										
Date Sampled	26/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084638										
Method Number	TM048										
Cust. Sample Ref.	TPT03ES1	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.50 - 1.60										
Sample Type	SOLID										
Date Sampled	26/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084645										
Method Number	TM048										
Cust. Sample Ref.	TPT04ES1	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.10 - 0.20										
Sample Type	SOLID										
Date Sampled	26/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084651										
Method Number	TM048										
Cust. Sample Ref.	TPT05ES1	08/06/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.00 - 1.10										
Sample Type	SOLID										
Date Sampled	25/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084656										
Method Number	TM048										
Cust. Sample Ref.	TPT06ES1	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.30 - 0.40										
Sample Type	SOLID										
Date Sampled	25/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084661										
Method Number	TM048										
Cust. Sample Ref.	TPT07ES1	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.30 - 0.40										
Sample Type	SOLID										
Date Sampled	25/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084666										
Method Number	TM048										
Cust. Sample Ref.	TPT09ES1	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.50 - 0.60										
Sample Type	SOLID										
Date Sampled	25/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084671										
Method Number	TM048										

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CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT10ES1 0.20 - 0.30 SOLID 25/05/2023 00:00:00 01/06/2023 10:00:00 230601-67 28084676 TM048	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT11ES1 0.20 - 0.30 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-67 28084627 TM048	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT12ES1 0.30 - 0.40 SOLID 23/05/2023 00:00:00 01/06/2023 10:00:00 230601-67 28084633 TM048	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	28084622	28084638	28084645	28084651	28084656	28084661	28084666	28084671	28084676	28084627
Customer Sample Ref.	TPT01	TPT02	TPT03	TPT04	TPT05	TPT06	TPT07	TPT09	TPT10	TPT11
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40	0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	07-Jun-2023	07-Jun-2023	06-Jun-2023	07-Jun-2023	07-Jun-2023	06-Jun-2023	07-Jun-2023	06-Jun-2023	07-Jun-2023	07-Jun-2023
Anions in soil by IC	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
Asbestos ID in Solid Samples	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
Chromium III	08-Jun-2023	08-Jun-2023	08-Jun-2023	07-Jun-2023	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
EPH CWG GC (S)	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
GRO by GC-FID (S)	07-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	08-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Hexavalent Chromium (s)	08-Jun-2023	08-Jun-2023	08-Jun-2023	06-Jun-2023	08-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Magnesium (BRE)	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Metals in solid samples by OES	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
PAH by GCMS	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
PCBs by GCMS	08-Jun-2023	12-Jun-2023	08-Jun-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
pH	06-Jun-2023	06-Jun-2023	06-Jun-2023	08-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Phenols by HPLC (S)	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	06-Jun-2023
Sample description	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Semi Volatile Organic Compounds	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Total Organic Carbon	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Total Sulphate		06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Total Sulphur	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
TPH CWG GC (S)	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
VOC MS (S)	07-Jun-2023	08-Jun-2023	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	06-Jun-2023

Lab Sample No(s)	28084633
Customer Sample Ref.	TPT12
AGS Ref.	ES1
Depth	0.30 - 0.40
Type	Soil/Solid (S)
Anions by Kone (soil)	07-Jun-2023
Anions in soil by IC	08-Jun-2023
Asbestos ID in Solid Samples	08-Jun-2023
Chromium III	07-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	07-Jun-2023
EPH CWG GC (S)	07-Jun-2023
GRO by GC-FID (S)	06-Jun-2023
Hexavalent Chromium (s)	06-Jun-2023
Magnesium (BRE)	06-Jun-2023
Metals in solid samples by OES	07-Jun-2023
PAH by GCMS	07-Jun-2023
PCBs by GCMS	09-Jun-2023
pH	06-Jun-2023
Phenols by HPLC (S)	05-Jun-2023
Sample description	01-Jun-2023
Semi Volatile Organic Compounds	06-Jun-2023
Total Organic Carbon	12-Jun-2023
Total Sulphate	06-Jun-2023
Total Sulphur	12-Jun-2023
TPH CWG GC (S)	07-Jun-2023
VOC MS (S)	06-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	13 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230601-68
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	692294
Order Number:	12380

We received 8 samples on Thursday June 01, 2023 and 8 of these samples were scheduled for analysis which was completed on Tuesday June 13, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28084693	TPBP01	ES1	1.40 - 1.50	23/05/2023
28084712	TPBP02	ES1	0.20 - 0.30	23/05/2023
28084719	TPBP03	ES1	0.20 - 0.30	23/05/2023
28084726	TPBP04	ES1	0.50 - 0.60	24/05/2023
28084732	TPBP05	ES1	0.50 - 0.60	23/05/2023
28084740	TPBP06	ES1	0.20 - 0.30	24/05/2023
28084745	TPBP07	ES1	0.30 - 0.40	24/05/2023
28084752	TPBP08	ES1	3.20 - 3.30	24/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28084693			28084712			28084719			28084726			28084732			28084740			28084745
Customer Sample Reference			TPBP01			TPBP02			TPBP03			TPBP04			TPBP05			TPBP06			TPBP07
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			1.40 - 1.50			0.20 - 0.30			0.20 - 0.30			0.50 - 0.60			0.50 - 0.60			0.20 - 0.30			0.30 - 0.40
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Anions in soil by IC	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Chromium III	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8			X			X			X			X			X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Magnesium (BRE)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Sample description	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		

28084752	TPBP08	ES1	3.20 - 3.30	60g VOC (ALE215)	S									X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X														
28084745	TPBP07	ES1	0.30 - 0.40	60g VOC (ALE215)	S									X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28084693			28084712			28084719			28084726			28084732			28084740			28084745
Customer Sample Reference			TPBP01			TPBP02			TPBP03			TPBP04			TPBP05			TPBP06			TPBP07
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			1.40 - 1.50			0.20 - 0.30			0.20 - 0.30			0.50 - 0.60			0.50 - 0.60			0.20 - 0.30			0.30 - 0.40
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 7		X						X			X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 8			X			X			X			X			X			X	

28084752	TPBP08	ES1	3.20 - 3.30	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		
				1kg TUB with Handle (ALE260)	S												
28084745	TPBP07	ES1	0.30 - 0.40	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28084693	TPBP01	1.40 - 1.50	Dark Brown	Silt Loam	None	None
28084712	TPBP02	0.20 - 0.30	Light Brown	Clay Loam	Vegetation	Stones
28084719	TPBP03	0.20 - 0.30	Dark Brown	Sandy Loam	Stones	None
28084726	TPBP04	0.50 - 0.60	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28084732	TPBP05	0.50 - 0.60	Dark Brown	Sandy Loam	Stones	Vegetation
28084740	TPBP06	0.20 - 0.30	Dark Brown	Loamy Sand	Stones	Vegetation
28084745	TPBP07	0.30 - 0.40	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28084752	TPBP08	3.20 - 3.30	Grey	Sandy Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	61	25	4	38	22	1.8
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0016	0.000332	0.000859	0.00138	0.00228	0.00169
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.735	0.344	0.0115	0.378	0.0498	0.0146
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	2.9 #	0.303 #	0.0459 #	0.588 #	0.0995 #	0.0637 #
Organic Matter, Total	<0.35 %	TM132	27.9 #	15.4 #	7.36 #	9.76 #	6.95 #	0.638 #
Sulphate, Total potential	<0.06 %	TM132	8.7	0.909	0.138	1.76	0.299	0.191
pH	1 pH Units	TM133	5.56 M	8.2 M	8.79 M	7.75 M	9.03 M	9.02 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 @ M	<1 M	<1 @ M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<105	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<180	<36	<36

12:03:26 13/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	13.9	0.931	3.1	6.1	5.54	2.57
Arsenic	<0.6 mg/kg	TM181	51.8 M	2.56 M	3.14 M	14.7 M	3.91 M	2.15 M
Barium	<0.6 mg/kg	TM181	99.6 #	183 #	11.2 #	20 #	55 #	34.4 #
Beryllium	<0.01 mg/kg	TM181	0.681 M	0.18 M	0.158 M	0.428 M	0.28 M	0.152 M
Cadmium	<0.02 mg/kg	TM181	2.14 M	0.354 M	0.285 M	1.65 M	0.395 M	0.356 M
Chromium	<0.9 mg/kg	TM181	13.9 M	0.931 M	3.1 M	6.1 M	5.54 M	2.57 M
Copper	<1.4 mg/kg	TM181	20.9 M	3.47 M	2.63 M	23.7 M	5.08 M	2.23 M
Lead	<0.7 mg/kg	TM181	20.8 M	2.38 M	2.2 M	6.82 M	4.69 M	2.18 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	54.7 M	7 M	6.45 M	29.4 M	14 M	4.94 M
Selenium	<1 mg/kg	TM181	24.1 #	1.25 #	<1 #	8.47 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	22.5 #	3.93 #	3.74 #	9.96 #	7.04 #	5.09 #
Zinc	<1.9 mg/kg	TM181	165 M	24.9 M	13.4 M	71.6 M	31.1 M	17.6 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.866 M		0.0332 M	0.143 M	0.0587 M	0.0576 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.063 M	0.0049 M	0.0045 M	0.012 M	0.0095 M	0.0052 M
Magnesium (BRE)	<0.008 g/l	TM282	0.00867	<0.008	<0.008	<0.008	<0.008	<0.008

12:03:26 13/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPBP07	TPBP08				
Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			-	-				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Moisture Content Ratio (% of as received sample)	%	PM024	25	7.5				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0105	0.000433				
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0219	0.0119				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Sulphur, Total	<0.02 %	TM132	0.062 #	0.0545 #				
Organic Matter, Total	<0.35 %	TM132	2.5 #	5.17 #				
Sulphate, Total potential	<0.06 %	TM132	0.186	0.164				
pH	1 pH Units	TM133	8.4 M	9.07 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			.	.				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	14.3	5.79				
Arsenic	<0.6 mg/kg	TM181	8.89 M	1.56 M				
Barium	<0.6 mg/kg	TM181	61.9 #	39 #				
Beryllium	<0.01 mg/kg	TM181	0.667 M	0.32 M				
Cadmium	<0.02 mg/kg	TM181	0.791 M	0.778 M				
Chromium	<0.9 mg/kg	TM181	14.3 M	5.79 M				
Copper	<1.4 mg/kg	TM181	8.52 M	8.36 M				
Lead	<0.7 mg/kg	TM181	12.8 M	5.82 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181	30.5 M	15.9 M				
Selenium	<1 mg/kg	TM181	<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	18.1 #	8.81 #				
Zinc	<1.9 mg/kg	TM181	72.4 M	41 M				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0339 M	0.0318 M				
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.005 M	0.0029 M				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				

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CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
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PAH by GCMS

Results Legend

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1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	86.4	88.7	86.8	82.9	87.3	87.8
Acenaphthene-d10 % recovery**	%	TM218	97.1	94.6	92.4	88.3	92.4	93.8
Phenanthrene-d10 % recovery**	%	TM218	104	96.4	92.3	89.5	93.3	93.3
Chrysene-d12 % recovery**	%	TM218	106	109	103	105	106	102
Perylene-d12 % recovery**	%	TM218	93.2	96	91.5	87.7	91.5	92.3
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M	<9 @ M	<45 M	<9 @ M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M	<12 @ M	<60 M	<12 @ M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M	<8 @ M	<40 M	<8 @ M	<8 M
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<50 M	<10 @ M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<75 M	<15 @ M	<15 M
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M	<16 @ M	<80 M	<16 @ M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M	<17 @ M	<85 M	<17 @ M	<17 M
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<75 M	<15 @ M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<70 M	<14 @ M	<14 M
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<50 M	<10 @ M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<75 M	<15 @ M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<70 M	<14 @ M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<75 M	<15 @ M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M	<18 @ M	<90 M	<18 @ M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M	<23 @ M	<115 M	<23 @ M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M	<24 @ M	<120 M	<24 @ M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<590	<118	<118

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CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
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tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			-	-				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	86.9	86.8				
Acenaphthene-d10 % recovery**	%	TM218	93.2	92.3				
Phenanthrene-d10 % recovery**	%	TM218	93.8	88.7				
Chrysene-d12 % recovery**	%	TM218	106	92.7				
Perylene-d12 % recovery**	%	TM218	93.1	80.2				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M				
Pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M				
Chrysene	<10 µg/kg	TM218	<10 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				

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CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Isophorone	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<400	<200	<200	<1000	<200	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Carbazole	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Azobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Acenaphthene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Anthracene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Chrysene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Fluoranthene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Fluorene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Phenanthrene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Pyrene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Naphthalene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100

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Semi Volatile Organic Compounds

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Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
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Date Sampled			24/05/2023	24/05/2023				
Sample Time			-	-				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<200	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

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1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	TPBP07	TPBP08				
Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			.	.				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Acenaphthylene	<100 µg/kg	TM157	<100	<100				
Acenaphthene	<100 µg/kg	TM157	<100	<100				
Anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Fluoranthene	<100 µg/kg	TM157	<100	<100				
Fluorene	<100 µg/kg	TM157	<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100				
Phenanthrene	<100 µg/kg	TM157	<100	<100				
Pyrene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	60.5 4 @	80.8 @	91.8 @	93	78.6 @	95.9
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 4 @	<10 @	<10 @	<10	<10 @	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 4 @	<10 @	<10 @	<10	<10 @	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 4 @	<10 @	<10 @	<10	<10 @	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	9860 #	<1000 #	<1000 #	3110 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	36900 #	8070 #	3190 #	16200 #	<1000 #	5710 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	9430	<1000	<1000	1630	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	56200	9480	<5000	21000	<5000	6270
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	198000	19200	<10000	82900	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 4 @	<10 @	<10 @	<10	<10 @	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 4 @	<10 @	<10 @	<10	<10 @	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 4 @	<10 @	<10 @	<10	<10 @	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	16200 #	<1000 #	<1000 #	1960 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	90600 #	6570 #	4620 #	36400 #	2200 #	1190 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	34200	2420	<1000	23600	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	11700	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	141000	9700	6200	61900	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	198000	19200	<10000	82900	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 4 @	<50 @	<50 @	<50	<50 @	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 4 @	<50 @	<50 @	<50	<50 @	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 4 @	<20 @	<20 @	<20	<20 @	<20

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			-	-				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	100	99.2				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1060 #	<1000 #				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	4860 #	<1000 #				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	6170	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20				

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	108 @	109 @	111 @	109	121 @	108
Toluene-d8**	%	TM116	97.2 @	82 @	97.2 @	98.7	98.6 @	98.7
4-Bromofluorobenzene**	%	TM116	95.5 @	79.1 @	83.9 @	79.1	101 @	102
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<10 @ #	<0.5 @ #	<0.5 @ #	<0.5 #	<10 @ #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #	<2 #	<40 @ #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Chloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 @ #	<0.5 @ #	<0.5 @ #	<0.5 #	<10 @ #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	1570 @ M	2.95 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Dichloromethane	<5 µg/kg	TM116	<100 @ #	<5 @ #	<5 @ #	<5 #	<100 @ #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<20 @	<1 @	<1 @	<1	<20 @	<1
Bromochloromethane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Chloroform	<3 µg/kg	TM116	<60 @ M	<3 @ M	<3 @ M	<3 M	<60 @ M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Benzene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Trichloroethene	<1 µg/kg	TM116	<20 @ #	<1 @ #	<1 @ #	<1 #	<20 @ #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
Toluene	<1 µg/kg	TM116	<20 @ M	<1 @ M	2.82 @ M	1.81 M	<20 @ M	2.08 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<20 @	<1 @	<1 @	<1	<20 @	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #	<2 #	<40 @ #	<2 #
o-Xylene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Styrene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #	<2 #	<40 @ #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #	<2 #	<40 @ #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Bromobenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Propylbenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<60 @ M	<3 @ M	<3 @ M	<3 M	<60 @ M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<60 @ M	<3 @ M	<3 @ M	<3 M	<60 @ M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #	<2 #	<40 @ #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<60 @ #	<3 @ #	<3 @ #	<3 #	<60 @ #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<20 @	<1 @	<1 @	<1	<20 @	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<40 @	<2 @	<2 @	<2	<40 @	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<5 @ M	<5 M	<100 @ M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<5 @ M	<5 M	<100 @ M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<60 @	<3 @	<3 @	<3	<60 @	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<5 @ M	<5 M	<100 @ M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<20 @ #	<1 @ #	<1 @ #	<1 #	<20 @ #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<140 @	<7 @	<7 @	<7	<140 @	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<80 @	<4 @	<4 @	<4	<80 @	<4
Naphthalene	<8 µg/kg	TM116	<160 @ M	<8 @ M	<8 @ M	<8 M	<160 @ M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<200 @ #	<10 @ #	<10 @ #	<10 #	<200 @ #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<140	<7	<7	<7	<140	<7

12:03:26 13/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4 @	<0.02 @	<0.02 @	<0.02	<0.4 @	<0.02
Sum of BTEX	<7 µg/kg	TM116	<140 @	<7 @	<7 @	<7	<140 @	<7

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CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPBP07	TPBP08				
Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			-	-				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Dibromofluoromethane**	%	TM116	119	121				
Toluene-d8**	%	TM116	84.7	97.1				
4-Bromofluorobenzene**	%	TM116	77.9	74.8				
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #				
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #				
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M				
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M				
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M				
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #				
Carbon Disulphide	<1 µg/kg	TM116	<1 M	2.89 M				
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M				
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1				
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M				
Chloroform	<3 µg/kg	TM116	<3 M	<3 M				
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M				
Benzene	<1 µg/kg	TM116	<1 M	<1 M				
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #				
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M				
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M				
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
Toluene	<1 µg/kg	TM116	1.72 M	6.59 M				
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1				
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M				
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			.	.				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M				
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M				
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M				
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M				
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M				
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M				
p/m-Xylene	<2 µg/kg	TM116	<2 #	2.5 #				
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M				
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #				
Bromoform	<2 µg/kg	TM116	<2 M	<2 M				
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #				
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #				
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M				
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M				
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M				
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M				
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M				
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M				
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #				
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #				
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1				
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2				
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
n-Butylbenzene	<3 µg/kg	TM116	<3	<3				
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M				
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #				
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7				
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4				
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M				
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #				
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			.	.				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02				
Sum of BTEX	<7 µg/kg	TM116	<7	9.09				

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Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP01ES1 1.40 - 1.50 SOLID 23/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084693 TM048	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP02ES1 0.20 - 0.30 SOLID 23/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084712 TM048	08/06/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP03ES1 0.20 - 0.30 SOLID 23/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084719 TM048	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP04ES1 0.50 - 0.60 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084726 TM048	05/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP05ES1 0.50 - 0.60 SOLID 23/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084732 TM048	08/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP06ES1 0.20 - 0.30 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084740 TM048	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP07ES1 0.30 - 0.40 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084745 TM048	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP08ES1 3.20 - 3.30 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084752 TM048	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28084693	28084712	28084719	28084726	28084732	28084740	28084745	28084752
Customer Sample Ref.	TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06	TPBP07	TPBP08
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30	0.30 - 0.40	3.20 - 3.30
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	08-Jun-2023	07-Jun-2023	06-Jun-2023	07-Jun-2023	07-Jun-2023	06-Jun-2023	07-Jun-2023	06-Jun-2023
Anions in soil by IC	09-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
Asbestos ID in Solid Samples	08-Jun-2023	08-Jun-2023	08-Jun-2023	05-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
Chromium III	07-Jun-2023	07-Jun-2023	07-Jun-2023	08-Jun-2023	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
EPH CWG GC (S)	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
GRO by GC-FID (S)	08-Jun-2023	06-Jun-2023	07-Jun-2023	07-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Hexavalent Chromium (s)	06-Jun-2023	06-Jun-2023	06-Jun-2023	08-Jun-2023	08-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Magnesium (BRE)	08-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Metals in solid samples by OES	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
PAH by GCMS	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
PCBs by GCMS	12-Jun-2023	12-Jun-2023	08-Jun-2023	12-Jun-2023	12-Jun-2023	08-Jun-2023	12-Jun-2023	08-Jun-2023
pH	06-Jun-2023	08-Jun-2023	06-Jun-2023	06-Jun-2023	08-Jun-2023	06-Jun-2023	08-Jun-2023	06-Jun-2023
Phenols by HPLC (S)	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	06-Jun-2023
Sample description	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Semi Volatile Organic Compounds	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Total Organic Carbon	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Total Sulphate	06-Jun-2023		06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Total Sulphur	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	13-Jun-2023	12-Jun-2023	12-Jun-2023
TPH CWG GC (S)	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
VOC MS (S)	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	12 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230601-71
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	692167
Order Number:	12380

We received 5 samples on Thursday June 01, 2023 and 5 of these samples were scheduled for analysis which was completed on Monday June 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28084795	BHT10	ES1	5.50 - 5.50	25/05/2023
28084813	BHT11	ES1	5.00 - 5.00	24/05/2023
28084821	BHT12	ES1	6.00 - 6.00	24/05/2023
28084829	BHT13	ES1	3.00 - 3.00	24/05/2023
28084834	BHT14	ES1	1.50 - 1.50	19/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

		Lab Sample No(s)	28084795			28084813			28084821			28084829			28084834	
		Customer Sample Reference	BHT10			BHT11			BHT12			BHT13			BHT14	
		AGS Reference	ES1			ES1			ES1			ES1			ES1	
		Depth (m)	5.50 - 5.50			5.00 - 5.00			6.00 - 6.00			3.00 - 3.00			1.50 - 1.50	
		Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
		Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 5		X			X			X			X		X
Anions in soil by IC	All	NDPs: 0 Tests: 5		X			X			X			X		X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5	X			X			X			X		X	
Chromium III	All	NDPs: 0 Tests: 5		X			X			X			X		X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5		X			X			X			X		X
EPH CWG GC (S)	All	NDPs: 0 Tests: 5		X			X			X			X		X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 5			X			X			X		X		X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 5		X			X			X			X		X
Magnesium (BRE)	All	NDPs: 0 Tests: 5		X			X			X			X		X
Metals in solid samples by OES	All	NDPs: 0 Tests: 5		X			X			X			X		X
PAH by GCMS	All	NDPs: 0 Tests: 5		X			X			X			X		X
PCBs by GCMS	All	NDPs: 0 Tests: 5		X			X			X			X		X
pH	All	NDPs: 0 Tests: 5		X			X			X			X		X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 5		X			X			X			X		X
Sample description	All	NDPs: 0 Tests: 5		X			X			X			X		X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)				28084795			28084813			28084821			28084829		28084834
Customer Sample Reference				BHT10			BHT11			BHT12			BHT13		BHT14
AGS Reference				ES1			ES1			ES1			ES1		ES1
Depth (m)				5.50 - 5.50			5.00 - 5.00			6.00 - 6.00			3.00 - 3.00		1.50 - 1.50
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type				S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 5			X			X			X			X		X
Total Organic Carbon	All	NDPs: 0 Tests: 5			X			X			X			X		X
Total Sulphate	All	NDPs: 0 Tests: 5			X			X			X			X		X
Total Sulphur	All	NDPs: 0 Tests: 5			X			X			X			X		X
TPH CWG GC (S)	All	NDPs: 0 Tests: 5			X			X			X			X		X
VOC MS (S)	All	NDPs: 0 Tests: 5				X			X			X		X		X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28084795	BHT10	5.50 - 5.50	Grey	Silty Clay	Stones	None
28084813	BHT11	5.00 - 5.00	Dark Brown	Sand	Stones	Vegetation
28084821	BHT12	6.00 - 6.00	Grey	Sand	Stones	None
28084829	BHT13	3.00 - 3.00	Grey	Sand	Stones	Vegetation
28084834	BHT14	1.50 - 1.50	Dark Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Moisture Content Ratio (% of as received sample)	%	PM024	19	2.8	9	3	8.9
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00036	0.00026	0.000249	<0.0002	0.000256
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.018	0.0169	0.0253	0.0174	0.013
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 @ M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 @ M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 @ M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 @ M
Sulphur, Total	<0.02 %	TM132	0.0825 #	0.0458 #	0.112 #	0.0491 #	0.0285 #
Organic Matter, Total	<0.35 %	TM132	0.46 #	0.402 #	<0.35 #	<0.35 #	0.648 #
Sulphate, Total potential	<0.06 %	TM132	0.248	0.137	0.336	0.147	0.0855
pH	1 pH Units	TM133	8.64 M	9.61 M	9.43 M	9.66 M	8.93 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 @ M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14	
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50	
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023	
Sample Time			.	.	.	.	.	
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71	
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834	
AGS Reference			ES1	ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	5.21	4.26	4.1	3.23	8.52	
Arsenic	<0.6 mg/kg	TM181	1.88 M	2.38 M	2.17 M	1.71 M	1.9 M	
Barium	<0.6 mg/kg	TM181	40.8 #	10.4 #	7.45 #	9.37 #	8.27 #	
Beryllium	<0.01 mg/kg	TM181	0.461 M	0.216 M	0.167 M	0.199 M	0.237 M	
Cadmium	<0.02 mg/kg	TM181	0.875 M	0.344 M	0.379 M	0.44 M	0.385 M	
Chromium	<0.9 mg/kg	TM181	5.21 M	4.26 M	4.1 M	3.23 M	8.52 M	
Copper	<1.4 mg/kg	TM181	12.3 M	4.47 M	4.11 M	4.22 M	4.38 M	
Lead	<0.7 mg/kg	TM181	10.2 M	3.64 M	3.03 M	3.43 M	7.1 M	
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	
Nickel	<0.2 mg/kg	TM181	22.2 M	14.8 M	15.3 M	8.95 M	15 M	
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	
Vanadium	<0.2 mg/kg	TM181	10.3 #	4.46 #	4.58 #	4.32 #	4.65 #	
Zinc	<1.9 mg/kg	TM181	55.2 M	27.8 M	17.8 M	26.1 M	29.4 M	
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0186 M	0.0314 M	0.0273 M	0.0245 M	0.0227 M	
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.004 M	0.0037 M	0.004 M	0.0034 M	0.0037 M	
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	

12:35:19 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Naphthalene-d8 % recovery**	%	TM218	87.7	88.3	87.8	87.3	88
Acenaphthene-d10 % recovery**	%	TM218	92.4	92.9	91.8	91.9	92
Phenanthrene-d10 % recovery**	%	TM218	87.3	87.7	87.9	88.5	88.9
Chrysene-d12 % recovery**	%	TM218	93.7	87.5	96.7	98.6	97.2
Perylene-d12 % recovery**	%	TM218	80.9	78.6	86.8	89	88.3
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118

12:35:19 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<200	<200	<200	<200
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100

12:35:19 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
GRO Surrogate % recovery**	%	TM089	62 4	103	113	89.7 2	90 2
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10	<10 2	<10 2
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10	<10 2	<10 2
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10	<10 2	<10 2
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	2660 #	<1000 #	2140 @ #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000 @
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000 @
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10	<10 2	<10 2
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10	<10 2	<10 2
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10	<10 2	<10 2
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	4110 @ #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000 @
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000 @
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	5390
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 4	<50	<50	<50 2	<50 2
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 4	<50	<50	<50 2	<50 2
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 4	<20	<20	<20 2	<20 2

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Dibromofluoromethane**	%	TM116	117	112	109	119 2	160 2
Toluene-d8**	%	TM116	91.6	116	98.6	101 2	105 2
4-Bromofluorobenzene**	%	TM116	91.5	91.2	110	98.3 2	100 2
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<5 #	<0.5 #	<0.5 #	<0.5 2 #	<0.5 2 #
Chloromethane	<2 µg/kg	TM116	<20 #	<2 #	<2 #	<2 2 #	<2 2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<5 @ M	<0.5 @ M	<0.5 @ M	<0.5 2 M	<0.5 2 M
Bromomethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Chloroethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<5 #	<0.5 #	<0.5 #	<0.5 2 #	<0.5 2 #
Carbon Disulphide	<1 µg/kg	TM116	<10 M	1.06 M	<1 M	<1 2 M	3.61 2 M
Dichloromethane	<5 µg/kg	TM116	<50 #	<5 #	<5 #	23.1 2 #	31.3 2 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<1	<1	<1 2	<1 2
Bromochloromethane	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Chloroform	<3 µg/kg	TM116	<30 M	<3 M	<3 M	<3 2 M	<3 2 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
Carbontetrachloride	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
1,2-Dichloroethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Benzene	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Trichloroethene	<1 µg/kg	TM116	<10 #	<1 #	<1 #	<1 2 #	<1 2 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
Dibromomethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Bromodichloromethane	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
Toluene	<1 µg/kg	TM116	<10 M	4.14 M	10 M	<1 2 M	2.04 2 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<1	<1	<1 2	<1 2
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
1,3-Dichloropropane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT10	BHT11	BHT12	BHT13	BHT14
Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Dibromochloromethane	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Chlorobenzene	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Ethylbenzene	<1 µg/kg	TM116	<10 M	<1 M	1.54 M	<1 2 M	<1 2 M
p/m-Xylene	<2 µg/kg	TM116	<20 #	<2 #	4.11 #	<2 2 #	<2 2 #
o-Xylene	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Styrene	<2 µg/kg	TM116	<20 @ #	<2 @ #	<2 @ #	<2 2 #	<2 2 #
Bromoform	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Isopropylbenzene	<2 µg/kg	TM116	<20 #	<2 #	<2 #	<2 2 #	<2 2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<20 #	<2 #	<2 #	<2 2 #	<2 2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Bromobenzene	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Propylbenzene	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
2-Chlorotoluene	<3 µg/kg	TM116	<30 M	<3 M	<3 M	<3 2 M	<3 2 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
4-Chlorotoluene	<3 µg/kg	TM116	<30 M	<3 M	<3 M	<3 2 M	<3 2 M
tert-Butylbenzene	<2 µg/kg	TM116	<20 #	<2 #	<2 #	<2 2 #	<2 2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<30 #	<3 #	<3 #	<3 2 #	<3 2 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<1	<1	<1 2	<1 2
4-Isopropyltoluene	<2 µg/kg	TM116	<20	<2	<2	<2 2	<2 2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M	<5 M	<5 2 M	<5 2 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M	<5 M	<5 2 M	<5 2 M
n-Butylbenzene	<3 µg/kg	TM116	<30	<3	<3	<3 2	<3 2
1,2-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M	<5 M	<5 2 M	<5 2 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<1 #	<1 #	<1 2 #	<1 2 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<70	<7	<7	<7 2	<7 2
Hexachlorobutadiene	<4 µg/kg	TM116	<40	<4	<4	<4 2	<4 2
Naphthalene	<8 µg/kg	TM116	<80 M	<8 M	<8 M	<8 2 M	<8 2 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<100 #	<10 #	<10 #	<10 2 #	<10 2 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<70	<7	<7	<7 2	<7 2

12:35:19 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.2	<0.02	<0.02	<0.02 2	<0.02 2
Sum of BTEX	<7 µg/kg	TM116	<70	<7	15.7	<7 2	<7 2

12:35:19 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT10ES1 5.50 - 5.50 SOLID 25/05/2023 00:00:00 01/06/2023 10:00:00 230601-71 28084795 TM048	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT11ES1 5.00 - 5.00 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-71 28084813 TM048	07/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT12ES1 6.00 - 6.00 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-71 28084821 TM048	07/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT13ES1 3.00 - 3.00 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-71 28084829 TM048	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT14ES1 1.50 - 1.50 SOLID 19/05/2023 00:00:00 01/06/2023 10:00:00 230601-71 28084834 TM048	08/06/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	28084795	28084813	28084821	28084829	28084834
Customer Sample Ref.	BHT10	BHT11	BHT12	BHT13	BHT14
AGS Ref.	ES1	ES1	ES1	ES1	ES1
Depth	5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	07-Jun-2023	07-Jun-2023	06-Jun-2023	06-Jun-2023	07-Jun-2023
Anions in soil by IC	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
Asbestos ID in Solid Samples	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
Chromium III	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
EPH CWG GC (S)	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
GRO by GC-FID (S)	08-Jun-2023	06-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
Hexavalent Chromium (s)	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Magnesium (BRE)	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Metals in solid samples by OES	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
PAH by GCMS	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
PCBs by GCMS	08-Jun-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
pH	06-Jun-2023	08-Jun-2023	06-Jun-2023	08-Jun-2023	06-Jun-2023
Phenols by HPLC (S)	06-Jun-2023	06-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023
Sample description	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Semi Volatile Organic Compounds	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Total Organic Carbon	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Total Sulphate	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Total Sulphur	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
TPH CWG GC (S)	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
VOC MS (S)	08-Jun-2023	07-Jun-2023	07-Jun-2023	08-Jun-2023	08-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	15 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230605-71
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	692601
Order Number:	12380

We received 13 samples on Monday June 05, 2023 and 13 of these samples were scheduled for analysis which was completed on Thursday June 15, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28101530	BHT05	ES1	5.00 - 5.00	01/06/2023
28101525	BHT07	ES1	5.50 - 5.50	31/05/2023
28101519	BHT09	ES1	6.00 - 6.00	29/05/2023
28101471	TP312	ES1	1.20 - 1.30	30/05/2023
28101513	TP313	ES1	0.50 - 0.60	31/05/2023
28101535	TPC01	ES1	2.60 - 2.70	29/05/2023
28101540	TPC02	ES1	2.50 - 2.60	29/05/2023
28101477	TPC03	ES1	3.20 - 3.30	30/05/2023
28101482	TPC04	ES1	1.60 - 1.70	30/05/2023
28101487	TPC05	ES1	0.50 - 0.60	30/05/2023
28101497	TPC06	ES1	2.50 - 2.60	30/05/2023
28101508	TPC07	ES1	1.40 - 1.50	30/05/2023
28101492	TPCC01	ES1	2.90 - 3.00	29/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28101530			28101525			28101519			28101471			28101513			28101535			28101540
Customer Sample Reference			BHT05			BHT07			BHT09			TP312			TP313			TPC01			TPC02
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			5.00 - 5.00			5.50 - 5.50			6.00 - 6.00			1.20 - 1.30			0.50 - 0.60			2.60 - 2.70			2.50 - 2.60
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 1 Tests: 12		X			X			X			X			X			X		
Anions in soil by IC	All	NDPs: 1 Tests: 12		X			X			X			X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 13	X			X			X			X			X			X			X
Chromium III	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 13			X			X			X			X			X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
Magnesium (BRE)	All	NDPs: 1 Tests: 12		X			X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
Sample description	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					28101530			28101525			28101519			28101471			28101513			28101535		28101540
Customer Sample Reference					BHT05			BHT07			BHT09			TP312			TP313			TPC01		TPC02
AGS Reference					ES1			ES1			ES1			ES1			ES1			ES1		ES1
Depth (m)					5.00 - 5.00			5.50 - 5.50			6.00 - 6.00			1.20 - 1.30			0.50 - 0.60			2.60 - 2.70		2.50 - 2.60
Container					1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type					S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 13				X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 13				X			X			X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 13				X			X			X			X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 13				X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 13				X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 13					X			X			X			X			X			X	

28101492	TPCC01	ES1	2.90 - 3.00	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28101508	TPC07	ES1	1.40 - 1.50	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28101497	TPC06	ES1	2.50 - 2.60	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28101487	TPC05	ES1	0.50 - 0.60	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28101482	TPC04	ES1	1.60 - 1.70	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28101477	TPC03	ES1	3.20 - 3.30	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28101540	TPC02	ES1	2.50 - 2.60	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28101530	BHT05	5.00 - 5.00	Grey	Loamy Sand	Vegetation	None
28101525	BHT07	5.50 - 5.50	Dark Brown	Sand	Stones	None
28101519	BHT09	6.00 - 6.00	Grey	Sandy Clay	Stones	None
28101471	TP312	1.20 - 1.30	Grey	Sandy Silt Loam	Stones	None
28101513	TP313	0.50 - 0.60	Dark Brown	Loamy Sand	Stones	None
28101535	TPC01	2.60 - 2.70	Grey	Sandy Loam	Stones	None
28101540	TPC02	2.50 - 2.60	Dark Brown	Sandy Clay Loam	Stones	None
28101477	TPC03	3.20 - 3.30	Grey	Sandy Loam	Stones	None
28101482	TPC04	1.60 - 1.70	Grey	Sandy Silt Loam	Stones	Vegetation
28101487	TPC05	0.50 - 0.60	Dark Brown	Silt Loam	Stones	Vegetation
28101497	TPC06	2.50 - 2.60	Dark Brown	Silt Loam	Vegetation	None
28101508	TPC07	1.40 - 1.50	Grey	Sandy Silt Loam	Stones	None
28101492	TPCC01	2.90 - 3.00	Dark Brown	Sandy Silt Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	19	3.7	8	9.6	12	20
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000218	<0.0002	0.000253	<0.0002	0.0172	<0.0002
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0204	0.0171	0.0226	0.0171	0.0119	0.02
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0895 #	0.0608 #	0.0673 #	0.0462 #	0.0391 #	0.0307 #
Organic Matter, Total	<0.35 %	TM132	2.78 #	7.52 #	2.69 #	0.802 #	3.69 #	0.731 #
Sulphate, Total potential	<0.06 %	TM132	0.269	0.182	0.202	0.139	0.117	0.0921
pH	1 pH Units	TM133	8.94 M	9.46 M	8.66 M	8.4 M	8.59 M	8.48 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	7.44	3.07	7.52	7.08	2.66	17.9
Arsenic	<0.6 mg/kg	TM181	2.36 M	2.05 M	3.65 M	3.02 M	3.02 M	4.14 M
Barium	<0.6 mg/kg	TM181	10 #	7.03 #	74.2 #	29.4 #	16.1 #	22.6 #
Beryllium	<0.01 mg/kg	TM181	0.169 M	0.17 M	0.317 M	0.43 M	0.206 M	0.356 M
Cadmium	<0.02 mg/kg	TM181	0.423 M	0.302 M	0.836 M	0.906 M	0.358 M	0.591 M
Chromium	<0.9 mg/kg	TM181	7.44 M	3.07 M	7.52 M	7.08 M	2.66 M	17.9 M
Copper	<1.4 mg/kg	TM181	5.88 M	3.74 M	10.5 M	10.5 M	4.3 M	7.38 M
Lead	<0.7 mg/kg	TM181	4.88 M	3.86 M	7 M	9.97 M	4.1 M	7.36 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	11.5 M	9.32 M	22.3 M	40.7 M	11.4 M	28.2 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	1.18 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	4.75 #	4.51 #	11.6 #	13.3 #	4.85 #	14.9 #
Zinc	<1.9 mg/kg	TM181	38.8 M	20.7 M	51.7 M	75 M	28.6 M	46 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0314 M	0.0422 M	0.0278 M	0.0238 M	0.0437 M	0.0412 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0054 M	0.0038 M	0.0038 M	0.0084 M	0.0136 M	0.0071 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	20	14	21	85	29	28
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	<0.0002	0.000355	<0.0002		0.00096	<0.0002
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0228	0.0265	0.0347		0.066	0.0147
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.061 #	0.15 #	0.0466 #	0.663 #	0.198 #	0.0269 #
Organic Matter, Total	<0.35 %	TM132	1.19 #	2.81 #	1.51 #	78.4 #	3.91 #	1.93 #
Sulphate, Total potential	<0.06 %	TM132	0.183	0.45	0.14	1.99	0.594	0.0807
pH	1 pH Units	TM133	7.9 M	8.36 M	6.68 M	5.36 M	7.75 M	7.74 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	32.1	25.7	47.8	<0.9	21.6	53.8
Arsenic	<0.6 mg/kg	TM181	6.46 M	5.85 M	4.88 M	6.3 M	5.93 M	5.3 M
Barium	<0.6 mg/kg	TM181	85.7 #	71.2 #	86.4 #	137 #	276 #	146 #
Beryllium	<0.01 mg/kg	TM181	0.979 M	0.567 M	0.463 M	0.043 M	0.817 M	1.03 M
Cadmium	<0.02 mg/kg	TM181	0.689 M	0.516 M	0.458 M	0.0488 M	0.523 M	0.995 M
Chromium	<0.9 mg/kg	TM181	32.1 M	25.7 M	47.8 M	<0.9 M	21.6 M	53.8 M
Copper	<1.4 mg/kg	TM181	19.9 M	13.7 M	9.13 M	2.56 M	25.4 M	15.8 M
Lead	<0.7 mg/kg	TM181	19.5 M	9.65 M	18.6 M	1.87 M	37 M	20.3 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	72.8 M	48.9 M	60.3 M	9.06 M	44.3 M	71.6 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	1.61 #	4.73 #	<1 #
Vanadium	<0.2 mg/kg	TM181	38 #	29.1 #	37.8 #	1.37 #	19.3 #	57.7 #
Zinc	<1.9 mg/kg	TM181	85.8 M	57.4 M	97.1 M	6.39 M	81.1 M	102 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0217 M	0.0365 M	0.0285 M	0.155 M	0.0432 M	0.0082 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0096 M	0.0069 M	0.0525 M		0.0147 M	0.0065 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008		<0.008	<0.008

08:28:18 15/06/2023

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPCC01					
Customer Sample Ref.			TPCC01					
Depth (m)			2.90 - 3.00					
Sample Type			Soil/Solid (S)					
Date Sampled			29/05/2023					
Sample Time			-					
Date Received			05/06/2023					
SDG Ref			230605-71					
Lab Sample No.(s)			28101492					
AGS Reference			ES1					
Moisture Content Ratio (% of as received sample)	%	PM024	51					
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00136					
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.35					
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M					
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M					
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M					
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M					
Sulphur, Total	<0.02 %	TM132	0.676 #					
Organic Matter, Total	<0.35 %	TM132	11.8 #					
Sulphate, Total potential	<0.06 %	TM132	2.03					
pH	1 pH Units	TM133	7.89 M					
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M					
Cyanide, Total	<1 mg/kg	TM153	<1 M					
PCB congener 28	<3 µg/kg	TM168	<6 M					
PCB congener 52	<3 µg/kg	TM168	<6 M					
PCB congener 101	<3 µg/kg	TM168	<6 M					
PCB congener 118	<3 µg/kg	TM168	<6 M					
PCB congener 138	<3 µg/kg	TM168	<6 M					
PCB congener 153	<3 µg/kg	TM168	<6 M					
PCB congener 180	<3 µg/kg	TM168	<6 M					
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<42					
PCB congener 81	<3 µg/kg	TM168	<6 M					
PCB congener 77	<3 µg/kg	TM168	<6 M					
PCB congener 123	<3 µg/kg	TM168	<6 M					
PCB congener 114	<3 µg/kg	TM168	<6 M					
PCB congener 105	<3 µg/kg	TM168	<6 M					
PCB congener 126	<3 µg/kg	TM168	<6 M					
PCB congener 167	<3 µg/kg	TM168	<6 M					
PCB congener 156	<3 µg/kg	TM168	<6 M					
PCB congener 157	<3 µg/kg	TM168	<6 M					
PCB congener 169	<3 µg/kg	TM168	<6 M					
PCB congener 189	<3 µg/kg	TM168	<6 M					
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<72					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	TPCC01					
Customer Sample Ref.			TPCC01					
Depth (m)			2.90 - 3.00					
Sample Type			Soil/Solid (S)					
Date Sampled			29/05/2023					
Sample Time			.					
Date Received			05/06/2023					
SDG Ref			230605-71					
Lab Sample No.(s)			28101492					
AGS Reference			ES1					
Chromium, Trivalent	<0.9 mg/kg	TM181	2.98					
Arsenic	<0.6 mg/kg	TM181	9.52 M					
Barium	<0.6 mg/kg	TM181	213 #					
Beryllium	<0.01 mg/kg	TM181	0.327 M					
Cadmium	<0.02 mg/kg	TM181	0.271 M					
Chromium	<0.9 mg/kg	TM181	2.98 M					
Copper	<1.4 mg/kg	TM181	3.18 M					
Lead	<0.7 mg/kg	TM181	1.62 M					
Mercury	<0.1 mg/kg	TM181	<0.1 M					
Nickel	<0.2 mg/kg	TM181	8.4 M					
Selenium	<1 mg/kg	TM181	2.01 #					
Vanadium	<0.2 mg/kg	TM181	7.7 #					
Zinc	<1.9 mg/kg	TM181	20.7 M					
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.157 M					
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0115 M					
Magnesium (BRE)	<0.008 g/l	TM282	<0.008					

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CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	91.3	94.3	92.7	90.8	90.5	93.2
Acenaphthene-d10 % recovery**	%	TM218	91.7	94.9	92.1	92.5	92.9	91.9
Phenanthrene-d10 % recovery**	%	TM218	83.9	91.3	83.8	88.4	89.5	82.4
Chrysene-d12 % recovery**	%	TM218	79.6	96.5	81.6	91	93.1	78.4
Perylene-d12 % recovery**	%	TM218	74.5	91.1	76.3	87.3	88.2	77.6
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	91.5	89.5	95.5	94.6	91.4	93.7
Acenaphthene-d10 % recovery**	%	TM218	94.1	91.9	95.3	97.1	94.4	92.3
Phenanthrene-d10 % recovery**	%	TM218	92.1	89.8	86.6	92.8	92.5	82.2
Chrysene-d12 % recovery**	%	TM218	95.8	92.7	80.8	86.4	97	77.8
Perylene-d12 % recovery**	%	TM218	93.2	88.9	80.5	82.2	92.2	75.8
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	TPCC01
Depth (m)	2.90 - 3.00
Sample Type	Soil/Solid (S)
Date Sampled	29/05/2023
Sample Time	-
Date Received	05/06/2023
SDG Ref	230605-71
Lab Sample No.(s)	28101492
AGS Reference	ES1

Component	LOD/Units	Method	TPCC01
Naphthalene-d8 % recovery**	%	TM218	94.8
Acenaphthene-d10 % recovery**	%	TM218	99.1
Phenanthrene-d10 % recovery**	%	TM218	95.3
Chrysene-d12 % recovery**	%	TM218	101
Perylene-d12 % recovery**	%	TM218	98.2
Naphthalene	<9 µg/kg	TM218	<18 M
Acenaphthylene	<12 µg/kg	TM218	<24 M
Acenaphthene	<8 µg/kg	TM218	<16 M
Fluorene	<10 µg/kg	TM218	<20 M
Phenanthrene	<15 µg/kg	TM218	<30 M
Anthracene	<16 µg/kg	TM218	<32 M
Fluoranthene	<17 µg/kg	TM218	<34 M
Pyrene	<15 µg/kg	TM218	<30 M
Benz(a)anthracene	<14 µg/kg	TM218	<28 M
Chrysene	<10 µg/kg	TM218	<20 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<30 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<28 M
Benzo(a)pyrene	<15 µg/kg	TM218	<30 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<36 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<46 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<48 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<236

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	TPCC01
Depth (m)	2.90 - 3.00
Sample Type	Soil/Solid (S)
Date Sampled	29/05/2023
Sample Time	-
Date Received	05/06/2023
SDG Ref	230605-71
Lab Sample No.(s)	28101492
AGS Reference	ES1

Component	LOD/Units	Method						
Phenol	<100 µg/kg	TM157	<100					
Pentachlorophenol	<100 µg/kg	TM157	<100					
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100					
Nitrobenzene	<100 µg/kg	TM157	<100					
Isophorone	<100 µg/kg	TM157	<100					
Hexachloroethane	<100 µg/kg	TM157	<100					
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100					
Hexachlorobutadiene	<100 µg/kg	TM157	<100					
Hexachlorobenzene	<100 µg/kg	TM157	<100					
n-Dioctyl phthalate	<100 µg/kg	TM157	<100					
Dimethyl phthalate	<100 µg/kg	TM157	<100					
Diethyl phthalate	<100 µg/kg	TM157	<100					
n-Dibutyl phthalate	<100 µg/kg	TM157	<100					
Dibenzofuran	<100 µg/kg	TM157	<100					
Carbazole	<100 µg/kg	TM157	<100					
Butylbenzyl phthalate	<100 µg/kg	TM157	<100					
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100					
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100					
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100					
Azobenzene	<100 µg/kg	TM157	<100					
4-Nitrophenol	<100 µg/kg	TM157	<100					
4-Nitroaniline	<100 µg/kg	TM157	<100					
4-Methylphenol	<100 µg/kg	TM157	<100					
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100					
4-Chloroaniline	<100 µg/kg	TM157	<100					
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100					
4-Bromophenylphenylether	<100 µg/kg	TM157	<100					
3-Nitroaniline	<100 µg/kg	TM157	<100					
2-Nitrophenol	<100 µg/kg	TM157	<100					
2-Nitroaniline	<100 µg/kg	TM157	<100					
2-Methylphenol	<100 µg/kg	TM157	<100					
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100					
2-Chlorophenol	<100 µg/kg	TM157	<100					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPCC01					
Depth (m)			2.90 - 3.00					
Sample Type			Soil/Solid (S)					
Date Sampled			29/05/2023					
Sample Time			.					
Date Received			05/06/2023					
SDG Ref			230605-71					
Lab Sample No.(s)			28101492					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dimethylphenol	<100 µg/kg	TM157	<100					
2,4-Dichlorophenol	<100 µg/kg	TM157	<100					
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100					
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100					
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100					
2-Chloronaphthalene	<100 µg/kg	TM157	<100					
2-Methylnaphthalene	<100 µg/kg	TM157	<100					
Acenaphthylene	<100 µg/kg	TM157	<100					
Acenaphthene	<100 µg/kg	TM157	<100					
Anthracene	<100 µg/kg	TM157	<100					
Benzo(a)anthracene	<100 µg/kg	TM157	<100					
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100					
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100					
Benzo(a)pyrene	<100 µg/kg	TM157	<100					
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100					
Chrysene	<100 µg/kg	TM157	<100					
Fluoranthene	<100 µg/kg	TM157	<100					
Fluorene	<100 µg/kg	TM157	<100					
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100					
Phenanthrene	<100 µg/kg	TM157	<100					
Pyrene	<100 µg/kg	TM157	<100					
Naphthalene	<100 µg/kg	TM157	<100					
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100					
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	92.9	101	74.2	117	103	104
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	1280 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	3630 #	<1000 #	3950 #	<1000 #	6490 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	2290	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	10100	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	24700	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1730 #	<1000 #	1030 #	<1000 #	11800 #	<1000 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	2350	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	14700	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	24700	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	101	108	98.8	66 4	99.5	89.7
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10 4	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10 4	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10 4	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	8230 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	47000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	39200 #	29700 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	14400 #	69500 #	1560 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	12100	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	109000	111000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	131000	383000	17500	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10 4	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10 4	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10 4	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	7990 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	7960 #	13600 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	4190 #	227000 #	14000 #	1760 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	31400	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	1770	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	21500	272000	15100	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	131000	383000	15100	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50 4	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50 4	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20 4	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	TPCC01
Depth (m)	2.90 - 3.00
Sample Type	Soil/Solid (S)
Date Sampled	29/05/2023
Sample Time	-
Date Received	05/06/2023
SDG Ref	230605-71
Lab Sample No.(s)	28101492
AGS Reference	ES1

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	98.9
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1610 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	4700 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	6090
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT05	BHT07	BHT09	TP312	TP313	TPC01
Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Dibromofluoromethane**	%	TM116	105	101	105	111	127	114
Toluene-d8**	%	TM116	103	102	100	95.8	93.7	97.2
4-Bromofluorobenzene**	%	TM116	96.1	91.4	94.7	77.1	70.9	85.6
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<5 #	<0.5 #	<10 #	<0.5 #	<0.5 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<20 #	<2 #	<40 #	<2 #	<2 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Chloroethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<5 #	<0.5 #	<10 #	<0.5 #	<0.5 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<10 M	<1 M	<20 M	1.91 M	1.22 M	1.35 M
Dichloromethane	<5 µg/kg	TM116	<50 #	<5 #	<100 #	<5 #	<5 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<1	<20	<1	<1	<1
Bromochloromethane	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
Chloroform	<3 µg/kg	TM116	<30 M	<3 M	<60 M	<3 M	<3 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Benzene	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<10 #	<1 #	<20 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
Toluene	<1 µg/kg	TM116	<10 M	1.21 M	<20 M	<1 M	2.25 M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<1	<20	<1	<1	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<20 #	<2 #	<40 #	<2 #	<2 #	<2 #
o-Xylene	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
Styrene	<2 µg/kg	TM116	<20 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<55 M	<5.5 M	<110 M	<2 M	<2 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<20 #	<2 #	<40 #	<2 #	<2 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<20 #	<2 #	<40 #	<2 #	<2 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<30 M	<3 M	<60 M	<3 M	<3 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<30 M	<3 M	<60 M	<3 M	<3 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<20 #	<2 #	<40 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<30 #	<3 #	<60 #	<3 #	<3 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<1	<20	<1	<1	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<20	<2	<40	<2	<2	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M	<100 M	<5 M	<5 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M	<100 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<30	<3	<60	<3	<3	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M	<100 M	<5 M	<5 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<1 #	<20 #	<1 #	<1 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<70	<7	<140	<7	<7	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<40	<4	<80	<4	<4	<4
Naphthalene	<8 µg/kg	TM116	<80 M	<8 M	<160 M	<8 M	<8 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<100 #	<10 #	<200 #	<10 #	<10 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<70	<7	<140	<7	<7	<7

08:28:18 15/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.2	<0.02	<0.4	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<70	<7	<140	<7	<7	<7

08:28:18 15/06/2023

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	110	117	106	103	105	102
Toluene-d8**	%	TM116	95.9	96.3	91.6	99.4	102	90.5
4-Bromofluorobenzene**	%	TM116	89.6	78.9	73.8	93.6	94.8	76.6
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<10 #	<10 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<40 #	<40 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<10 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<10 #	<10 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<1 M	3.87 M	14.3 M	<20 M	<20 M	3.46 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #	<5 #	<100 #	<100 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1	<1	<20	<20	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<60 M	<60 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<20 #	<20 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1	<1	<20	<20	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	1.82 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<40 #	<40 #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<40 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<110 M	<100 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<40 #	<40 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<40 #	<40 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<60 M	<60 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<60 M	<60 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<40 #	<40 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #	<3 #	<60 #	<60 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1	<1	<20	<20	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2	<2	<40	<40	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<100 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<100 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<3	<3	<60	<60	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<100 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<20 #	<20 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<140	<140	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4	<4	<80	<80	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<160 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<200 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<140	<140	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.4	<0.4	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	<7	<7	<140	<140	<7

08:28:18 15/06/2023

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	TPCC01
Depth (m)	2.90 - 3.00
Sample Type	Soil/Solid (S)
Date Sampled	29/05/2023
Sample Time	-
Date Received	05/06/2023
SDG Ref	230605-71
Lab Sample No.(s)	28101492
AGS Reference	ES1

Component	LOD/Units	Method	TPCC01
Dibromofluoromethane**	%	TM116	126
Toluene-d8**	%	TM116	95.8
4-Bromofluorobenzene**	%	TM116	78.6
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	4.87 M
Dichloromethane	<5 µg/kg	TM116	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M
Chloroform	<3 µg/kg	TM116	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M
Benzene	<1 µg/kg	TM116	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	TPCC01
Depth (m)	2.90 - 3.00
Sample Type	Soil/Solid (S)
Date Sampled	29/05/2023
Sample Time	.
Date Received	05/06/2023
SDG Ref	230605-71
Lab Sample No.(s)	28101492
AGS Reference	ES1

Component	LOD/Units	Method	TPCC01
Tetrachloroethene	<2 µg/kg	TM116	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4
Naphthalene	<8 µg/kg	TM116	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPCC01
Depth (m)			2.90 - 3.00
Sample Type			Soil/Solid (S)
Date Sampled			29/05/2023
Sample Time			.
Date Received			05/06/2023
SDG Ref			230605-71
Lab Sample No.(s)			28101492
AGS Reference			ES1
Component	**LOD/Units**	**Method**	
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT05ES1 5.00 - 5.00 SOLID 01/06/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101530 TM048	09/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT07ES1 5.50 - 5.50 SOLID 31/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101525 TM048	12/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT09ES1 6.00 - 6.00 SOLID 29/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101519 TM048	12/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP312ES1 1.20 - 1.30 SOLID 30/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101471 TM048	12/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP313ES1 0.50 - 0.60 SOLID 31/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101513 TM048	12/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC01ES1 2.60 - 2.70 SOLID 29/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101535 TM048	12/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC02ES1 2.50 - 2.60 SOLID 29/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101540 TM048	12/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC03ES1 3.20 - 3.30 SOLID 30/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101477 TM048	12/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC04ES1 1.60 - 1.70 SOLID 30/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101482 TM048	12/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC05ES1 0.50 - 0.60 SOLID 30/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101487 TM048	12/06/202	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC06ES1 2.50 - 2.60 SOLID 30/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101497 TM048	12/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC07ES1 1.40 - 1.50 SOLID 30/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101508 TM048	12/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPCC01ES1 2.90 - 3.00 SOLID 29/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101492 TM048	12/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Notification of NDPs (No determination possible)

Date Received : 05/06/2023 12:04:09

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
28101487	TPC05 ES1	0.50 - 0.60	Anions in soil by IC	Sample cannot be filtered
28101487	TPC05 ES1	0.50 - 0.60	Anions by Kone (soil)	Sample cannot be filtered
28101487	TPC05	0.50 - 0.60	Magnesium (BRE)	Unsuitable for Analysis

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	28101530	28101525	28101519	28101471	28101513	28101535	28101540	28101477	28101482	28101487
Customer Sample Ref.	BHT05	BHT07	BHT09	TP312	TP313	TPC01	TPC02	TPC03	TPC04	TPC05
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70	2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023	12-Jun-2023	08-Jun-2023	12-Jun-2023	
Anions in soil by IC	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	
Asbestos ID in Solid Samples	09-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Chromium III	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	12-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	13-Jun-2023
EPH CWG GC (S)	08-Jun-2023	08-Jun-2023	09-Jun-2023	09-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023
GRO by GC-FID (S)	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023
Hexavalent Chromium (s)	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	12-Jun-2023
Magnesium (BRE)	08-Jun-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023	
Metals in solid samples by OES	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	08-Jun-2023	09-Jun-2023	09-Jun-2023	08-Jun-2023	09-Jun-2023	12-Jun-2023
PAH by GCMS	12-Jun-2023	08-Jun-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023	12-Jun-2023
PCBs by GCMS	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023
pH	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
Phenols by HPLC (S)	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023
Sample description	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Semi Volatile Organic Compounds	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Total Organic Carbon	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023
Total Sulphate	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	12-Jun-2023
Total Sulphur	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	12-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023
TPH CWG GC (S)	08-Jun-2023	08-Jun-2023	09-Jun-2023	09-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023
VOC MS (S)	10-Jun-2023	10-Jun-2023	10-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	10-Jun-2023

Lab Sample No(s)	28101497	28101508	28101492
Customer Sample Ref.	TPC06	TPC07	TPCC01
AGS Ref.	ES1	ES1	ES1
Depth	2.50 - 2.60	1.40 - 1.50	2.90 - 3.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	08-Jun-2023	08-Jun-2023	12-Jun-2023
Anions in soil by IC	14-Jun-2023	09-Jun-2023	15-Jun-2023
Asbestos ID in Solid Samples	12-Jun-2023	12-Jun-2023	12-Jun-2023
Chromium III	09-Jun-2023	09-Jun-2023	09-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	09-Jun-2023	09-Jun-2023	09-Jun-2023
EPH CWG GC (S)	09-Jun-2023	09-Jun-2023	08-Jun-2023
GRO by GC-FID (S)	08-Jun-2023	08-Jun-2023	08-Jun-2023
Hexavalent Chromium (s)	09-Jun-2023	09-Jun-2023	09-Jun-2023
Magnesium (BRE)	08-Jun-2023	08-Jun-2023	12-Jun-2023
Metals in solid samples by OES	09-Jun-2023	09-Jun-2023	09-Jun-2023
PAH by GCMS	08-Jun-2023	12-Jun-2023	08-Jun-2023
PCBs by GCMS	13-Jun-2023	13-Jun-2023	13-Jun-2023
pH	07-Jun-2023	07-Jun-2023	07-Jun-2023
Phenols by HPLC (S)	08-Jun-2023	08-Jun-2023	12-Jun-2023
Sample description	06-Jun-2023	06-Jun-2023	06-Jun-2023
Semi Volatile Organic Compounds	12-Jun-2023	12-Jun-2023	12-Jun-2023
Total Organic Carbon	13-Jun-2023	13-Jun-2023	13-Jun-2023
Total Sulphate	09-Jun-2023	09-Jun-2023	12-Jun-2023
Total Sulphur	13-Jun-2023	13-Jun-2023	13-Jun-2023
TPH CWG GC (S)	09-Jun-2023	09-Jun-2023	08-Jun-2023
VOC MS (S)	10-Jun-2023	09-Jun-2023	09-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	28 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230615-86
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	694116
Order Number:	12380

This report has been revised and directly supersedes 693622 in its entirety.

We received 6 samples on Thursday June 15, 2023 and 6 of these samples were scheduled for analysis which was completed on Wednesday June 28, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28158637	BHT1		5.00	13/06/2023
28158646	BHT2	ES1	6.00	08/06/2023
28158669	BHT3	ES1	5.50	07/06/2023
28158679	BHT4	ES1	4.00	06/06/2023
28158654	BHT6	ES1	5.50	02/06/2023
28158621	TPT8		0.50 - 0.80	13/06/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28158637				28158646				28158669				28158679				28158654				28158621	
Customer Sample Reference			BHT1				BHT2				BHT3				BHT4				BHT6				TPT8	
AGS Reference							ES1				ES1				ES1				ES1					
Depth (m)			5.00				6.00				5.50				4.00				5.50				0.50 - 0.80	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Anions in soil by IC	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 6	X			X			X			X			X			X			X		
Chromium III	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6			X			X			X			X			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
pH	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Sample description	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28158637			28158646			28158669			28158679			28158654			28158621		
Customer Sample Reference			BHT1			BHT2			BHT3			BHT4			BHT6			TPT8		
AGS Reference						ES1			ES1			ES1			ES1					
Depth (m)			5.00			6.00			5.50			4.00			5.50			0.50 - 0.80		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Total Sulphate	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 6			X			X			X			X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28158637	BHT1	5.00	Dark Brown	Sand	Stones	None
28158646	BHT2	6.00	Dark Brown	Silty Sand	Vegetation	None
28158669	BHT3	5.50	Grey	Silt Loam	Stones	None
28158679	BHT4	4.00	Dark Brown	Sand	Stones	None
28158654	BHT6	5.50	Dark Brown	Silty Clay Loam	None	None
28158621	TPT8	0.50 - 0.80	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Customer Sample Ref.								
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			-	-	-	-	-	-
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Moisture Content Ratio (% of as received sample)	%	PM024	11	18	17	7.8	12	22
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000819	0.000576	0.000838	0.00203	0.000764	0.0183
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.04	0.0454	0.0354	0.0179	0.0577	0.0284
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 @ M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 @ M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 @ M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 @ M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.475 #	0.0819 #	0.084 #	0.0481 #	0.0676 #	0.0456 #
Organic Matter, Total	<0.35 %	TM132	9.45 #	7.28 #	1.88 #	3.55 #	3.84 #	1.52 #
Sulphate, Total potential	<0.06 %	TM132	1.43	0.246	0.252	0.144	0.203	0.137
pH	1 pH Units	TM133	8.69 M	8.4 M	8.6 M	9.56 M	8.57 M	8.26 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 @ M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			.	.	.	.	.	.
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	5.85	3.61	6.95	3.36	11.1	14
Arsenic	<0.6 mg/kg	TM181	9.69 M	3.63 M	2.68 M	1.08 M	6.28 M	3.37 M
Barium	<0.6 mg/kg	TM181	12.9 #	20.3 #	60.9 #	7.78 #	84.7 #	41.3 #
Beryllium	<0.01 mg/kg	TM181	0.174 M	0.216 M	0.492 M	0.142 M	0.542 M	0.56 M
Cadmium	<0.02 mg/kg	TM181	0.379 M	0.469 M	0.858 M	0.273 M	0.963 M	0.486 M
Chromium	<0.9 mg/kg	TM181	5.85 M	3.61 M	6.95 M	3.36 M	11.1 M	14 M
Copper	<1.4 mg/kg	TM181	5.21 M	5.98 M	15.8 M	2.48 M	19.2 M	7.46 M
Lead	<0.7 mg/kg	TM181	3.6 M	5.69 M	10.5 M	2.28 M	24.3 M	12.3 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	13 M	12.6 M	27.9 M	7.35 M	38.9 M	20.3 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	1.23 #	<1 #	1.34 #	<1 #
Vanadium	<0.2 mg/kg	TM181	5.28 #	5.23 #	12.5 #	3.6 #	15.7 #	17.1 #
Zinc	<1.9 mg/kg	TM181	26.7 M	44 M	72.5 M	17.9 M	104 M	36.8 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0464 M	0.0235 M	0.0243 M	0.0295 M	0.0415 M	0.0293 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0078 M	0.0043 M	0.0069 M	0.0028 M	0.008 M	0.0059 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

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CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			-	-	-	-	-	-
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	89.1	99.4	99.6	101	85.9	88.7
Acenaphthene-d10 % recovery**	%	TM218	91	95.6	95.5	95.9	88	90.7
Phenanthrene-d10 % recovery**	%	TM218	89.5	91.5	89.4	90.4	87.7	89
Chrysene-d12 % recovery**	%	TM218	89	85.5	77.9	80	80.7	83.3
Perylene-d12 % recovery**	%	TM218	84.5	85.3	75.5	80.1	72.6	70.7
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 @ M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 @ M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 @ M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 @ M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 @ M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 @ M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 @ M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 @ M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 @ M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 @ M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 @ M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 @ M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			-	-	-	-	-	-
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			.	.	.	.	.	.
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
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- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			-	-	-	-	-	-
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	124	91.8	93.8	95.3	21.8 4 @	97.4
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4 @	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4 @	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4 @	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	52100 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	8020	<1000	<1000	<1000 @	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	60500	<5000	<5000	<5000 @	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	86900	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4 @	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4 @	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4 @	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	20500 #	<1000 #	<1000 #	<1000 @ #	3620 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	5230	<1000	<1000	<1000 @	1690
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	1490	<1000	<1000	<1000 @	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	26400	<5000	<5000	<5000	5370
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	86900	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50 4 @	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50 4 @	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20 4 @	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			-	-	-	-	-	-
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	111	99.6	109	127	112 @	127
Toluene-d8**	%	TM116	101	96.7	102	103	101 @	98.5
4-Bromofluorobenzene**	%	TM116	87.5	75.2	94.5	99.5	87.2 @	80.3
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<10 #	<0.5 #	<10 @ #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #	<40 #	<2 #	<40 @ #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 @ M	<10 @ M	<0.5 @ M	<10 @ M	<0.5 M
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<10 #	<0.5 #	<10 @ #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	6.8 M	3.34 M	<20 M	<1 M	<20 @ M	<1 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #	<100 #	<5 #	<100 @ #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1	<20	<1	<20 @	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<3 M	<60 M	<3 M	<60 @ M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #	<20 #	<1 #	<20 @ #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
Toluene	<1 µg/kg	TM116	1.75 M	14.6 M	<20 M	7.11 M	42.5 @ M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1	<20	<1	<20 @	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M

13:26:49 28/06/2023

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			.	.	.	.	.	.
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	3.33 M	<20 M	1.1 M	<20 @ M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	8.72 #	<40 #	3.31 #	<40 @ #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
Styrene	<2 µg/kg	TM116	<2 #	<2 @ #	<40 @ #	<2 @ #	<40 @ #	<2 #
Bromoform	<2 µg/kg	TM116	<2 M	<5 M	<98 M	<5 M	<107 @ M	<6 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<40 #	<2 #	<40 @ #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #	<40 #	<2 #	<40 @ #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<60 M	<3 M	<60 @ M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<60 M	<3 M	<60 @ M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<40 #	<2 #	<40 @ #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #	<60 #	<3 #	<60 @ #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1	<20	<1	<20 @	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2	<40	<2	<40 @	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<100 M	<5 M	<100 @ M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<100 M	<5 M	<100 @ M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<3	<60	<3	<60 @	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<100 M	<5 M	<100 @ M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #	<20 #	<1 #	<20 @ #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<140	<7	<140 @	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4	<80	<4	<80 @	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M	<160 M	<8 M	<160 @ M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #	<200 #	<10 #	<200 @ #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<140	<7	<140	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			.	.	.	.	.	.
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.4	<0.02	<0.4 @	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	26.6	<140	11.5	<140 @	<7

13:26:49 28/06/2023

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT1 5.00 SOLID 13/06/2023 00:00:00 15/06/2023 11:00:00 230615-86 28158637 TM048	23/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT2ES1 6.00 SOLID 08/06/2023 00:00:00 15/06/2023 11:00:00 230615-86 28158646 TM048	22/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT3ES1 5.50 SOLID 07/06/2023 00:00:00 15/06/2023 11:00:00 230615-86 28158669 TM048	21/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT4ES1 4.00 SOLID 06/06/2023 00:00:00 15/06/2023 11:00:00 230615-86 28158679 TM048	22/06/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT6ES1 5.50 SOLID 02/06/2023 00:00:00 15/06/2023 11:00:00 230615-86 28158654 TM048	22/06/2023	Paul Poynton	Loose fibres in soil	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT8 0.50 - 0.80 SOLID 13/06/2023 00:00:00 15/06/2023 11:00:00 230615-86 28158621 TM048	22/06/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM019	Determination of Anions in Soils using Ion Chromatography
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM218	The determination of PAH in soil samples by GC-MS
TM282	Extraction of Magnesium by BRE Method

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28158637	28158646	28158669	28158679	28158654	28158621
Customer Sample Ref.	BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
AGS Ref.		ES1	ES1	ES1	ES1	
Depth	5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	23-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	23-Jun-2023
Anions in soil by IC	23-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	23-Jun-2023
Asbestos ID in Solid Samples	23-Jun-2023	22-Jun-2023	21-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023
Chromium III	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	22-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	22-Jun-2023
EPH CWG GC (S)	22-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	22-Jun-2023
GRO by GC-FID (S)	22-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	22-Jun-2023
Hexavalent Chromium (s)	21-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	21-Jun-2023
Magnesium (BRE)	23-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	23-Jun-2023
Metals in solid samples by OES	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023
PAH by GCMS	21-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	23-Jun-2023	21-Jun-2023
PCBs by GCMS	26-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	26-Jun-2023
pH	21-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	21-Jun-2023
Phenols by HPLC (S)	21-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	22-Jun-2023
Sample description	19-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	19-Jun-2023
Semi Volatile Organic Compounds	26-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023
Total Organic Carbon	23-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	23-Jun-2023
Total Sulphate	23-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	23-Jun-2023
Total Sulphur	28-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	23-Jun-2023	23-Jun-2023
TPH CWG GC (S)	22-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	22-Jun-2023
VOC MS (S)	22-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	22-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	03 July 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230623-103
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	694794
Order Number:	12380

We received 6 samples on Friday June 23, 2023 and 6 of these samples were scheduled for analysis which was completed on Monday July 03, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28207092	BHCC01	ES1	4.50 - 4.50	14/06/2023
28207097	BHCC02	ES1	3.00 - 3.00	14/06/2023
28207102	TP221	ES1	2.70 - 2.80	14/06/2023
28207108	TP222	ES1	1.50 - 1.70	14/06/2023
28207115	TP223	ES1	2.50 - 2.60	14/06/2023
28207120	TP224	ES1	0.90 - 1.00	14/06/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28207092			28207097			28207102			28207108			28207115			28207120		
Customer Sample Reference			BHCC01			BHCC02			TP221			TP222			TP223			TP224		
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1		
Depth (m)			4.50 - 4.50			3.00 - 3.00			2.70 - 2.80			1.50 - 1.70			2.50 - 2.60			0.90 - 1.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 2		X			X													
Anions by Kone (soil)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 2	X			X														
Anions in soil by IC	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 6	X			X			X			X			X			X		
CEN Readings	All	NDPs: 0 Tests: 2	X			X														
Chromium III	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Coronene	All	NDPs: 0 Tests: 2		X			X													
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	X			X														
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2	X			X														
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X													
EPH CWG GC (S)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Fluoride	All	NDPs: 0 Tests: 2	X			X														
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6			X			X			X			X			X			X

16:26:42 03/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28207092				28207097				28207102				28207108				28207115				28207120	
Customer Sample Reference			BHCC01				BHCC02				TP221				TP222				TP223				TP224	
AGS Reference			ES1				ES1				ES1				ES1				ES1				ES1	
Depth (m)			4.50 - 4.50				3.00 - 3.00				2.70 - 2.80				1.50 - 1.70				2.50 - 2.60				0.90 - 1.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 2		X			X																
Magnesium (BRE)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 2	X			X																	
Metals in solid samples by OES	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 2		X			X																
PAH by GCMS	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
pH	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 2	X			X																	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2	X			X																	
Sample description	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	

16:26:42 03/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
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DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28207092			28207097			28207102			28207108			28207115			28207120		
Customer Sample Reference			BHCC01			BHCC02			TP221			TP222			TP223			TP224		
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1		
Depth (m)			4.50 - 4.50			3.00 - 3.00			2.70 - 2.80			1.50 - 1.70			2.50 - 2.60			0.90 - 1.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Total Sulphate	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 6			X			X			X			X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28207092	BHCC01	4.50 - 4.50	Grey	Loamy Sand	None	None
28207097	BHCC02	3.00 - 3.00	Grey	Loamy Sand	Stones	None
28207102	TP221	2.70 - 2.80	Light Brown	Silt Loam	Stones	None
28207108	TP222	1.50 - 1.70	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28207115	TP223	2.50 - 2.60	Dark Brown	Sandy Loam	Stones	Vegetation
28207120	TP224	0.90 - 1.00	Dark Brown	Silty Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			-	-	-	-	-	-
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	16	9.7	21	24	12	17
Loss on ignition	<0.7 %	TM018	0.751 M	1.43 M				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000481	0.000411	0.00112	0.00146	0.00101	0.000436
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0814	0.0476	0.101	0.38	0.023	0.301
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 @ M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 @ M
Organic Carbon, Total	<0.2 %	TM132	5.92 M	4.6 M				
Sulphur, Total	<0.02 %	TM132	0.143 #	0.154 #	0.183 #	2.59 #	0.0379 #	0.259 #
Organic Matter, Total	<0.35 %	TM132	10.2 #	7.93 #	1.61 #	3.71 #	2.67 #	1.84 #
Sulphate, Total potential	<0.06 %	TM132	0.429	0.462	0.549	7.77	0.114	0.777
pH	1 pH Units	TM133	8.78 M	8.7 M	7.56 M	5.84 M	8.46 M	7.11 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	2.42 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 @ M	<1 @ M	<1 @ M	<1 @ M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			.	.	.	.	.	.
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36
Chromium, Trivalent	<0.9 mg/kg	TM181	5.17	5.42	106	48.5	11.8	13.8
Arsenic	<0.6 mg/kg	TM181	3.96 M	4.04 M	36.7 M	172 M	4.63 M	10.3 M
Barium	<0.6 mg/kg	TM181	13.8 #	15.4 #	75.9 #	35.5 #	12.3 #	28.8 #
Beryllium	<0.01 mg/kg	TM181	0.148 M	0.166 M	1.04 M	0.757 M	0.281 M	0.359 M
Cadmium	<0.02 mg/kg	TM181	0.399 M	0.402 M	26.1 M	10.8 M	0.631 M	0.618 M
Chromium	<0.9 mg/kg	TM181	5.17 M	5.42 M	109 M	48.5 M	11.8 M	13.8 M
Copper	<1.4 mg/kg	TM181	4.76 M	4.32 M	14.3 M	89.5 M	18.5 M	12.2 M
Lead	<0.7 mg/kg	TM181	2.28 M	2.58 M	9.82 M	31 M	9.06 M	21.3 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	12.7 M	11.4 M	382 M	121 M	30.8 M	28.2 M
Selenium	<1 mg/kg	TM181	1.37 #	1.52 #	<1 #	2.65 #	<1 #	1.08 #
Vanadium	<0.2 mg/kg	TM181	5.67 #	5.83 #	407 #	142 #	9 #	17.5 #
Zinc	<1.9 mg/kg	TM181	25.8 M	27.6 M	1820 M	366 M	42.1 M	105 M
ANC @ pH 4	<0.03 mol/kg	TM182	0.104	0.217				
ANC @ pH 6	<0.03 mol/kg	TM182	0.0411	0.0485				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0623 M	0.0673 M	0.164 M	0.151 M	0.0348 M	0.123 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.003 M	0.0029 M	0.0274 M	0.0101 M	0.0088 M	0.0058 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10				
Coronene	<200 µg/kg	TM410	<200	<200				
EPH Surrogate % recovery**	%	TM415	101	95.9				
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5				

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			-	-	-	-	-	-
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	97.9	96.7	96	92.2	91.9	91.7
Acenaphthene-d10 % recovery**	%	TM218	100	99.2	96.5	93.3	92.3	91.8
Phenanthrene-d10 % recovery**	%	TM218	99.9	101	95.6	92.6	90.6	91
Chrysene-d12 % recovery**	%	TM218	98.3	98.9	96.1	94	89	87.8
Perylene-d12 % recovery**	%	TM218	105	106	108	102	95.3	93.2
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
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- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
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- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			-	-	-	-	-	-
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<500	<500	<500	<500	<500	<500
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
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- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			.	.	.	.	.	.
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	186	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	254	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	167	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
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- aq Aqueous / settled sample.
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- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			.	.	.	.	.	.
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	95.5 @	97.4 @	102 @	71.8 @	95.8 @	105 @
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	43.6 @
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	69 @
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	169 @
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	2440 @ #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	4930 @ #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	2310 @ #	<1000 @ #	3250 @ #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000 @	<5000 @	<5000 @	<5000 @	<5000 @	11100 @
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	37800	<10000	19300
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	113 @
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	1390 @ #	30800 @ #	<1000 @ #	6680 @ #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	3660 @	<1000 @	<1000 @
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	34600	<5000	8200
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	34600	<10000	19700
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50 @	<50 @	282 @
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50 @	<50 @	113 @
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 @	<20 @	<20 @	<20 @	<20 @	394 @

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CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			-	-	-	-	-	-
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	103 @	116 @	112 @	107 @	112 @	109 @
Toluene-d8**	%	TM116	98.3 @	97.6 @	98.3 @	98.9 @	97.7 @	96.5 @
4-Bromofluorobenzene**	%	TM116	94.9 @	97 @	94.8 @	97.2 @	94.6 @	82 @
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 @ #	<0.5 @ #	<0.5 @ #	<10 @ #	<0.5 @ #	<0.5 @ #
Chloromethane	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Chloroethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 @ #	<0.5 @ #	<0.5 @ #	<10 @ #	<0.5 @ #	<0.5 @ #
Carbon Disulphide	<1 µg/kg	TM116	3.59 @ M	2.45 @ M	11.3 @ M	134 @ M	3.78 @ M	22.1 @ M
Dichloromethane	<5 µg/kg	TM116	<5 @ #	<5 @ #	<5 @ #	<100 @ #	<5 @ #	<5 @ #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
2,2-Dichloropropane	<1 µg/kg	TM116	<1 @	<1 @	<1 @	<20 @	<1 @	<1 @
Bromochloromethane	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Chloroform	<3 µg/kg	TM116	<3 @ M	<3 @ M	<3 @ M	<60 @ M	<3 @ M	<3 @ M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Benzene	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Trichloroethene	<1 µg/kg	TM116	<1 @ #	<1 @ #	<1 @ #	<20 @ #	<1 @ #	<1 @ #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
Dibromomethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Bromodichloromethane	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
Toluene	<1 µg/kg	TM116	<1 @ M	2.31 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1 @	<1 @	<1 @	<20 @	<1 @	<1 @
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHCC01	BHCC02	TP221	TP222	TP223	TP224
Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			.	.	.	.	.	.
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Dibromochloromethane	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Chlorobenzene	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Ethylbenzene	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
p/m-Xylene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #
o-Xylene	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Isopropylbenzene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Bromobenzene	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Propylbenzene	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
2-Chlorotoluene	<3 µg/kg	TM116	<3 @ M	<3 @ M	<3 @ M	<60 @ M	<3 @ M	<3 @ M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
4-Chlorotoluene	<3 µg/kg	TM116	<3 @ M	<3 @ M	<3 @ M	<60 @ M	<3 @ M	<3 @ M
tert-Butylbenzene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 @ #	<3 @ #	<3 @ #	<60 @ #	<3 @ #	<3 @ #
sec-Butylbenzene	<1 µg/kg	TM116	<1 @	<1 @	<1 @	<20 @	<1 @	<1 @
4-Isopropyltoluene	<2 µg/kg	TM116	<2 @	<2 @	<2 @	<40 @	<2 @	<2 @
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 @ M	<5 @ M	<100 @ M	<5 @ M	<5 @ M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 @ M	<5 @ M	<100 @ M	<5 @ M	<5 @ M
n-Butylbenzene	<3 µg/kg	TM116	<3 @	<3 @	<3 @	<60 @	<3 @	<3 @
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 @ M	<5 @ M	<100 @ M	<5 @ M	<5 @ M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 @ #	<1 @ #	<1 @ #	<20 @ #	<1 @ #	<1 @ #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7 @	<7 @	<7 @	<140 @	<7 @	<7 @
Hexachlorobutadiene	<4 µg/kg	TM116	<4 @	<4 @	<4 @	<80 @	<4 @	<4 @
Naphthalene	<8 µg/kg	TM116	<8 @ M	<8 @ M	<8 @ M	<160 @ M	<8 @ M	<8 @ M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<200 @ #	<10 @ #	<10 @ #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<140	<7	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			.	.	.	.	.	.
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02 @	<0.02 @	<0.02 @	<0.4 @	<0.02 @	<0.02 @
Sum of BTEX	<7 µg/kg	TM116	<7 @	<7 @	<7 @	<140 @	<7 @	<7 @

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CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHCC01ES1 4.50 - 4.50 SOLID 14/06/2023 00:00:00 23/06/2023 10:00:00 230623-103 28207092 TM048	30/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHCC02ES1 3.00 - 3.00 SOLID 14/06/2023 00:00:00 23/06/2023 10:00:00 230623-103 28207097 TM048	30/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP221ES1 2.70 - 2.80 SOLID 14/06/2023 00:00:00 23/06/2023 10:00:00 230623-103 28207102 TM048	30/06/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP222ES1 1.50 - 1.70 SOLID 14/06/2023 00:00:00 23/06/2023 10:00:00 230623-103 28207108 TM048	30/06/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP223ES1 2.50 - 2.60 SOLID 14/06/2023 00:00:00 23/06/2023 10:00:00 230623-103 28207115 TM048	30/06/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP224ES1 0.90 - 1.00 SOLID 14/06/2023 00:00:00 23/06/2023 10:00:00 230623-103 28207120 TM048	30/06/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	16.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85.7
Particle Size <4mm	>95%		

Case	
SDG	230623-103
Lab Sample Number(s)	28207092
Sampled Date	14-Jun-2023
Customer Sample Ref.	BHCC01 ES1
Depth (m)	4.50 - 4.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	5.92	3	5	6
Loss on Ignition (%)	0.751	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.78	-	>6	-
ANC to pH 6 (mol/kg)	0.0411	-	-	-
ANC to pH 4 (mol/kg)	0.104	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00919	<0.0005	0.0919	<0.005	0.5	2	25
Barium	0.189	<0.0002	1.89	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00237	<0.0003	0.0237	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0273	<0.003	0.273	<0.03	0.5	10	30
Nickel	0.0029	<0.0004	0.029	<0.004	0.4	10	40
Lead	0.000569	<0.0002	0.00569	<0.002	0.5	10	50
Antimony	0.00287	<0.001	0.0287	<0.01	0.06	0.7	5
Selenium	0.0197	<0.001	0.197	<0.01	0.1	0.5	7
Zinc	0.00505	<0.001	0.0505	<0.01	4	50	200
Chloride	2.8	<2	28	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	19.7	<2	197	<20	1000	20000	50000
Total Dissolved Solids	87.6	<10	876	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.01	<3	60.1	<30	500	800	1000

Leach Test Information

Date Prepared	28-Jun-2023
pH (pH Units)	9.06
Conductivity (µS/cm)	115
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

03/07/2023 16:26:50

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	10.2
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.7
Particle Size <4mm	>95%		

Case	
SDG	230623-103
Lab Sample Number(s)	28207097
Sampled Date	14-Jun-2023
Customer Sample Ref.	BHCC02 ES1
Depth (m)	3.00 - 3.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	4.6	3	5	6
Loss on Ignition (%)	1.43	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.7	-	>6	-
ANC to pH 6 (mol/kg)	0.0485	-	-	-
ANC to pH 4 (mol/kg)	0.217	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00457	<0.0005	0.0457	<0.005	0.5	2	25
Barium	0.0097	<0.0002	0.097	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00153	<0.0003	0.0153	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0176	<0.003	0.176	<0.03	0.5	10	30
Nickel	0.00142	<0.0004	0.0142	<0.004	0.4	10	40
Lead	0.000227	<0.0002	0.00227	<0.002	0.5	10	50
Antimony	0.00239	<0.001	0.0239	<0.01	0.06	0.7	5
Selenium	0.00898	<0.001	0.0898	<0.01	0.1	0.5	7
Zinc	0.00357	<0.001	0.0357	<0.01	4	50	200
Chloride	2.3	<2	23	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	4.1	<2	41	<20	1000	20000	50000
Total Dissolved Solids	60.9	<10	609	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.37	<3	43.7	<30	500	800	1000

Leach Test Information

Date Prepared	28-Jun-2023
pH (pH Units)	9.04
Conductivity (µS/cm)	81
Volume Leachant (Litres)	0.891

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

03/07/2023 16:26:50

16:26:42 03/07/2023

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28207092	28207097	28207102	28207108	28207115	28207120
Customer Sample Ref.	BHCC01	BHCC02	TP221	TP222	TP223	TP224
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1
Depth	4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	29-Jun-2023	29-Jun-2023				
Anions by Kone (soil)	30-Jun-2023	30-Jun-2023	29-Jun-2023	30-Jun-2023	29-Jun-2023	30-Jun-2023
Anions by Kone (w)	30-Jun-2023	29-Jun-2023				
Anions in soil by IC	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Asbestos ID in Solid Samples	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
CEN 10:1 Leachate (1 Stage)	28-Jun-2023	28-Jun-2023				
CEN Readings	30-Jun-2023	30-Jun-2023				
Chromium III	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Coronene	30-Jun-2023	30-Jun-2023				
Cyanide Comp/Free/Total/Thiocyanate	30-Jun-2023	30-Jun-2023	29-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Dissolved Metals by ICP-MS	30-Jun-2023	03-Jul-2023				
Dissolved Organic/Inorganic Carbon	03-Jul-2023	30-Jun-2023				
EPH by GCxGC-FID	01-Jul-2023	30-Jun-2023				
EPH CWG GC (S)	30-Jun-2023	30-Jun-2023	29-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Fluoride	30-Jun-2023	30-Jun-2023				
GRO by GC-FID (S)	29-Jun-2023	29-Jun-2023	29-Jun-2023	29-Jun-2023	29-Jun-2023	29-Jun-2023
Hexavalent Chromium (s)	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Loss on Ignition in soils	30-Jun-2023	30-Jun-2023				
Magnesium (BRE)	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Mercury Dissolved	30-Jun-2023	30-Jun-2023				
Metals in solid samples by OES	30-Jun-2023	30-Jun-2023	29-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Moisture at 105C	28-Jun-2023	28-Jun-2023				
PAH 16 & 17 Calc	30-Jun-2023	30-Jun-2023				
PAH by GCMS	30-Jun-2023	30-Jun-2023	03-Jul-2023	03-Jul-2023	03-Jul-2023	03-Jul-2023
PCBs by GCMS	30-Jun-2023	30-Jun-2023	03-Jul-2023	03-Jul-2023	03-Jul-2023	03-Jul-2023
pH	29-Jun-2023	29-Jun-2023	29-Jun-2023	29-Jun-2023	29-Jun-2023	29-Jun-2023
pH Value of Filtered Water	30-Jun-2023	30-Jun-2023				
Phenols by HPLC (S)	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Phenols by HPLC (W)	30-Jun-2023	30-Jun-2023				
Sample description	28-Jun-2023	28-Jun-2023	27-Jun-2023	28-Jun-2023	28-Jun-2023	28-Jun-2023
Semi Volatile Organic Compounds	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Total Organic Carbon	01-Jul-2023	01-Jul-2023	30-Jun-2023	30-Jun-2023	01-Jul-2023	01-Jul-2023
Total Sulphate	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Total Sulphur	30-Jun-2023	30-Jun-2023	28-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
TPH CWG GC (S)	30-Jun-2023	30-Jun-2023	29-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
VOC MS (S)	29-Jun-2023	29-Jun-2023	29-Jun-2023	30-Jun-2023	29-Jun-2023	29-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	06 July 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230627-39
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	695202
Order Number:	12380

We received 3 samples on Monday June 26, 2023 and 3 of these samples were scheduled for analysis which was completed on Thursday July 06, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28220946	BHSS06	ES1	5.50 - 5.50	20/06/2023
28220938	BHT8	ES1	3.50 - 3.50	19/06/2023
28220954	BHT16	ES1	3.50 - 3.50	21/06/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28220946			28220938			28220954		
Customer Sample Reference			BHSS06			BHT8			BHT16		
AGS Reference			ES1			ES1			ES1		
Depth (m)			5.50 - 5.50			3.50 - 3.50			3.50 - 3.50		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X	
Anions in soil by IC	All	NDPs: 0 Tests: 3		X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X		
Chromium III	All	NDPs: 0 Tests: 3		X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 3		X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
pH	All	NDPs: 0 Tests: 3		X			X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3		X			X			X	
Sample description	All	NDPs: 0 Tests: 3		X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					28220946			28220938			28220954
Customer Sample Reference					BHSS06			BHT8			BHT16
AGS Reference					ES1			ES1			ES1
Depth (m)					5.50 - 5.50			3.50 - 3.50			3.50 - 3.50
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3			X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 3			X			X			X	
Total Sulphate	All	NDPs: 0 Tests: 3			X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 3			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 3				X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28220946	BHSS06	5.50 - 5.50	Black	Loamy Sand	Stones	None
28220938	BHT8	3.50 - 3.50	Grey	Loamy Sand	Stones	None
28220954	BHT16	3.50 - 3.50	Black	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			-	-	-			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	15	9.8	1.1			
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000317	0.000321	0.000711			
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.162	0.0229	0.0206			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 @ M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 @ M	<0.035 M			
Sulphur, Total	<0.02 %	TM132	2.13 #	0.11 #	0.0563 #			
Organic Matter, Total	<0.35 %	TM132	7.67 #	<0.35 #	11.5 #			
Sulphate, Total potential	<0.06 %	TM132	6.39	0.33	0.169			
pH	1 pH Units	TM133	6.35 M	9.16 M	9.54 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M			
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 M			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21			
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	55.5	11	4.43			
Arsenic	<0.6 mg/kg	TM181	28.9 M	2.18 M	0.828 M			
Barium	<0.6 mg/kg	TM181	22.1 #	9.4 #	4.65 #			
Beryllium	<0.01 mg/kg	TM181	0.183 M	0.15 M	0.118 M			
Cadmium	<0.02 mg/kg	TM181	25.9 M	0.463 M	0.161 M			
Chromium	<0.9 mg/kg	TM181	55.5 M	11 M	4.43 M			
Copper	<1.4 mg/kg	TM181	19.6 M	3.75 M	1.56 M			
Lead	<0.7 mg/kg	TM181	38.4 M	2.58 M	<0.7 M			
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181	309 M	14.4 M	3.83 M			
Selenium	<1 mg/kg	TM181	8.76 #	1.05 #	1.21 #			
Vanadium	<0.2 mg/kg	TM181	57.2 #	4.08 #	3.17 #			
Zinc	<1.9 mg/kg	TM181	997 M	36.4 M	8.9 M			
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.235 M	0.0433 M	0.0778 M			
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.023 M	0.0049 M	0.0029 M			
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHSS06	BHT8	BHT16			
Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Naphthalene-d8 % recovery**	%	TM218	95.9	96.3	100			
Acenaphthene-d10 % recovery**	%	TM218	96.1	96.6	97.4			
Phenanthrene-d10 % recovery**	%	TM218	94.1	95.9	99.4			
Chrysene-d12 % recovery**	%	TM218	82.8	95	96.9			
Perylene-d12 % recovery**	%	TM218	75.2	100	102			
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			

12:16:39 06/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			-	-	-			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157	<500	<500	<500			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100			
Isophorone	<100 µg/kg	TM157	<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100			
Carbazole	<100 µg/kg	TM157	<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100			
Azobenzene	<100 µg/kg	TM157	<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100			
Anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100	<100			
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Fluorene	<100 µg/kg	TM157	<100	<100	<100			
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100			
Pyrene	<100 µg/kg	TM157	<100	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100	<100			
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	45.5 4	98.8	91.4			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000 @	<1000			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000 @	<5000			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1580 #	<1000 @ #	<1000 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	2640 #	<1000 @ #	<1000 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1350	<1000 @	<1000			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000 @	<1000			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	5570	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 4	<50	<50			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 4	<50	<50			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 4	<20	<20			

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	102	107	103			
Toluene-d8**	%	TM116	96.6	96.1	97.6			
4-Bromofluorobenzene**	%	TM116	88.5	97	98.2			
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<10 #	<0.5 #	<0.5 #			
Chloromethane	<2 µg/kg	TM116	<40 #	<2 #	<2 #			
Vinyl Chloride	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M			
Bromomethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Chloroethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Trichlorofluorormethane	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<0.5 #	<0.5 #			
Carbon Disulphide	<1 µg/kg	TM116	156 M	<1 M	<1 M			
Dichloromethane	<5 µg/kg	TM116	<100 #	<5 #	<5 #			
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
1,1-Dichloroethane	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
2,2-Dichloropropane	<1 µg/kg	TM116	<20	<1	<1			
Bromochloromethane	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Chloroform	<3 µg/kg	TM116	<60 M	<3 M	<3 M			
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
1,2-Dichloroethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Benzene	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Trichloroethene	<1 µg/kg	TM116	<20 #	<1 #	<1 #			
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
Dibromomethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Bromodichloromethane	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
Toluene	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<20	<1	<1			
1,1,2-Trichloroethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
1,3-Dichloropropane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Dibromochloromethane	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
1,2-Dibromoethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Chlorobenzene	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Ethylbenzene	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
p/m-Xylene	<2 µg/kg	TM116	<40 #	<2 #	<2 #			
o-Xylene	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Styrene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #			
Bromoform	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Isopropylbenzene	<2 µg/kg	TM116	<40 #	<2 #	<2 #			
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<40 #	<2 #	<2 #			
1,2,3-Trichloropropane	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Bromobenzene	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Propylbenzene	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
2-Chlorotoluene	<3 µg/kg	TM116	<60 M	<3 M	<3 M			
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
4-Chlorotoluene	<3 µg/kg	TM116	<60 M	<3 M	<3 M			
tert-Butylbenzene	<2 µg/kg	TM116	<40 #	<2 #	<2 #			
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<60 #	<3 #	<3 #			
sec-Butylbenzene	<1 µg/kg	TM116	<20	<1	<1			
4-Isopropyltoluene	<2 µg/kg	TM116	<40	<2	<2			
1,3-Dichlorobenzene	<5 µg/kg	TM116	<100 M	<5 M	<5 M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<100 M	<5 M	<5 M			
n-Butylbenzene	<3 µg/kg	TM116	<60	<3	<3			
1,2-Dichlorobenzene	<5 µg/kg	TM116	<100 M	<5 M	<5 M			
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Tert-amyl methyl ether	<1 µg/kg	TM116	<20 #	<1 #	<1 #			
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<140	<7	<7			
Hexachlorobutadiene	<4 µg/kg	TM116	<80	<4	<4			
Naphthalene	<8 µg/kg	TM116	<160 M	<8 M	<8 M			
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<200 #	<10 #	<10 #			
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<140	<7	<7			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4	<0.02	<0.02			
Sum of BTEX	<7 µg/kg	TM116	<140	<7	<7			

12:16:39 06/07/2023

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS06ES1 5.50 - 5.50 SOLID 20/06/2023 00:00:00 26/06/2023 15:00:00 230627-39 28220946 TM048	04/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT8ES1 3.50 - 3.50 SOLID 19/06/2023 00:00:00 26/06/2023 15:00:00 230627-39 28220938 TM048	04/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT16ES1 3.50 - 3.50 SOLID 21/06/2023 00:00:00 26/06/2023 15:00:00 230627-39 28220954 TM048	04/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM019	Determination of Anions in Soils using Ion Chromatography
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM218	The determination of PAH in soil samples by GC-MS
TM282	Extraction of Magnesium by BRE Method

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28220946	28220938	28220954
Customer Sample Ref.	BHSS06	BHT8	BHT16
AGS Ref.	ES1	ES1	ES1
Depth	5.50 - 5.50	3.50 - 3.50	3.50 - 3.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	03-Jul-2023	03-Jul-2023	03-Jul-2023
Anions in soil by IC	06-Jul-2023	06-Jul-2023	06-Jul-2023
Asbestos ID in Solid Samples	04-Jul-2023	04-Jul-2023	04-Jul-2023
Chromium III	04-Jul-2023	04-Jul-2023	04-Jul-2023
Cyanide Comp/Free/Total/Thiocyanate	06-Jul-2023	06-Jul-2023	06-Jul-2023
EPH CWG GC (S)	05-Jul-2023	05-Jul-2023	04-Jul-2023
GRO by GC-FID (S)	04-Jul-2023	02-Jul-2023	02-Jul-2023
Hexavalent Chromium (s)	04-Jul-2023	04-Jul-2023	04-Jul-2023
Magnesium (BRE)	03-Jul-2023	03-Jul-2023	03-Jul-2023
Metals in solid samples by OES	04-Jul-2023	03-Jul-2023	03-Jul-2023
PAH by GCMS	06-Jul-2023	06-Jul-2023	06-Jul-2023
PCBs by GCMS	06-Jul-2023	06-Jul-2023	06-Jul-2023
pH	03-Jul-2023	03-Jul-2023	03-Jul-2023
Phenols by HPLC (S)	04-Jul-2023	04-Jul-2023	04-Jul-2023
Sample description	30-Jun-2023	30-Jun-2023	30-Jun-2023
Semi Volatile Organic Compounds	05-Jul-2023	05-Jul-2023	05-Jul-2023
Total Organic Carbon	04-Jul-2023	04-Jul-2023	03-Jul-2023
Total Sulphate	04-Jul-2023	04-Jul-2023	04-Jul-2023
Total Sulphur	04-Jul-2023	04-Jul-2023	04-Jul-2023
TPH CWG GC (S)	05-Jul-2023	05-Jul-2023	04-Jul-2023
VOC MS (S)	03-Jul-2023	03-Jul-2023	03-Jul-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	18 July 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230705-77
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	696722
Order Number:	12380

We received 20 samples on Wednesday July 05, 2023 and 20 of these samples were scheduled for analysis which was completed on Tuesday July 18, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28275828	TP208	ES5	2.00 - 2.10	29/06/2023
28275833	TP208	ES10	3.50 - 3.60	29/06/2023
28275856	TPC08	ES5	0.80 - 0.90	28/06/2023
28275861	TPC08	ES8	2.30 - 2.60	28/06/2023
28275840	TPC09	ES5	1.30 - 1.40	28/06/2023
28275848	TPC09	ES8	2.70 - 2.80	28/06/2023
28275895	TPSS101	ES3	0.40 - 0.50	27/06/2023
28275900	TPSS101	ES8	2.40 - 2.50	27/06/2023
28275883	TPSS102	ES3	0.40 - 0.50	27/06/2023
28275888	TPSS102	ES8	2.40 - 2.50	27/06/2023
28275905	TPSS103	ES3	0.40 - 0.50	27/06/2023
28275910	TPSS103	ES8	2.40 - 2.50	27/06/2023
28275818	TPSS104	ES5	0.70 - 0.80	27/06/2023
28275823	TPSS104	ES8	2.00 - 2.10	27/06/2023
28275922	TPSS105	ES3	0.40 - 0.50	27/06/2023
28275813	TPSS105	ES8	2.40 - 2.50	27/06/2023
28275803	TPSS106	ES3	0.40 - 0.50	27/06/2023
28275873	TPSS106	ES8	2.40 - 2.50	27/06/2023
28275868	TPSS107	ES3	0.40 - 0.50	28/06/2023
28275878	TPSS107	ES6	1.80 - 1.90	28/06/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28275828			28275833			28275856			28275861			28275840			28275848			28275895
Customer Sample Reference			TP208			TP208			TPC08			TPC08			TPC09			TPC09			TPSS101
AGS Reference			ES5			ES10			ES5			ES8			ES5			ES8			ES3
Depth (m)			2.00 - 2.10			3.50 - 3.60			0.80 - 0.90			2.30 - 2.60			1.30 - 1.40			2.70 - 2.80			0.40 - 0.50
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Anions in soil by IC	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 20	X			X			X			X			X			X			X
Chromium III	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 20			X			X			X			X			X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Magnesium (BRE)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Sample description	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		

28275823	TPSS104	ES8	2.00 - 2.10	1kg TUB with Handle (ALE260)	S			X												
28275818	TPSS104	ES5	0.70 - 0.80	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28275910	TPSS103	ES8	2.40 - 2.50	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28275905	TPSS103	ES3	0.40 - 0.50	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28275888	TPSS102	ES8	2.40 - 2.50	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28275883	TPSS102	ES3	0.40 - 0.50	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28275900	TPSS101	ES8	2.40 - 2.50	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28275895	TPSS101	ES3	0.40 - 0.50	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28275828			28275833			28275856			28275861			28275840			28275848			28275895
Customer Sample Reference			TP208			TP208			TPC08			TPC08			TPC09			TPC09			TPSS101
AGS Reference			ES5			ES10			ES5			ES8			ES5			ES8			ES3
Depth (m)			2.00 - 2.10			3.50 - 3.60			0.80 - 0.90			2.30 - 2.60			1.30 - 1.40			2.70 - 2.80			0.40 - 0.50
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 20			X			X			X			X			X			X	

28275823	TPSS104	ES8	2.00 - 2.10	1kg TUB with Handle (ALE260)	S							
28275818	TPSS104	ES5	0.70 - 0.80	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28275910	TPSS103	ES8	2.40 - 2.50	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28275905	TPSS103	ES3	0.40 - 0.50	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28275888	TPSS102	ES8	2.40 - 2.50	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28275883	TPSS102	ES3	0.40 - 0.50	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28275900	TPSS101	ES8	2.40 - 2.50	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28275895	TPSS101	ES3	0.40 - 0.50	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28275823			28275922			28275813			28275803			28275873			28275868			28275878	
Customer Sample Reference			TPSS104			TPSS105			TPSS105			TPSS106			TPSS106			TPSS107			TPSS107	
AGS Reference			ES8			ES3			ES8			ES3			ES8			ES3			ES6	
Depth (m)			2.00 - 2.10			0.40 - 0.50			2.40 - 2.50			0.40 - 0.50			2.40 - 2.50			0.40 - 0.50			1.80 - 1.90	
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Anions in soil by IC	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 20			X			X			X			X			X			X		
Chromium III	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Magnesium (BRE)	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
PAH by GCMS	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
PCBs by GCMS	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
pH	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Sample description	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
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PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28275823			28275922			28275813			28275803			28275873			28275868			28275878	
Customer Sample Reference			TPSS104			TPSS105			TPSS105			TPSS106			TPSS106			TPSS107			TPSS107	
AGS Reference			ES8			ES3			ES8			ES3			ES8			ES3			ES6	
Depth (m)			2.00 - 2.10			0.40 - 0.50			2.40 - 2.50			0.40 - 0.50			2.40 - 2.50			0.40 - 0.50			1.80 - 1.90	
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Total Organic Carbon	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Total Sulphate	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Total Sulphur	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
VOC MS (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28275828	TP208	2.00 - 2.10	Dark Brown	Silty Clay Loam	Stones	Vegetation
28275833	TP208	3.50 - 3.60	Dark Brown	Sandy Silt Loam	Stones	None
28275856	TPC08	0.80 - 0.90	Light Brown	Sandy Silt Loam	Stones	Vegetation
28275861	TPC08	2.30 - 2.60	Grey	Sandy Silt Loam	Stones	None
28275840	TPC09	1.30 - 1.40	Grey	Sandy Silt Loam	Stones	None
28275848	TPC09	2.70 - 2.80	Grey	Sandy Silt Loam	Stones	None
28275895	TPSS101	0.40 - 0.50	Light Brown	Sandy Loam	Stones	Vegetation
28275900	TPSS101	2.40 - 2.50	Grey	Sandy Silt Loam	Stones	Vegetation
28275883	TPSS102	0.40 - 0.50	Light Brown	Sandy Loam	Stones	Vegetation
28275888	TPSS102	2.40 - 2.50	Light Brown	Sandy Silt Loam	Stones	None
28275905	TPSS103	0.40 - 0.50	Light Brown	Sandy Silt Loam	Stones	Vegetation
28275910	TPSS103	2.40 - 2.50	Grey	Sandy Silt Loam	Stones	None
28275818	TPSS104	0.70 - 0.80	Dark Brown	Sandy Silt Loam	Stones	None
28275823	TPSS104	2.00 - 2.10	Grey	Sandy Silt Loam	Stones	None
28275813	TPSS105	2.40 - 2.50	Grey	Sandy Silt Loam	Stones	None
28275922	TPSS105	0.40 - 0.50	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28275803	TPSS106	0.40 - 0.50	Light Brown	Sandy Loam	Stones	Vegetation
28275873	TPSS106	2.40 - 2.50	Grey	Sandy Silt Loam	Stones	None
28275868	TPSS107	0.40 - 0.50	Dark Brown	Silty Clay Loam	Stones	Vegetation
28275878	TPSS107	1.80 - 1.90	Grey	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	21	11	23	11	17	14
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00894	0.00518	0.00603	0.000331	0.000443	<0.0002
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0151	0.012	0.0239	0.0174	0.0248	0.0146
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #
Organic Matter, Total	<0.35 %	TM132	1.53 #	<0.35 #	1.72 #	<0.35 #	0.634 #	0.395 #
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06	0.06	0.06	0.06	0.06
pH	1 pH Units	TM133	6.24 M	8.44 M	7.42 M	8.4 M	8.07 M	8.73 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	20.9	6.65	44.3	16.8	15.2	8.11
Arsenic	<0.6 mg/kg	TM181	2.47 M	2.07 M	4.9 M	1.29 M	7.01 M	3.06 M
Barium	<0.6 mg/kg	TM181	40 #	19.7 #	127 #	72.3 #	85.6 #	61.2 #
Beryllium	<0.01 mg/kg	TM181	0.502 M	0.398 M	0.931 M	0.481 M	0.428 M	0.434 M
Cadmium	<0.02 mg/kg	TM181	2.84 M	0.726 M	0.569 M	0.691 M	0.145 M	0.546 M
Chromium	<0.9 mg/kg	TM181	20.9 M	6.65 M	44.3 M	16.8 M	15.2 M	8.11 M
Copper	<1.4 mg/kg	TM181	12.3 M	11.2 M	11.1 M	13.6 M	4.22 M	10.1 M
Lead	<0.7 mg/kg	TM181	21.1 M	7.18 M	17.3 M	7.61 M	11.3 M	10.4 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	45.4 M	19.8 M	59.4 M	32.7 M	24.6 M	23.2 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	21.7 #	9.58 #	45.8 #	19.9 #	19 #	10.8 #
Zinc	<1.9 mg/kg	TM181	113 M	56.4 M	101 M	55 M	44 M	46.6 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0122 M	0.0171 M	0.0154 M	0.0187 M	0.0242 M	0.0238 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0042 M	0.0027 M	0.0066 M	0.0032 M	0.0058 M	0.0045 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	12	11	20	9.8	10	10
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00612	<0.0002	0.00338	<0.0002	0.000438	<0.0002
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.012	0.01	0.017	0.00865	0.0151	0.0166
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #
Organic Matter, Total	<0.35 %	TM132	1.09 #	<0.35 #	2.03 #	<0.35 #	0.86 #	0.398 #
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06	0.06	0.06	0.06	0.06
pH	1 pH Units	TM133	8.3 M	8.23 M	8.26 M	8.55 M	8.57 M	8.45 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Chromium, Trivalent	<0.9 mg/kg	TM181	30.9	23.3	47.1	18.3	21.3	19.3
Arsenic	<0.6 mg/kg	TM181	5.12 M	8.08 M	3.59 M	4.38 M	4 M	2.07 M
Barium	<0.6 mg/kg	TM181	137 #	107 #	129 #	91.8 #	103 #	89.4 #
Beryllium	<0.01 mg/kg	TM181	0.743 M	0.518 M	0.984 M	0.509 M	0.528 M	0.476 M
Cadmium	<0.02 mg/kg	TM181	0.374 M	0.489 M	0.698 M	0.459 M	0.433 M	0.49 M
Chromium	<0.9 mg/kg	TM181	30.9 M	23.3 M	47.1 M	18.3 M	21.3 M	19.3 M
Copper	<1.4 mg/kg	TM181	8.99 M	13.8 M	12.2 M	13.1 M	12.2 M	14.5 M
Lead	<0.7 mg/kg	TM181	14.6 M	7.27 M	20.3 M	7.95 M	7.65 M	7.92 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	46.2 M	42.6 M	65.1 M	40.7 M	44.1 M	39.2 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	1.13 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	33.9 #	24.8 #	49.3 #	23.1 #	24.9 #	22.3 #
Zinc	<1.9 mg/kg	TM181	70.9 M	64.6 M	157 M	56 M	58.6 M	62.3 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0275 M	0.0255 M	0.035 M	0.0237 M	0.023 M	0.0193 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0034 M	0.0031 M	0.0042 M	0.0025 M	0.0031 M	0.0034 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	26	12	12	10	15	11
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000523	<0.0002	0.00159	0.000274	0.00382	<0.0002
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0279	0.0188	0.012	0.00848	0.00919	0.0129
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #
Organic Matter, Total	<0.35 %	TM132	1.78 #	<0.35 #	0.419 #	<0.35 #	2.71 #	<0.35 #
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06	0.06	0.06	0.06	0.06
pH	1 pH Units	TM133	7.97 M	8.25 M	8.62 M	8.22 M	7.82 M	8.31 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	28.2	23.4	10.8	18.8	27.7	23.5
Arsenic	<0.6 mg/kg	TM181	6.47 M	3.28 M	3.78 M	1.99 M	16.1 M	2.78 M
Barium	<0.6 mg/kg	TM181	124 #	63.4 #	70.2 #	80.6 #	165 #	109 #
Beryllium	<0.01 mg/kg	TM181	0.679 M	0.558 M	0.416 M	0.501 M	0.663 M	0.533 M
Cadmium	<0.02 mg/kg	TM181	0.454 M	0.414 M	0.454 M	0.519 M	0.757 M	0.467 M
Chromium	<0.9 mg/kg	TM181	28.2 M	23.4 M	10.8 M	18.8 M	27.7 M	23.5 M
Copper	<1.4 mg/kg	TM181	8.88 M	11.2 M	7.72 M	13.7 M	11.6 M	15.6 M
Lead	<0.7 mg/kg	TM181	16.7 M	7.4 M	12.6 M	6.79 M	20.6 M	6.57 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	51.5 M	43.9 M	26.6 M	39 M	46.8 M	45.1 M
Selenium	<1 mg/kg	TM181	1.1 #	1.08 #	1.1 #	1.02 #	<1 #	1.08 #
Vanadium	<0.2 mg/kg	TM181	33.9 #	26.8 #	12.4 #	23.7 #	33.4 #	26.6 #
Zinc	<1.9 mg/kg	TM181	100 M	61.1 M	44.3 M	55.3 M	76.4 M	54.8 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0321 M	0.0473 M	0.0296 M	0.0398 M	0.0209 M	0.0182 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0054 M	0.0045 M	0.0036 M	0.0033 M	0.0048 M	0.0047 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

10:33:40 18/07/2023

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Moisture Content Ratio (% of as received sample)	%	PM024	18	7.4				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00194	<0.0002				
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0197	0.0112				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #				
Organic Matter, Total	<0.35 %	TM132	1.55 #	<0.35 #				
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06				
pH	1 pH Units	TM133	8.19 M	8.48 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36				

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Chromium, Trivalent	<0.9 mg/kg	TM181	25.6	32.4				
Arsenic	<0.6 mg/kg	TM181	6.01 M	3.69 M				
Barium	<0.6 mg/kg	TM181	161 #	95.3 #				
Beryllium	<0.01 mg/kg	TM181	0.771 M	0.603 M				
Cadmium	<0.02 mg/kg	TM181	0.455 M	0.328 M				
Chromium	<0.9 mg/kg	TM181	25.6 M	32.4 M				
Copper	<1.4 mg/kg	TM181	11.2 M	16.7 M				
Lead	<0.7 mg/kg	TM181	19.8 M	5.87 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181	41.1 M	52.7 M				
Selenium	<1 mg/kg	TM181	<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	30.3 #	37.1 #				
Zinc	<1.9 mg/kg	TM181	73.5 M	60.5 M				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0384 M	0.0322 M				
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0056 M	0.0032 M				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	96.4	94.6	96.7	95.5	93.2	97.4
Acenaphthene-d10 % recovery**	%	TM218	94.5	92.3	93.6	93.2	91.8	94.9
Phenanthrene-d10 % recovery**	%	TM218	93	89.1	91	91.5	90.5	91.5
Chrysene-d12 % recovery**	%	TM218	93.1	92.8	94.6	97.8	95.5	97.5
Perylene-d12 % recovery**	%	TM218	88.3	89.3	91.3	97.6	91.7	92.2
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 @ M	<9 @ M	<9 @ M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 @ M	<12 @ M	<12 @ M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 @ M	<8 @ M	<8 @ M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 @ M	<16 @ M	<16 @ M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 @ M	<17 @ M	<17 @ M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 @ M	<18 @ M	<18 @ M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 @ M	<23 @ M	<23 @ M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 @ M	<24 @ M	<24 @ M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	92	97.2	95.8	92.2	92.4	92.6
Acenaphthene-d10 % recovery**	%	TM218	90.7	93.7	92.6	90.3	90.9	91.4
Phenanthrene-d10 % recovery**	%	TM218	90.6	90.6	89.8	88.9	90.2	90.5
Chrysene-d12 % recovery**	%	TM218	82.7	92.4	91.1	80.9	84.7	83
Perylene-d12 % recovery**	%	TM218	78.9	89.8	83.2	78.7	80.2	81.3
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

10:33:40 18/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Naphthalene-d8 % recovery**	%	TM218	92	94.2	91.9	95.8	96.5	92.6
Acenaphthene-d10 % recovery**	%	TM218	91.4	91.9	90.8	93	94.8	91.3
Phenanthrene-d10 % recovery**	%	TM218	90.8	89.7	88.7	89.1	93.8	89.6
Chrysene-d12 % recovery**	%	TM218	83.6	82	84	90.3	95.2	84.3
Perylene-d12 % recovery**	%	TM218	79.5	80.5	83.3	86.2	88.8	86.7
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

10:33:40 18/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	95.1	95.7				
Acenaphthene-d10 % recovery**	%	TM218	92.6	93.4				
Phenanthrene-d10 % recovery**	%	TM218	90	91.3				
Chrysene-d12 % recovery**	%	TM218	93.2	97.2				
Perylene-d12 % recovery**	%	TM218	89	93.1				
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M				
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M				
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M				
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M				
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M				
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M				
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M				
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M				
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP208	TP208	TPC08	TPC08	TPC09	TPC09
Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP208	TP208	TPC08	TPC08	TPC09	TPC09
Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
		Customer Sample Ref.	TPSS107	TPSS107				
		Depth (m)	0.40 - 0.50	1.80 - 1.90				
		Sample Type	Soil/Solid (S)	Soil/Solid (S)				
		Date Sampled	28/06/2023	28/06/2023				
		Sample Time	.	.				
		Date Received	05/07/2023	05/07/2023				
		SDG Ref	230705-77	230705-77				
		Lab Sample No.(s)	28275868	28275878				
		AGS Reference	ES3	ES6				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Acenaphthylene	<100 µg/kg	TM157	<100	<100				
Acenaphthene	<100 µg/kg	TM157	<100	<100				
Anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Fluoranthene	<100 µg/kg	TM157	<100	<100				
Fluorene	<100 µg/kg	TM157	<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100				
Phenanthrene	<100 µg/kg	TM157	<100	<100				
Pyrene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	107	93.9	114	127	98.5	156 4
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10 4
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10 4
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10 4
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10 4
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10 4
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10 4
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	1780 #	<1000 #	<1000 #	<1000 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50 4
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50 4
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20 4

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
GRO Surrogate % recovery**	%	TM089	91.2	94.1	129	106	96.5	90.4
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1330 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000 @	<5000 @	<5000 @	<5000 @	<5000 @	<5000 @
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	2960 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	128	116 @	94.8	101	90.8	99.2
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000 @	<5000 @	<5000 @	<5000 @	<5000 @	<5000 @
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	2280 @ #	<1000 @ #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50 @	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50 @	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20 @	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	103	102				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20				

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	112	111	104	117	104	104
Toluene-d8**	%	TM116	98.3	101	95.2	98.3	98.2	99.4
4-Bromofluorobenzene**	%	TM116	89.5	94.9	88	99.6	97.6	96.1
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	1.61 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP208	TP208	TPC08	TPC08	TPC09	TPC09
Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2	<2	<2	<2	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<3	<3	<3	<3	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4	<4	<4	<4	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

10:33:40 18/07/2023

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	108	114	137	123	117	119
Toluene-d8**	%	TM116	99.4	99.7	98.2	101	100	99.8
4-Bromofluorobenzene**	%	TM116	85.4	92.2	79.9	92	91.6	95.6
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2	<2	<2	<2	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<3	<3	<3	<3	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4	<4	<4	<4	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

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CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	115	122	109	114	111	109
Toluene-d8**	%	TM116	98.5	100	90.4	101	96.3	100
4-Bromofluorobenzene**	%	TM116	80	97	70.4	94.1	75.6	91.2
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2	<2	<2	<2	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<3	<3	<3	<3	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4	<4	<4	<4	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

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VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	109	116				
Toluene-d8**	%	TM116	98.4	98.8				
4-Bromofluorobenzene**	%	TM116	97	99.9				
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<5 #	<0.5 #				
Chloromethane	<2 µg/kg	TM116	<20 #	<2 #				
Vinyl Chloride	<0.5 µg/kg	TM116	<5 @ M	<0.5 @ M				
Bromomethane	<1 µg/kg	TM116	<10 M	<1 M				
Chloroethane	<1 µg/kg	TM116	<10 M	<1 M				
Trichlorofluorormethane	<0.5 µg/kg	TM116	<5 M	<0.5 M				
1,1-Dichloroethene	<0.5 µg/kg	TM116	<5 #	<0.5 #				
Carbon Disulphide	<1 µg/kg	TM116	<10 M	<1 M				
Dichloromethane	<5 µg/kg	TM116	<50 #	<5 #				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<5 M	<0.5 M				
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<1 M				
1,1-Dichloroethane	<0.5 µg/kg	TM116	<5 M	<0.5 M				
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<5 M	<0.5 M				
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<1				
Bromochloromethane	<2 µg/kg	TM116	<20 M	<2 M				
Chloroform	<3 µg/kg	TM116	<30 M	<3 M				
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<5 M	<0.5 M				
1,1-Dichloropropene	<0.5 µg/kg	TM116	<5 M	<0.5 M				
Carbontetrachloride	<0.5 µg/kg	TM116	<5 M	<0.5 M				
1,2-Dichloroethane	<1 µg/kg	TM116	<10 M	<1 M				
Benzene	<1 µg/kg	TM116	<10 M	<1 M				
Trichloroethene	<1 µg/kg	TM116	<10 #	<1 #				
1,2-Dichloropropane	<0.5 µg/kg	TM116	<5 M	<0.5 M				
Dibromomethane	<1 µg/kg	TM116	<10 M	<1 M				
Bromodichloromethane	<2 µg/kg	TM116	<20 M	<2 M				
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<5 M	<0.5 M				
Toluene	<1 µg/kg	TM116	<10 M	<1 M				
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<1				
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<1 M				
1,3-Dichloropropane	<1 µg/kg	TM116	<10 M	<1 M				

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS107	TPSS107				
Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Tetrachloroethene	<2 µg/kg	TM116	<20 M	<2 M				
Dibromochloromethane	<2 µg/kg	TM116	<20 M	<2 M				
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<1 M				
Chlorobenzene	<2 µg/kg	TM116	<20 M	<2 M				
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<1 M				
Ethylbenzene	<1 µg/kg	TM116	<10 M	<1 M				
p/m-Xylene	<2 µg/kg	TM116	<20 #	<2 #				
o-Xylene	<2 µg/kg	TM116	<20 M	<2 M				
Styrene	<2 µg/kg	TM116	<20 @ #	<2 @ #				
Bromoform	<2 µg/kg	TM116	<20 M	<2 M				
Isopropylbenzene	<2 µg/kg	TM116	<20 #	<2 #				
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<20 #	<2 #				
1,2,3-Trichloropropane	<2 µg/kg	TM116	<20 M	<2 M				
Bromobenzene	<2 µg/kg	TM116	<20 M	<2 M				
Propylbenzene	<2 µg/kg	TM116	<20 M	<2 M				
2-Chlorotoluene	<3 µg/kg	TM116	<30 M	<3 M				
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<20 M	<2 M				
4-Chlorotoluene	<3 µg/kg	TM116	<30 M	<3 M				
tert-Butylbenzene	<2 µg/kg	TM116	<20 #	<2 #				
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<30 #	<3 #				
sec-Butylbenzene	<1 µg/kg	TM116	<10	<1				
4-Isopropyltoluene	<2 µg/kg	TM116	<20	<2				
1,3-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M				
n-Butylbenzene	<3 µg/kg	TM116	<30	<3				
1,2-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M				
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<20 M	<2 M				
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<1 #				
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<70	<7				
Hexachlorobutadiene	<4 µg/kg	TM116	<40	<4				
Naphthalene	<8 µg/kg	TM116	<80 M	<8 M				
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<100 #	<10 #				
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<70	<7				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.2	<0.02				
Sum of BTEX	<7 µg/kg	TM116	<70	<7				

10:33:40 18/07/2023

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP208ES5 2.00 - 2.10 SOLID 29/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275828 TM048	12/07/2023	Alex Horner	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP208ES10 3.50 - 3.60 SOLID 29/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275833 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC08ES5 0.80 - 0.90 SOLID 28/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275856 TM048	13/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC08ES8 2.30 - 2.60 SOLID 28/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275861 TM048	13/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC09ES5 1.30 - 1.40 SOLID 28/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275840 TM048	12/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC09ES8 2.70 - 2.80 SOLID 28/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275848 TM048	12/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS101ES3 0.40 - 0.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275895 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS101ES8 2.40 - 2.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275900 TM048	12/07/2023	Alex Horner	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS102ES3 0.40 - 0.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275883 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS102ES8 2.40 - 2.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275888 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS103ES3 0.40 - 0.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275905 TM048	12/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS103ES8 2.40 - 2.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275910 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS104ES5 0.70 - 0.80 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275818 TM048	13/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS104ES8 2.00 - 2.10 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275823 TM048	13/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS105ES3 0.40 - 0.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275922 TM048	13/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS105ES8 2.40 - 2.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275813 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS106ES3 0.40 - 0.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275803 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS106ES8 2.40 - 2.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275873 TM048	12/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS107ES3 0.40 - 0.50 SOLID 28/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275868 TM048	12/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS107ES6 1.80 - 1.90 SOLID 28/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275878 TM048	13/07/2023	Alex Horner	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM019	Determination of Anions in Soils using Ion Chromatography
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM218	The determination of PAH in soil samples by GC-MS
TM282	Extraction of Magnesium by BRE Method
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28275828	28275833	28275856	28275861	28275840	28275848	28275895	28275900	28275883	28275888
Customer Sample Ref.	TP208	TP208	TPC08	TPC08	TPC09	TPC09	TPSS101	TPSS101	TPSS102	TPSS102
AGS Ref.	ES5	ES10	ES5	ES8	ES5	ES8	ES3	ES8	ES3	ES8
Depth	2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023
Anions in soil by IC	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023
Asbestos ID in Solid Samples	12-Jul-2023	12-Jul-2023	13-Jul-2023	13-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023
Chromium III	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023
Cyanide Comp/Free/Total/Thiocyanate	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023
EPH CWG GC (S)	13-Jul-2023	14-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	14-Jul-2023	14-Jul-2023	18-Jul-2023
GRO by GC-FID (S)	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	10-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	11-Jul-2023
Hexavalent Chromium (s)	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023
Magnesium (BRE)	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	12-Jul-2023	12-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023
Metals in solid samples by OES	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	07-Jul-2023	07-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023
PAH by GCMS	14-Jul-2023	14-Jul-2023	14-Jul-2023	14-Jul-2023	14-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	14-Jul-2023	17-Jul-2023
PCBs by GCMS	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023
pH	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	12-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023
Phenols by HPLC (S)	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	12-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023
Sample description	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023
Semi Volatile Organic Compounds	13-Jul-2023	13-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	13-Jul-2023	12-Jul-2023	13-Jul-2023	12-Jul-2023	13-Jul-2023
Total Organic Carbon	11-Jul-2023	11-Jul-2023	11-Jul-2023	10-Jul-2023	11-Jul-2023	10-Jul-2023	11-Jul-2023	12-Jul-2023	11-Jul-2023	11-Jul-2023
Total Sulphate	10-Jul-2023	10-Jul-2023	10-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023
Total Sulphur	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	11-Jul-2023	07-Jul-2023	11-Jul-2023
TPH CWG GC (S)	13-Jul-2023	14-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	14-Jul-2023	14-Jul-2023	18-Jul-2023
VOC MS (S)	07-Jul-2023	07-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023

Lab Sample No(s)	28275905	28275910	28275818	28275823	28275813	28275922	28275803	28275873	28275868	28275878
Customer Sample Ref.	TPSS103	TPSS103	TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106	TPSS107	TPSS107
AGS Ref.	ES3	ES8	ES5	ES8	ES8	ES3	ES3	ES8	ES3	ES6
Depth	0.40 - 0.50	2.40 - 2.50	0.70 - 0.80	2.00 - 2.10	2.40 - 2.50	0.40 - 0.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	1.80 - 1.90
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023
Anions in soil by IC	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	12-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023
Asbestos ID in Solid Samples	12-Jul-2023	12-Jul-2023	13-Jul-2023	13-Jul-2023	12-Jul-2023	13-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	13-Jul-2023
Chromium III	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023
Cyanide Comp/Free/Total/Thiocyanate	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023
EPH CWG GC (S)	14-Jul-2023	18-Jul-2023	18-Jul-2023	18-Jul-2023	14-Jul-2023	18-Jul-2023	18-Jul-2023	14-Jul-2023	18-Jul-2023	14-Jul-2023
GRO by GC-FID (S)	07-Jul-2023	07-Jul-2023	07-Jul-2023	12-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023
Hexavalent Chromium (s)	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023
Magnesium (BRE)	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	12-Jul-2023
Metals in solid samples by OES	07-Jul-2023	07-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	07-Jul-2023	10-Jul-2023	07-Jul-2023
PAH by GCMS	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	14-Jul-2023
PCBs by GCMS	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023
pH	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023
Phenols by HPLC (S)	12-Jul-2023	12-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	12-Jul-2023	07-Jul-2023
Sample description	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023
Semi Volatile Organic Compounds	12-Jul-2023	13-Jul-2023	13-Jul-2023	12-Jul-2023	12-Jul-2023	13-Jul-2023	12-Jul-2023	13-Jul-2023	12-Jul-2023	12-Jul-2023
Total Organic Carbon	10-Jul-2023	10-Jul-2023	12-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	10-Jul-2023	10-Jul-2023	12-Jul-2023
Total Sulphate	07-Jul-2023	07-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	07-Jul-2023	10-Jul-2023	07-Jul-2023
Total Sulphur	07-Jul-2023	07-Jul-2023	07-Jul-2023	11-Jul-2023	07-Jul-2023	07-Jul-2023	11-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023
TPH CWG GC (S)	14-Jul-2023	18-Jul-2023	18-Jul-2023	18-Jul-2023	14-Jul-2023	18-Jul-2023	18-Jul-2023	14-Jul-2023	18-Jul-2023	14-Jul-2023
VOC MS (S)	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	10-Jul-2023	10-Jul-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	02 August 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230726-72
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	698813
Order Number:	12380

We received 8 samples on Wednesday July 26, 2023 and 8 of these samples were scheduled for analysis which was completed on Wednesday August 02, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28383943	BHSS101	ES18	1.00 - 1.50	17/07/2023
28383948	BHSS102	ES13	3.00 - 3.80	18/07/2023
28383953	BHSS103	ES15	3.00 - 3.50	17/07/2023
28383958	BHSS104	ES15	2.00 - 2.50	19/07/2023
28383964	BHSS105	ES7	1.00 - 1.50	14/07/2023
28383969	BHSS106	ES16	3.00 - 3.50	20/07/2023
28383974	BHSS107	ES9	2.50 - 2.50	20/07/2023
28383979	BHSS108	ES12	3.00 - 3.00	20/07/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28383943			28383948			28383953			28383958			28383964			28383969			28383974
Customer Sample Reference			BHSS101			BHSS102			BHSS103			BHSS104			BHSS105			BHSS106			BHSS107
AGS Reference			ES18			ES13			ES15			ES15			ES7			ES16			ES9
Depth (m)			1.00 - 1.50			3.00 - 3.80			3.00 - 3.50			2.00 - 2.50			1.00 - 1.50			3.00 - 3.50			2.50 - 2.50
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Anions by Kone (w)	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Anions in soil by IC	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
CEN Readings	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Chromium III	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Coronene	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
EPH by GCxGC-FID	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Fluoride	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8			X			X			X			X			X			X	

| | | |

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
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SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
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RE - Recreational Water
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Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28383943			28383948			28383953			28383958			28383964			28383969			28383974
Customer Sample Reference			BHSS101			BHSS102			BHSS103			BHSS104			BHSS105			BHSS106			BHSS107
AGS Reference			ES18			ES13			ES15			ES15			ES7			ES16			ES9
Depth (m)			1.00 - 1.50			3.00 - 3.80			3.00 - 3.50			2.00 - 2.50			1.00 - 1.50			3.00 - 3.50			2.50 - 2.50
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Loss on Ignition in soils	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Magnesium (BRE)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Mercury Dissolved	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Metals in solid samples by OES	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Sample description	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28383943			28383948			28383953			28383958			28383964			28383969			28383974
Customer Sample Reference			BHSS101			BHSS102			BHSS103			BHSS104			BHSS105			BHSS106			BHSS107
AGS Reference			ES18			ES13			ES15			ES15			ES7			ES16			ES9
Depth (m)			1.00 - 1.50			3.00 - 3.80			3.00 - 3.50			2.00 - 2.50			1.00 - 1.50			3.00 - 3.50			2.50 - 2.50
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Total Sulphate	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 8			X			X			X			X			X			X	

28383979	BHSS108	ES12	3.00 - 3.00	60g VOC (ALE215)	S								X
				250g Amber Jar (ALE210)	S		X		X		X		
				1kg TUB with Handle (ALE260)	S								
28383974	BHSS107	ES9	2.50 - 2.50	60g VOC (ALE215)	S								X
				250g Amber Jar (ALE210)	S		X		X		X		

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28383943	BHSS101	1.00 - 1.50	Dark Brown	Sandy Clay Loam	Stones	Vegetation
28383948	BHSS102	3.00 - 3.80	Grey	Sandy Loam	Stones	None
28383953	BHSS103	3.00 - 3.50	Dark Brown	Sandy Clay Loam	Stones	None
28383958	BHSS104	2.00 - 2.50	Grey	Sandy Clay Loam	Stones	Vegetation
28383964	BHSS105	1.00 - 1.50	Dark Brown	Sandy Clay Loam	Stones	None
28383969	BHSS106	3.00 - 3.50	Grey	Sandy Loam	Stones	None
28383974	BHSS107	2.50 - 2.50	Grey	Sandy Clay Loam	Stones	None
28383979	BHSS108	3.00 - 3.00	Dark Brown	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			-	-	-	-	-	-
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Moisture Content Ratio (% of as received sample)	%	PM024	21	6.4	10	6.4	13	6.3
Loss on ignition	<0.7 %	TM018	3.63 M	4.31 M	3.09 M	3.06 M	2.95 M	11.4 M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00502	0.00192	0.00274	0.00334	0.0025	0.00122
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0251	0.0264	0.0123	0.0487	0.0206	0.0125
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Organic Carbon, Total	<0.2 %	TM132	1.19 M	1.67 M	3 M	0.415 M	0.335 M	<0.2 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	<0.02 #	0.162 #	<0.02 #	<0.02 #
Organic Matter, Total	<0.35 %	TM132	2.05 #	2.88 #	5.17 #	0.715 #	0.578 #	<0.35 #
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06	0.06	0.486	0.06	0.06
pH	1 pH Units	TM133	8.21 M	8.78 M	8.73 M	8.44 M	8.38 M	8.72 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 @ M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			.	.	.	.	.	.
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36
Chromium, Trivalent	<0.9 mg/kg	TM181	13.2	29	26	11.7	35.8	14
Arsenic	<0.6 mg/kg	TM181	6.17 M	2.37 M	3.17 M	3.22 M	4.41 M	1.79 M
Barium	<0.6 mg/kg	TM181	74.2 #	85.9 #	68.2 #	79.7 #	109 #	64.4 #
Beryllium	<0.01 mg/kg	TM181	0.389 M	0.564 M	0.476 M	0.303 M	0.647 M	0.309 M
Cadmium	<0.02 mg/kg	TM181	0.328 M	0.395 M	0.44 M	0.311 M	0.45 M	0.384 M
Chromium	<0.9 mg/kg	TM181	13.2 M	29 M	26 M	11.8 M	35.8 M	14 M
Copper	<1.4 mg/kg	TM181	7.13 M	16.5 M	14.3 M	10.7 M	14.6 M	10.2 M
Lead	<0.7 mg/kg	TM181	17.1 M	13 M	6.89 M	8.81 M	9.75 M	6.36 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	22.5 M	51 M	49.3 M	26.2 M	62.9 M	28.7 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	1.13 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	13.6 #	31 #	27 #	13.9 #	35.2 #	16 #
Zinc	<1.9 mg/kg	TM181	112 M	79 M	59.7 M		194 M	
ANC @ pH 4	<0.03 mol/kg	TM182	0.525	2.06	2.79	2.31	2.14	2.51
ANC @ pH 6	<0.03 mol/kg	TM182	0.0387	0.131	0.169	0.135	0.0609	0.118
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0417 M	0.0428 M	0.0253 M	0.0429 M	0.0245 M	0.0267 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0105 M	0.0227 M	0.0051 M	0.0063 M	0.0104 M	0.0064 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10	<10	<10	<10
Coronene	<200 µg/kg	TM410	<200	<200	<200	<200	<200	<200
EPH Surrogate % recovery**	%	TM415	100	105	93.5	100	97.2	102
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5	<5	<5	<5	<5

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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	7.5	8.8				
Loss on ignition	<0.7 %	TM018	2.27 M	3.24 M				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000916	0.000812				
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0183	0.0144				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Organic Carbon, Total	<0.2 %	TM132	0.511 M	0.913 M				
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #				
Organic Matter, Total	<0.35 %	TM132	0.881 #	1.57 #				
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06				
pH	1 pH Units	TM133	8.4 M	8.72 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHSS107	BHSS108				
Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36				
Chromium, Trivalent	<0.9 mg/kg	TM181	33.6	33.3				
Arsenic	<0.6 mg/kg	TM181	2.78 M	6.76 M				
Barium	<0.6 mg/kg	TM181	98.2 #	96.4 #				
Beryllium	<0.01 mg/kg	TM181	0.551 M	0.627 M				
Cadmium	<0.02 mg/kg	TM181	0.442 M	1 M				
Chromium	<0.9 mg/kg	TM181	33.6 M	33.3 M				
Copper	<1.4 mg/kg	TM181	17.7 M	20 M				
Lead	<0.7 mg/kg	TM181	7.6 M	10.1 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181	62.2 M	74.9 M				
Selenium	<1 mg/kg	TM181	1.03 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	34.6 #	33.6 #				
Zinc	<1.9 mg/kg	TM181	65.4 M	90.3 M				
ANC @ pH 4	<0.03 mol/kg	TM182	2.5	1.66				
ANC @ pH 6	<0.03 mol/kg	TM182	0.257	0.0823				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0321 M	0.0186 M				
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0054 M	0.0046 M				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10				
Coronene	<200 µg/kg	TM410	<200	<200				
EPH Surrogate % recovery**	%	TM415	97.1	97.2				
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5				

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			.	.	.	.	.	.
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	93.2	91.4	93.6	94	92.6	92.8
Acenaphthene-d10 % recovery**	%	TM218	87.7	87.2	88.3	88.8	86.9	87.8
Phenanthrene-d10 % recovery**	%	TM218	84.4	86.1	82.6	84.3	79.9	83
Chrysene-d12 % recovery**	%	TM218	85.9	93.1	85.4	92	76.8	85.1
Perylene-d12 % recovery**	%	TM218	86.3	86.8	82.2	90.3	76.4	85
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	91.2	92.7				
Acenaphthene-d10 % recovery**	%	TM218	87.7	88.5				
Phenanthrene-d10 % recovery**	%	TM218	84.7	87.8				
Chrysene-d12 % recovery**	%	TM218	84.1	92.7				
Perylene-d12 % recovery**	%	TM218	76.2	89.6				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M				
Pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M				
Chrysene	<10 µg/kg	TM218	<10 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			-	-	-	-	-	-
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			.	.	.	.	.	.
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
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- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Acenaphthylene	<100 µg/kg	TM157	<100	<100				
Acenaphthene	<100 µg/kg	TM157	<100	<100				
Anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Fluoranthene	<100 µg/kg	TM157	<100	<100				
Fluorene	<100 µg/kg	TM157	<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100				
Phenanthrene	<100 µg/kg	TM157	<100	<100				
Pyrene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			-	-	-	-	-	-
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	100 @	101 @	93.9 @	108	101 @	99.6
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10	<10 @	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10	<10 @	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10	<10 @	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1270 #	<1000 #	<1000 #	1580 #	<1000 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10	<10 @	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10	<10 @	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10	<10 @	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	2240 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50	<50 @	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50	<50 @	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 @	<20 @	<20 @	<20	<20 @	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHSS107	BHSS108				
Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
GRO Surrogate % recovery**	%	TM089	103	102				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	2960 #				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20				

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			-	-	-	-	-	-
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	110 @	117	112 @	115	101 @	115
Toluene-d8**	%	TM116	99.7 @	101	101 @	102	101 @	101
4-Bromofluorobenzene**	%	TM116	86 @	98.4	93.7 @	96.2	91.4 @	96.4
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 @ #	<0.5 #	<0.5 @ #	<0.5 #	<0.5 @ #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 @ #	<2 #	<2 @ #	<2 #	<2 @ #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 @ #	<0.5 #	<0.5 @ #	<0.5 #	<0.5 @ #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Dichloromethane	<5 µg/kg	TM116	<5 @ #	<5 #	<5 @ #	<5 #	<5 @ #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1 @	<1	<1 @	<1	<1 @	<1
Bromochloromethane	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Chloroform	<3 µg/kg	TM116	<3 @ M	<3 M	<3 @ M	<3 M	<3 @ M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Benzene	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 @ #	<1 #	<1 @ #	<1 #	<1 @ #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1 @	<1	<1 @	<1	<1 @	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			.	.	.	.	.	.
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<1 M	<1 @ M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 @ #	<2 #	<2 @ #	<2 #	<2 @ #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 @ #	<2 #	<2 @ #	<2 #	<2 @ #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 @ #	<2 #	<2 @ #	<2 #	<2 @ #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 @ M	<3 M	<3 @ M	<3 M	<3 @ M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 @ M	<3 M	<3 @ M	<3 M	<3 @ M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 @ #	<2 #	<2 @ #	<2 #	<2 @ #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 @ #	<3 #	<3 @ #	<3 #	<3 @ #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1 @	<1	<1 @	<1	<1 @	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2 @	<2	<2 @	<2	<2 @	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 M	<5 @ M	<5 M	<5 @ M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 M	<5 @ M	<5 M	<5 @ M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3 @	<3	<3 @	<3	<3 @	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 M	<5 @ M	<5 M	<5 @ M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 @ #	<1 @ #	<1 @ #	<1 #	<1 @ #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7 @	<7	<7 @	<7	<7 @	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4 @	<4	<4 @	<4	<4 @	<4
Naphthalene	<8 µg/kg	TM116	<8 @ M	<8 M	<8 @ M	<8 M	<8 @ M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 @ #	<10 #	<10 @ #	<10 #	<10 @ #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			.	.	.	.	.	.
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02 @	<0.02	<0.02 @	<0.02	<0.02 @	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7 @	<7	<7 @	<7	<7 @	<7

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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	123	105				
Toluene-d8**	%	TM116	98.3	97.7				
4-Bromofluorobenzene**	%	TM116	106	98.8				
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #				
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #				
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M				
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M				
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M				
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #				
Carbon Disulphide	<1 µg/kg	TM116	<1 M	<1 M				
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M				
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1				
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M				
Chloroform	<3 µg/kg	TM116	<3 M	<3 M				
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M				
Benzene	<1 µg/kg	TM116	<1 M	<1 M				
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #				
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M				
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M				
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
Toluene	<1 µg/kg	TM116	<1 M	<1 M				
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1				
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M				
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M				

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M				
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M				
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M				
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M				
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M				
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M				
p/m-Xylene	<2 µg/kg	TM116	<2 #	<2 #				
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M				
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #				
Bromoform	<2 µg/kg	TM116	<2 M	<2 M				
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #				
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #				
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M				
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M				
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M				
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M				
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M				
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M				
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #				
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #				
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1				
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2				
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
n-Butylbenzene	<3 µg/kg	TM116	<3	<3				
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M				
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #				
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7				
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4				
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M				
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #				
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02				
Sum of BTEX	<7 µg/kg	TM116	<7	<7				

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Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS101ES18 1.00 - 1.50 SOLID 17/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383943 TM048	01/08/2023	Alex Horner	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS102ES13 3.00 - 3.80 SOLID 18/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383948 TM048	01/08/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS103ES15 3.00 - 3.50 SOLID 17/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383953 TM048	01/08/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS104ES15 2.00 - 2.50 SOLID 19/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383958 TM048	01/08/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS105ES7 1.00 - 1.50 SOLID 14/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383964 TM048	01/08/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS106ES16 3.00 - 3.50 SOLID 20/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383969 TM048	01/08/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS107ES9 2.50 - 2.50 SOLID 20/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383974 TM048	01/08/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS108ES12 3.00 - 3.00 SOLID 20/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383979 TM048	01/08/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	15.7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86.4
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383943
Sampled Date	17-Jul-2023
Customer Sample Ref.	BHSS101 ES18
Depth (m)	1.00 - 1.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	1.19	3	5	6
Loss on Ignition (%)	3.63	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.21	-	>6	-
ANC to pH 6 (mol/kg)	0.0387	-	-	-
ANC to pH 4 (mol/kg)	0.525	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0219	<0.0002	0.219	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.0016	<0.0003	0.016	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.007	<0.003	0.07	<0.03	0.5	10	30
Nickel	0.00119	<0.0004	0.0119	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	75.3	<10	753	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.4	<3	54	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.20
Conductivity (µS/cm)	100
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.102	**Natural Moisture Content (%)**	12.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88.9
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383948
Sampled Date	18-Jul-2023
Customer Sample Ref.	BHSS102 ES13
Depth (m)	3.00 - 3.80

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	1.67	3	5	6
Loss on Ignition (%)	4.31	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.78	-	>6	-
ANC to pH 6 (mol/kg)	0.131	-	-	-
ANC to pH 4 (mol/kg)	2.06	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.000579	<0.0005	0.00579	<0.005	0.5	2	25
Barium	0.0738	<0.0002	0.738	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00115	<0.0003	0.0115	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00982	<0.003	0.0982	<0.03	0.5	10	30
Nickel	0.00127	<0.0004	0.0127	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00481	<0.001	0.0481	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00164	<0.001	0.0164	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	84.8	<10	848	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.34	<3	33.4	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.62
Conductivity (µS/cm)	112
Volume Leachant (Litres)	0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	14.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383953
Sampled Date	17-Jul-2023
Customer Sample Ref.	BHSS103 ES15
Depth (m)	3.00 - 3.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	3	3	5	6
Loss on Ignition (%)	3.09	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.73	-	>6	-
ANC to pH 6 (mol/kg)	0.169	-	-	-
ANC to pH 4 (mol/kg)	2.79	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0376	<0.0002	0.376	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00091	<0.0003	0.0091	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00393	<0.003	0.0393	<0.03	0.5	10	30
Nickel	0.000679	<0.0004	0.00679	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00151	<0.001	0.0151	<0.01	0.06	0.7	5
Selenium	0.00127	<0.001	0.0127	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	72.9	<10	729	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.23
Conductivity (µS/cm)	96
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.104	**Natural Moisture Content (%)**	14.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87.5
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383958
Sampled Date	19-Jul-2023
Customer Sample Ref.	BHSS104 ES15
Depth (m)	2.00 - 2.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.415	3	5	6
Loss on Ignition (%)	3.06	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.44	-	>6	-
ANC to pH 6 (mol/kg)	0.135	-	-	-
ANC to pH 4 (mol/kg)	2.31	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.000701	<0.0005	0.00701	<0.005	0.5	2	25
Barium	0.075	<0.0002	0.75	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00218	<0.0003	0.0218	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0165	<0.003	0.165	<0.03	0.5	10	30
Nickel	0.00247	<0.0004	0.0247	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00375	<0.001	0.0375	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	110	<10	1100	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.82	<3	58.2	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.30
Conductivity (µS/cm)	146
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	15.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86.6
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383964
Sampled Date	14-Jul-2023
Customer Sample Ref.	BHSS105 ES7
Depth (m)	1.00 - 1.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.335	3	5	6
Loss on Ignition (%)	2.95	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.38	-	>6	-
ANC to pH 6 (mol/kg)	0.0609	-	-	-
ANC to pH 4 (mol/kg)	2.14	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0483	<0.0002	0.483	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00128	<0.0003	0.0128	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0051	<0.003	0.051	<0.03	0.5	10	30
Nickel	0.000996	<0.0004	0.00996	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00157	<0.001	0.0157	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	96.3	<10	963	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.33
Conductivity (µS/cm)	127
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.102	**Natural Moisture Content (%)**	12.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88.8
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383969
Sampled Date	20-Jul-2023
Customer Sample Ref.	BHSS106 ES16
Depth (m)	3.00 - 3.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	11.4	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.72	-	>6	-
ANC to pH 6 (mol/kg)	0.118	-	-	-
ANC to pH 4 (mol/kg)	2.51	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.000627	<0.0005	0.00627	<0.005	0.5	2	25
Barium	0.0734	<0.0002	0.734	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00716	<0.003	0.0716	<0.03	0.5	10	30
Nickel	0.00147	<0.0004	0.0147	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00354	<0.001	0.0354	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00321	<0.001	0.0321	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	85.4	<10	854	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.16	<3	51.6	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.22
Conductivity (µS/cm)	113
Volume Leachant (Litres)	0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

02/08/2023 15:40:36

15:40:22 02/08/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.102	**Natural Moisture Content (%)**	14.2
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87.5
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383974
Sampled Date	20-Jul-2023
Customer Sample Ref.	BHSS107 ES9
Depth (m)	2.50 - 2.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.511	3	5	6
Loss on Ignition (%)	2.27	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.4	-	>6	-
ANC to pH 6 (mol/kg)	0.257	-	-	-
ANC to pH 4 (mol/kg)	2.5	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0881	<0.0002	0.881	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000533	<0.0003	0.00533	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.006	<0.003	0.06	<0.03	0.5	10	30
Nickel	0.000731	<0.0004	0.00731	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00348	<0.001	0.0348	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	2.1	<2	21	<20	1000	20000	50000
Total Dissolved Solids	91.6	<10	916	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.22
Conductivity (µS/cm)	121
Volume Leachant (Litres)	0.888

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	11.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	89.7
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383979
Sampled Date	20-Jul-2023
Customer Sample Ref.	BHSS108 ES12
Depth (m)	3.00 - 3.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.913	3	5	6
Loss on Ignition (%)	3.24	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.72	-	>6	-
ANC to pH 6 (mol/kg)	0.0823	-	-	-
ANC to pH 4 (mol/kg)	1.66	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00979	<0.0002	0.0979	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00647	<0.003	0.0647	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	69.7	<10	697	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.21
Conductivity (µS/cm)	92
Volume Leachant (Litres)	0.890

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM019	Determination of Anions in Soils using Ion Chromatography
TM104	Determination of Fluoride using the Kone Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM218	The determination of PAH in soil samples by GC-MS
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM282	Extraction of Magnesium by BRE Method
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28383943	28383948	28383953	28383958	28383964	28383969	28383974	28383979
Customer Sample Ref.	BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106	BHSS107	BHSS108
AGS Ref.	ES18	ES13	ES15	ES15	ES7	ES16	ES9	ES12
Depth	1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50	2.50 - 2.50	3.00 - 3.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	01-Aug-2023	28-Jul-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	28-Jul-2023	01-Aug-2023	01-Aug-2023
Anions by Kone (soil)	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	02-Aug-2023	01-Aug-2023	31-Jul-2023	31-Jul-2023
Anions by Kone (w)	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Anions in soil by IC	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023
Asbestos ID in Solid Samples	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023
CEN 10:1 Leachate (1 Stage)	27-Jul-2023	27-Jul-2023	27-Jul-2023	27-Jul-2023	27-Jul-2023	27-Jul-2023	27-Jul-2023	27-Jul-2023
CEN Readings	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Chromium III	01-Aug-2023	31-Jul-2023	01-Aug-2023	28-Jul-2023	31-Jul-2023	31-Jul-2023	01-Aug-2023	01-Aug-2023
Coronene	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Cyanide Comp/Free/Total/Thiocyanate	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Dissolved Metals by ICP-MS	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Dissolved Organic/Inorganic Carbon	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023
EPH by GCxGC-FID	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023
EPH CWG GC (S)	29-Jul-2023	31-Jul-2023	29-Jul-2023	31-Jul-2023	31-Jul-2023	28-Jul-2023	31-Jul-2023	31-Jul-2023
Fluoride	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
GRO by GC-FID (S)	01-Aug-2023	01-Aug-2023	01-Aug-2023	31-Jul-2023	31-Jul-2023	01-Aug-2023	02-Aug-2023	01-Aug-2023
Hexavalent Chromium (s)	31-Jul-2023	31-Jul-2023	27-Jul-2023	27-Jul-2023	31-Jul-2023	31-Jul-2023	27-Jul-2023	27-Jul-2023
Loss on Ignition in soils	31-Jul-2023	28-Jul-2023	31-Jul-2023	28-Jul-2023	01-Aug-2023	28-Jul-2023	01-Aug-2023	31-Jul-2023
Magnesium (BRE)	01-Aug-2023	01-Aug-2023	01-Aug-2023	31-Jul-2023	31-Jul-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023
Mercury Dissolved	01-Aug-2023	01-Aug-2023	01-Aug-2023	02-Aug-2023	01-Aug-2023	02-Aug-2023	02-Aug-2023	01-Aug-2023
Metals in solid samples by OES	02-Aug-2023	31-Jul-2023	01-Aug-2023	28-Jul-2023	31-Jul-2023	28-Jul-2023	01-Aug-2023	01-Aug-2023
Moisture at 105C	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023
PAH 16 & 17 Calc	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023
PAH by GCMS	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023
PCBs by GCMS	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023
pH	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023
pH Value of Filtered Water	31-Jul-2023	31-Jul-2023	31-Jul-2023	01-Aug-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Phenols by HPLC (S)	28-Jul-2023	28-Jul-2023	28-Jul-2023	28-Jul-2023	28-Jul-2023	28-Jul-2023	28-Jul-2023	28-Jul-2023
Phenols by HPLC (W)	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Sample description	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023
Semi Volatile Organic Compounds	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023
Total Organic Carbon	31-Jul-2023	31-Jul-2023	31-Jul-2023	01-Aug-2023	31-Jul-2023	01-Aug-2023	31-Jul-2023	31-Jul-2023
Total Sulphate	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	31-Jul-2023	02-Aug-2023	02-Aug-2023
Total Sulphur	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
TPH CWG GC (S)	02-Aug-2023	02-Aug-2023	02-Aug-2023	31-Jul-2023	31-Jul-2023	02-Aug-2023	02-Aug-2023	01-Aug-2023
VOC MS (S)	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	21 August 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230811-69
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	700849
Order Number:	12380

This report has been revised and directly supersedes 700779 in its entirety.

We received 3 samples on Friday August 11, 2023 and 3 of these samples were scheduled for analysis which was completed on Monday August 21, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28466319	BHT16A	ES1	1.50 - 1.50	01/08/2023
28466326	BHT17A	ES1	3.00 - 3.00	31/07/2023
28466331	BHT18A	ES1	3.00 - 3.00	03/08/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28466319			28466326			28466331		
Customer Sample Reference			BHT16A			BHT17A			BHT18A		
AGS Reference			ES1			ES1			ES1		
Depth (m)			1.50 - 1.50			3.00 - 3.00			3.00 - 3.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 3		X			X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 3	X			X			X		
Anions in soil by IC	All	NDPs: 0 Tests: 3		X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X		
CEN Readings	All	NDPs: 0 Tests: 3	X			X			X		
Chromium III	All	NDPs: 0 Tests: 3		X			X			X	
Coronene	All	NDPs: 0 Tests: 3		X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X			X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X			X			X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3	X			X			X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3		X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
Fluoride	All	NDPs: 0 Tests: 3	X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X			X

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CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

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X Test

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Non-regulatory
UNL - Unspecified Liquid
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OTH - Other

Lab Sample No(s)			28466319			28466326			28466331		
Customer Sample Reference			BHT16A			BHT17A			BHT18A		
AGS Reference			ES1			ES1			ES1		
Depth (m)			1.50 - 1.50			3.00 - 3.00			3.00 - 3.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 3		X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 3		X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 3	X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 3		X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
pH	All	NDPs: 0 Tests: 3		X			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 3	X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3		X			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 3	X			X			X		
Sample description	All	NDPs: 0 Tests: 3		X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3		X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 3		X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
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Lab Sample No(s)			28466319			28466326			28466331		
Customer Sample Reference			BHT16A			BHT17A			BHT18A		
AGS Reference			ES1			ES1			ES1		
Depth (m)			1.50 - 1.50			3.00 - 3.00			3.00 - 3.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Total Sulphate	All	NDPs: 0 Tests: 3		X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 3		X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 3			X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28466319	BHT16A	1.50 - 1.50	Dark Brown	Loamy Sand	Stones	Vegetation
28466326	BHT17A	3.00 - 3.00	Light Brown	Silty Sand	Stones	Vegetation
28466331	BHT18A	3.00 - 3.00	Light Brown	Silty Sand	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT16A	BHT17A	BHT18A			
Customer Sample Ref.								
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Moisture Content Ratio (% of as received sample)	%	PM024	4.8	12	24			
Loss on ignition	<0.7 %	TM018	1.12 M	1.84 M	3.13 M			
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00033	0.000296	0.000314			
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0382	0.0149	0.0169			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	0.106 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	0.0132 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 @ M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 @ M	0.119 M			
Organic Carbon, Total	<0.2 %	TM132	0.67 M	0.424 M	1.69 M			
Sulphur, Total	<0.02 %	TM132	0.0656 #	<0.02 #	<0.02 #			
Organic Matter, Total	<0.35 %	TM132	1.16 #	0.731 #	2.91 #			
Sulphate, Total potential	<0.06 %	TM132	0.197	0.06	0.06			
pH	1 pH Units	TM133	8.77 M	8.42 M	8.04 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M			
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 @ M	<1 M			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21			
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36			
Chromium, Trivalent	<0.9 mg/kg	TM181	1.8	6.25	8.04			
Arsenic	<0.6 mg/kg	TM181	0.663 M	1.96 M	2.32 M			
Barium	<0.6 mg/kg	TM181	9.39 #	38.3 #	26.6 #			
Beryllium	<0.01 mg/kg	TM181	0.105 M	0.275 M	0.325 M			
Cadmium	<0.02 mg/kg	TM181	0.221 M	0.569 M	0.445 M			
Chromium	<0.9 mg/kg	TM181	1.8 M	6.25 M	8.04 M			
Copper	<1.4 mg/kg	TM181	1.79 M	8.4 M	4.96 M			
Lead	<0.7 mg/kg	TM181	0.996 M	5.69 M	6.7 M			
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181	4.3 M	17.3 M	18.8 M			
Selenium	<1 mg/kg	TM181	1.1 #	1.28 #	<1 #			
Vanadium	<0.2 mg/kg	TM181	4.45 #	9.16 #	10.1 #			
Zinc	<1.9 mg/kg	TM181	12.1 M	45.5 M	45.4 M			
ANC @ pH 4	<0.03 mol/kg	TM182	0.179	1.44	0.323			
ANC @ pH 6	<0.03 mol/kg	TM182	0.0674	0.119	0.0409			
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0459 M	0.0134 M	0.0123 M			
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0437 M	0.0079 M	0.0072 M			
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10			
Coronene	<200 µg/kg	TM410	<200	<200	<200			
EPH Surrogate % recovery**	%	TM415	102	102	99			
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5	79.9			

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

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- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	97.1	95.8	95.5			
Acenaphthene-d10 % recovery**	%	TM218	96.1	93.2	93.8			
Phenanthrene-d10 % recovery**	%	TM218	94.9	92	93.3			
Chrysene-d12 % recovery**	%	TM218	88.8	87.2	91.4			
Perylene-d12 % recovery**	%	TM218	88.4	86.9	92.2			
Naphthalene	<9 µg/kg	TM218	<9 M	<9 @ M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 @ M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 @ M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 M	<10 @ M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 M	<16 @ M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 @ M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 @ M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 M	<10 @ M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 @ M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 @ M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 @ M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 @ M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			

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Validated

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SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

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Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100			
Isophorone	<100 µg/kg	TM157	<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100			
Carbazole	<100 µg/kg	TM157	<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100			
Azobenzene	<100 µg/kg	TM157	<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100			
Anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100	<100			
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Fluorene	<100 µg/kg	TM157	<100	<100	<100			
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100			
Pyrene	<100 µg/kg	TM157	<100	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100	<100			
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100			

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CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	88.1	94.9 @	89.3			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	2320 #	<1000 @ #	50700 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000 @	6620			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000 @	57500			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	62900			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	4490 #	<1000 @ #	3890 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1250	<1000 @	<1000			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000 @	<1000			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	6460	<5000	5350			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	62900			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50 @	<50			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50 @	<50			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20 @	<20			

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	110 @	122 @	117			
Toluene-d8**	%	TM116	98.2 @	101 @	97.8			
4-Bromofluorobenzene**	%	TM116	93.6 @	90.2 @	94			
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<10 @ #	<0.5 @ #	<5 #			
Chloromethane	<2 µg/kg	TM116	<40 @ #	<2 @ #	<20 #			
Vinyl Chloride	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 @ M			
Bromomethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Chloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Trichlorofluorormethane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 @ #	<0.5 @ #	<5 #			
Carbon Disulphide	<1 µg/kg	TM116	<20 @ M	1.95 @ M	<10 M			
Dichloromethane	<5 µg/kg	TM116	<100 @ #	<5 @ #	<50 #			
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
1,1-Dichloroethane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
2,2-Dichloropropane	<1 µg/kg	TM116	<20 @	<1 @	<10			
Bromochloromethane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
Chloroform	<3 µg/kg	TM116	<60 @ M	<3 @ M	<30 M			
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
Carbontetrachloride	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
1,2-Dichloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Benzene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Trichloroethene	<1 µg/kg	TM116	<20 @ #	<1 @ #	<10 #			
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
Dibromomethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Bromodichloromethane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
Toluene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<20 @	<1 @	<10			
1,1,2-Trichloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
1,3-Dichloropropane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
Dibromochloromethane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
1,2-Dibromoethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Chlorobenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Ethylbenzene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
p/m-Xylene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<20 #			
o-Xylene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
Styrene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<20 @ #			
Bromoform	<2 µg/kg	TM116	<100 @ M	<5 @ M	<60 M			
Isopropylbenzene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<20 #			
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<40 @ #	<2 @ #	<20 #			
1,2,3-Trichloropropane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
Bromobenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
Propylbenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
2-Chlorotoluene	<3 µg/kg	TM116	<60 @ M	<3 @ M	<30 M			
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
4-Chlorotoluene	<3 µg/kg	TM116	<60 @ M	<3 @ M	<30 M			
tert-Butylbenzene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<20 #			
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<60 @ #	<3 @ #	<30 #			
sec-Butylbenzene	<1 µg/kg	TM116	<20 @	<1 @	<10			
4-Isopropyltoluene	<2 µg/kg	TM116	<40 @	<2 @	<20			
1,3-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<50 M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<50 M			
n-Butylbenzene	<3 µg/kg	TM116	<60 @	<3 @	<30			
1,2-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<50 M			
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
Tert-amyl methyl ether	<1 µg/kg	TM116	<20 @ #	<1 @ #	<10 #			
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<140 @	<7 @	<70			
Hexachlorobutadiene	<4 µg/kg	TM116	<80 @	<4 @	<40			
Naphthalene	<8 µg/kg	TM116	<160 @ M	<8 @ M	<80 M			
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<200 @ #	<10 @ #	<100 #			
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<140	<7	<70			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT16A	BHT17A	BHT18A			
Customer Sample Ref.								
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4 @	<0.02 @	<0.2			
Sum of BTEX	<7 µg/kg	TM116	<140 @	<7 @	<70			

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT16AES1 1.50 - 1.50 SOLID 01/08/2023 00:00:00 11/08/2023 10:00:00 230811-69 28466319 TM048	16/08/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT17AES1 3.00 - 3.00 SOLID 31/07/2023 00:00:00 11/08/2023 10:00:00 230811-69 28466326 TM048	16/08/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT18AES1 3.00 - 3.00 SOLID 03/08/2023 00:00:00 11/08/2023 10:00:00 230811-69 28466331 TM048	16/08/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.106	**Natural Moisture Content (%)**	17.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85
Particle Size <4mm	>95%		

Case	
SDG	230811-69
Lab Sample Number(s)	28466319
Sampled Date	01-Aug-2023
Customer Sample Ref.	BHT16A ES1
Depth (m)	1.50 - 1.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.67	3	5	6
Loss on Ignition (%)	1.12	-	-	10
Sum of BTEX (mg/kg)	<0.14	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.77	-	>6	-
ANC to pH 6 (mol/kg)	0.0674	-	-	-
ANC to pH 4 (mol/kg)	0.179	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00187	<0.0005	0.0187	<0.005	0.5	2	25
Barium	0.0101	<0.0002	0.101	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000997	<0.0003	0.00997	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00307	<0.003	0.0307	<0.03	0.5	10	30
Nickel	0.00191	<0.0004	0.0191	<0.004	0.4	10	40
Lead	0.000203	<0.0002	0.00203	<0.002	0.5	10	50
Antimony	0.00213	<0.001	0.0213	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00271	<0.001	0.0271	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	99.8	<10	998	<100	4000	60000	100000
Total Monohydric Phenols (W)	0.03	<0.016	0.3	<0.16	1	-	-
Dissolved Organic Carbon	7.51	<3	75.1	<30	500	800	1000

Leach Test Information

Date Prepared	12-Aug-2023
pH (pH Units)	8.33
Conductivity (µS/cm)	131
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

21/08/2023 15:38:08

15:37:58 21/08/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	17.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85.2
Particle Size <4mm	>95%		

Case	
SDG	230811-69
Lab Sample Number(s)	28466326
Sampled Date	31-Jul-2023
Customer Sample Ref.	BHT17A ES1
Depth (m)	3.00 - 3.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.424	3	5	6
Loss on Ignition (%)	1.84	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.42	-	>6	-
ANC to pH 6 (mol/kg)	0.119	-	-	-
ANC to pH 4 (mol/kg)	1.44	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00123	<0.0005	0.0123	<0.005	0.5	2	25
Barium	0.0339	<0.0002	0.339	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00151	<0.0003	0.0151	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00363	<0.003	0.0363	<0.03	0.5	10	30
Nickel	0.0018	<0.0004	0.018	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00726	<0.001	0.0726	<0.01	0.06	0.7	5
Selenium	0.00137	<0.001	0.0137	<0.01	0.1	0.5	7
Zinc	0.00158	<0.001	0.0158	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	72.9	<10	729	<100	4000	60000	100000
Total Monohydric Phenols (W)	0.05	<0.016	0.5	<0.16	1	-	-
Dissolved Organic Carbon	5.26	<3	52.6	<30	500	800	1000

Leach Test Information

Date Prepared	12-Aug-2023
pH (pH Units)	8.52
Conductivity (µS/cm)	96
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

21/08/2023 15:38:08

15:37:58 21/08/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	21.2
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.5
Particle Size <4mm	>95%		

Case	
SDG	230811-69
Lab Sample Number(s)	28466331
Sampled Date	03-Aug-2023
Customer Sample Ref.	BHT18A ES1
Depth (m)	3.00 - 3.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	1.69	3	5	6
Loss on Ignition (%)	3.13	-	-	10
Sum of BTEX (mg/kg)	<0.07	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	79.9	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.04	-	>6	-
ANC to pH 6 (mol/kg)	0.0409	-	-	-
ANC to pH 4 (mol/kg)	0.323	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00438	<0.0002	0.0438	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000687	<0.0004	0.00687	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00101	<0.001	0.0101	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	1.17	<0.5	11.7	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	80.1	<10	801	<100	4000	60000	100000
Total Monohydric Phenols (W)	0.06	<0.016	0.6	<0.16	1	-	-
Dissolved Organic Carbon	3.09	<3	30.9	<30	500	800	1000

Leach Test Information

Date Prepared	12-Aug-2023
pH (pH Units)	8.46
Conductivity (µS/cm)	106
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Table of Results - Appendix

Method No	Description
TM019	Determination of Anions in Soils using Ion Chromatography
TM104	Determination of Fluoride using the Kone Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM218	The determination of PAH in soil samples by GC-MS
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM282	Extraction of Magnesium by BRE Method
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28466319	28466326	28466331
Customer Sample Ref.	BHT16A	BHT17A	BHT18A
AGS Ref.	ES1	ES1	ES1
Depth	1.50 - 1.50	3.00 - 3.00	3.00 - 3.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	15-Aug-2023	15-Aug-2023	17-Aug-2023
Anions by Kone (soil)	16-Aug-2023	16-Aug-2023	17-Aug-2023
Anions by Kone (w)	17-Aug-2023	17-Aug-2023	17-Aug-2023
Anions in soil by IC	16-Aug-2023	16-Aug-2023	17-Aug-2023
Asbestos ID in Solid Samples	16-Aug-2023	16-Aug-2023	16-Aug-2023
CEN 10:1 Leachate (1 Stage)	12-Aug-2023	12-Aug-2023	12-Aug-2023
CEN Readings	17-Aug-2023	17-Aug-2023	17-Aug-2023
Chromium III	16-Aug-2023	16-Aug-2023	16-Aug-2023
Coronene	15-Aug-2023	15-Aug-2023	15-Aug-2023
Cyanide Comp/Free/Total/Thiocyanate	16-Aug-2023	16-Aug-2023	16-Aug-2023
Dissolved Metals by ICP-MS	16-Aug-2023	16-Aug-2023	16-Aug-2023
Dissolved Organic/Inorganic Carbon	21-Aug-2023	21-Aug-2023	21-Aug-2023
EPH by GCxGC-FID	15-Aug-2023	15-Aug-2023	16-Aug-2023
EPH CWG GC (S)	15-Aug-2023	15-Aug-2023	16-Aug-2023
Fluoride	17-Aug-2023	17-Aug-2023	17-Aug-2023
GRO by GC-FID (S)	15-Aug-2023	15-Aug-2023	17-Aug-2023
Hexavalent Chromium (s)	16-Aug-2023	16-Aug-2023	16-Aug-2023
Loss on Ignition in soils	16-Aug-2023	15-Aug-2023	16-Aug-2023
Magnesium (BRE)	16-Aug-2023	16-Aug-2023	16-Aug-2023
Mercury Dissolved	17-Aug-2023	17-Aug-2023	17-Aug-2023
Metals in solid samples by OES	16-Aug-2023	16-Aug-2023	16-Aug-2023
Moisture at 105C	12-Aug-2023	12-Aug-2023	12-Aug-2023
PAH 16 & 17 Calc	15-Aug-2023	15-Aug-2023	15-Aug-2023
PAH by GCMS	15-Aug-2023	15-Aug-2023	16-Aug-2023
PCBs by GCMS	15-Aug-2023	15-Aug-2023	15-Aug-2023
pH	16-Aug-2023	16-Aug-2023	16-Aug-2023
pH Value of Filtered Water	17-Aug-2023	17-Aug-2023	17-Aug-2023
Phenols by HPLC (S)	15-Aug-2023	15-Aug-2023	16-Aug-2023
Phenols by HPLC (W)	17-Aug-2023	17-Aug-2023	17-Aug-2023
Sample description	12-Aug-2023	12-Aug-2023	12-Aug-2023
Semi Volatile Organic Compounds	15-Aug-2023	15-Aug-2023	15-Aug-2023
Total Organic Carbon	15-Aug-2023	15-Aug-2023	16-Aug-2023
Total Sulphate	17-Aug-2023	17-Aug-2023	17-Aug-2023
Total Sulphur	16-Aug-2023	16-Aug-2023	16-Aug-2023
TPH CWG GC (S)	15-Aug-2023	15-Aug-2023	17-Aug-2023
VOC MS (S)	16-Aug-2023	15-Aug-2023	16-Aug-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Appendix 14
Photographs (Trial Pits)

Figure 1 H:\23OY104_ derrygreenagh tp photos\Tp201dg...jpg

Figure 3 H:\23OY104_ derrygreenagh tp photos\Tp201dg.jpg

Figure 2 H:\23OY104_ derrygreenagh tp photos\Tp201dg..jpg

Figure 4 H:\23OY104_ derrygreenagh tp photos\Tp202dg,.jpg

Figure 5 H:\23OY104_ derrygreenagh tp photos\Tp202dg..jpg

Figure 7 H:\23OY104_ derrygreenagh tp photos\Tp203dg,.jpg

Figure 6 H:\23OY104_ derrygreenagh tp photos\Tp202dg.jpg

Figure 8 H:\23OY104_ derrygreenagh tp photos\Tp203dg..jpg

Figure 9 H:\23OY104_ derrygreenagh tp photos\Tp203dg.jpg

Figure 11 H:\23OY104_ derrygreenagh tp photos\Tp204dg..jpg

Figure 10 H:\23OY104_ derrygreenagh tp photos\Tp204dg,.jpg

Figure 12 H:\23OY104_ derrygreenagh tp photos\Tp204dg.jpg

Figure 13 H:\23OY104_ derrygreenagh tp photos\Tp205dg,.jpg

Figure 15 H:\23OY104_ derrygreenagh tp photos\Tp205dg.jpg

Figure 14 H:\23OY104_ derrygreenagh tp photos\Tp205dg..jpg

Figure 16 H:\23OY104_ derrygreenagh tp photos\Tp206Adg,.jpg

Figure 17 H:\23OY104_ derrygreenagh tp photos\Tp206Adg.jpg

Figure 19 H:\23OY104_ derrygreenagh tp photos\Tp207dg,.jpg

Figure 18 H:\23OY104_ derrygreenagh tp photos\Tp206dg.jpg

Figure 20 H:\23OY104_ derrygreenagh tp photos\Tp207dg..jpg

Figure 21 H:\23OY104_ derrygreenagh tp photos\Tp207dg.jpg

Figure 23 H:\23OY104_derrygreenagh \TP208 (4).jpg

Figure 22 H:\23OY104_derrygreenagh \TP208 (3).jpg

Figure 24 H:\23OY104_Derrygreenagh\TP208 (5).jpg

Figure 25 H:\23OY104_ Derrygreenagh\TP208.jpg

Figure 27 H:\23OY104_ derrygreenagh tp photos\Tp209dg..jpg

Figure 26 H:\23OY104_ derrygreenagh tp photos\Tp209dg...jpg

Figure 28 H:\23OY104_ derrygreenagh tp photos\Tp209dg.jpg

Figure 29 H:\23OY104_ derrygreenagh tp photos\Tp209pipe.jpg

Figure 31 H:\23OY104_ derrygreenagh tp photos\Tp210dg,.jpg

Figure 30 H:\23OY104_ derrygreenagh tp photos\Tp210dg,,.jpg

Figure 32 H:\23OY104_ derrygreenagh tp photos\Tp210dg..jpg

Figure 33 H:\23OY104_ derrygreenagh tp photos\Tp210dg.jpg

Figure 35 H:\23OY104_ derrygreenagh tp photos\Tp211dg..jpg

Figure 34 H:\23OY104_ derrygreenagh tp photos\Tp211dg,.jpg

Figure 36 H:\23OY104_ derrygreenagh tp photos\Tp211dg.jpg

Figure 37 H:\23OY104_ derrygreenagh tp photos\Tp212dg,.jpg

Figure 38 H:\23OY104_ derrygreenagh tp photos\Tp212dg..jpg

Figure 39 H:\23OY104_ derrygreenagh tp photos\Tp212dg.jpg

Tp224

Figure 40 H:\23OY104_ \Derrygreenagh\TP311 (1).jpg

Figure 41 H:\23OY104_ \Derrygreenagh\TP311 (3).jpg

Figure 43 H:\23OY104_ \Derrygreenagh\TP311 (6).jpg

Figure 42 H:\23OY104_ \Derrygreenagh\TP311 (4).jpg

Appendix 15
Photographs (Rotary Core)

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 101
Box
1.2.3.

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 101
Box
4.5.

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 102
Box
1.2.3.

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 102
Box
4.5.6.

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 103
Box
1.2.3.
5
6.5
8
9.5
11
12.5
14
15.5
17
18.5
20
21.5
23
25
27.5
29

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 103
Box
6.7.
40.7
41
42.6
43.9
EOH

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 103
Box
4.5.
Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 104
Box
1.2.3.

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 104
Box
4.5.6.
32.8
34.3
35.8
37.3
38.4
40.0
41.8
42.8

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 104
Box
7.8.9.
44.2
45.5
46.8
48.3
49.4
50.9
EOH

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 105
Box
1.2.3.
Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 105
Box
4.5.

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 105
Box
6.7.
41.3
42m
43.5
45m

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 106
Box
1.2.
7.4
8.7
10.2
11.7m
13.2
14.7
16.2
17.7
19.2
20.7m
22.2
23.7
25m
25m EOH

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 10 7
Box
1.2.3.
START 7.9M
10.1
11.7
13.3
14.9
16.4
17.9
19.1
20.4
22m
23.6
25m EOH
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 10 9
Box
1.2.3.

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 110
Box
1.2.
START -> 1.5M
2.7
4.2M
5.7M
7.2
8.7
10.2
11.7
13.2
14.7
16.2
17.7
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 110
Box
3.4.
18.7
19.7
20.7
20.7 EOH
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 1 1 1
Box
1.2.3.
1.5
2.9
4.4
5.9
6.9
8.4
9.4
11m
EOH

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 1 1 1 A
Box
1.2.3.
6M
7M
8M
10.2M
11.4M
13M
14M

Irish Drilling Ltd: Core Photos:

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 117
Box
1.2.3.
8.9
10.4
11.9
13.4
14.9
16.4
17.9
19.4
20.9
22.4
23.9
25.4
26.9
28.4
29.9
31.4
32.9
34.4
35.9
37.4
38.9
40.4
41.9
43.4
44.9
46.4
47.9
49.4
50.9
52.4
53.9
55.4
EOH
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 118
Box
1.2.3.
9M START
10.5
12.3M
13.6
14.6M
15.9M
16.5M
17.1
18.7M
20.3M
10 20 30 40 50 60 70 80 90 100 110 120 130 140

Appendix 16
Site Plans

LEGEND:

- TRIAL PIT LOCATION
- BOREHOLE LOCATION
- INFILTRATION TEST LOCATION
- CONE PENETRATION TEST LOCATION
- PUMP WELL DRILLED (2008)
- MONITORING WELL DRILLED (2008)
- PERCOLATION TEST AREA

Rev.	DESCRIPTION	DATE
P01	First Draft	19/09/23

IRISH DRILLING LIMITED
OLD GALWAY ROAD, LOUGHREA, CO.GALWAY
Email : info@irishdrilling.ie
Phone : 091841274

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Project
DERRYGREENAGH THERMAL POWER PLANT

Client

Drawing Title
IDL (AS BUILT) SITE INVESTIGATION
MAIN SITE AREA

Date	Scale (A1)	Drawn by	Checked by	Approved by
13/04/23	NTS	MM	RK	RK

Status
PLANNING ☐
TENDER ☐
FOR APPROVAL ☐
FOR CONSTRUCTION ☐
AS BUILT ☒

Dwg. No.

LEGEND:

- TRIAL PIT LOCATION
- BOREHOLE LOCATION
- INFILTRATION TEST LOCATION
- CONE PENETRATION TEST LOCATION
- PUMP WELL DRILLED (2008)
- MONITORING WELL DRILLED (2008)
- PERCOLATION TEST AREA

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Project
DERRYGREENAGH THERMAL POWER PLANT

Client

Drawing Title
IDL (AS BUILT) SITE INVESTIGATION
MAIN SITE AREA

Date	Scale (A1)	Drawn by	Checked by	Approved by
13/04/23	NTS	MM	RK	RK

Status
PLANNING ☐
TENDER ☐
FOR APPROVAL ☐
FOR CONSTRUCTION ☐
AS BUILT X

Dwg. No.

LEGEND:

- TRIAL PIT LOCATION
- BOREHOLE LOCATION
- INFILTRATION TEST LOCATION
- CONE PENETRATION TEST LOCATION
- PERCOLATION TEST AREA

Rev.	DESCRIPTION	DATE
P01	First Draft	19/09/23

IRISH DRILLING LIMITED
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Project
DERRYGREENAGH THERMAL POWER PLANT

Client

Drawing Title
IDL (AS BUILT) SITE INVESTIGATION
MAIN SITE AREA

Date	Scale (A1)	Drawn by	Checked by	Approved by
13/04/23	NTS	MM	RK	RK

Status
PLANNING ☐
TENDER ☐
FOR APPROVAL ☐
FOR CONSTRUCTION ☐
AS BUILT ☒

Dwg. No.

Appendix 17
Digital Data (AGS/Autocad)
Refer to Folder Appendix 17

IRISH DRILLING LIMITED

LOUGHREA, CO. GALWAY, IRELAND

CONTRACT DRILLING
SITE INVESTIGATION

Phone: (091) 841 274
Fax: (091) 880 861
email: info@irishdrilling.ie

DERRYGREENAGH THERMAL POWER PROJECT

MAIN SITE SOUTH AREA

SITE INVESTIGATION CONTRACT FACTUAL REPORT

Bord na Mona Powergen Ltd.,
Main Street,
Newbridge,
Co. Kildare.

	Prepared by	Approved by	Rev. Issue Date:	Revision No.
	Ronan Killeen	Declan Joyce	2nd November 2023	23 _OY _101/03
Signature				

FOREWORD

The borehole and trial pit records have been compiled from an examination of the samples by a Geotechnical Engineer and from the Drillers' descriptions.

The report presents an opinion on the configuration of the strata within the site based on the borehole and trial pit results. The assumptions, though reasonable, are given for guidance only and no liability can be accepted for changes in conditions not revealed by the boreholes and trial pits.

The fieldwork was carried out in accordance with IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Site Investigations with precedence given to IS EN 1997-2 where applicable.

Contents:

1.0	Introduction
2.0	The Site & Geology
3.0	Fieldwork
4.0	Laboratory Testing
Appendix 1	Borehole Records (Cable Percussive)
Appendix 2	Borehole Records (Rotary Core)
Appendix 3	Trial Pit Records
Appendix 4A	Geophysical Survey
Appendix 4B	Ground Electrical Resistivity Tests
Appendix 5	GPR Survey
Appendix 6	CPT Records
Appendix 7	Groundwater Readings
Appendix 8	Plate Bearing Test Records
Appendix 9	Permeability Test Records
Appendix 10	Laboratory Test Results
Appendix 11	Environmental Laboratory Test Results
Appendix 12	Photographs (Trial Pits)
Appendix 13	Photographs (Rotary Core)
Appendix 14	Site Plans
Appendix 15	Digital Data (AGS / Autocad)

1.0 Introduction.

Irish Drilling Ltd. (IDL) was instructed by Bord na Mona Powergen Limited to carry out a site investigation at the site of the proposed Derrygreenagh Thermal Power Site.

This site investigation was carried out at the Main Site South Area to provide detailed factual geotechnical information of the underlying ground conditions for a proposed gas-fired power plant and ancillary grid connection works.

The fieldwork commenced on April 13th 2023 and was completed on July 31st 2023.

2.0 Site & Geology

The site is located at an existing Bord na Mona facility at Derrygreenagh Bog, County Offaly.

The fieldwork was carried out predominantly on peat bog and adjacent agricultural lands and bogland.

Weather conditions in general were quite variable with the majority of the fieldwork carried out over a typical spring/summer period in Ireland. Boglands in particular were occasionally difficult to access, due to rutting, as land became soft caused by sustained wet periods. Tractors and excavators were occasionally used to assist moving of plant and machinery.

A Site Plan, prepared by the client's representatives and amended by IDL to show 'As-Built' fieldwork locations, is included with this report.

The following were the main published information sources used:
Geological Map of Ireland: 1:750,000 scale map series.

Site investigation data is available as point source data along the proposed route, and the majority of the ground in between the points can only be assumed to follow the characteristics of the nearest available data.

<u>Overview of Subsoil Geology</u>

Glacial Till:

Glacial Till is what was often referred to as Boulder Clay. It is a diverse material that is largely deposited sub-glacially and has a wide range of characteristics due to the variety of parent materials and different processes of deposition. Tills are often tightly packed, unsorted, heterogeneous, unbedded, and can have a wide range of particle sizes and types, which are often but not exclusively angular or sub-angular.

The type of parent material plays a critical role in providing the particles that create different subsoil permeability with sandstones giving rise to a high proportion of sand sized grains in the till matrix, clean limestones providing a relatively high proportion of silt, while shales, shaly limestones and mudstones break down to the finer clay sized particles.

Glacial Outwash Deposits:

Deposition of sand and gravel takes place mainly when glaciers are melting, which gives rise to large volumes of meltwater with great erosive and transporting power. The subsoils deposited in this environment are predominantly, but not exclusively, rounded to subrounded gravel and sand, with the finer fractions of clay and silt washed out.

Peat:

The deposition of peat occurred in post-glacial periods and is generally associated with the start of warmer and wetter climatic conditions. Peat is an unconsolidated usually dark brown to black organic material comprising a mixture of decomposed and undecomposed plant matter that accumulated in an acidic waterlogged environment. Peat has an extremely high-water content generally averaging over 90% by volume.

Solid Geology
The Geological Map of Ireland: 1:750,000 scale map series indicate that the site is underlain by the Carboniferous Limestone Rock Formations.

3.0 Fieldwork.

3.1 Fieldwork Plant:
The following plant was mobilised to site to carry out fieldwork operations:

Dando 2000 Cable Percussive Boring Rigs.
GT1100 GoTract Rotary Core Drilling Rigs.
Hyundai 140 LC-9 Wide-Tracked Excavator.

Fieldwork carried out to date has included the following:

3.2 Cable Percussive Boreholes:
Four cable percussion (Shell & Auger) boreholes were completed using Dando 2000 Cable Percussive Boring Rigs. The boreholes were bored to 'refusal' or to depths as instructed by the client's representatives.

The borehole depths ranged from 3.50m to 7.10m below ground level and the boreholes completed at the Main Site South Area are listed as follows:
BH 108
BH 113
BH 114
BH 115

In–Situ testing consisting of Standard Penetration Tests were carried out at regular intervals (predominantly 1.0m intervals) or as instructed by the client's representatives.

Disturbed bulk and jar soil samples were taken at each change in strata and were returned to the laboratory and logged by a Geotechnical Engineer and presented for testing. Groundwater samples were taken where possible and returned to the laboratory for storage and analysis.

Undisturbed (U100) soil samples were also recovered where possible in cohesive soils and returned to the laboratory for logging and testing.

Variable Head Permeability Tests (Rising and Falling Head) were carried out in all the boreholes during the completion of same and the records of same are included as Appendix 9.

Detailed engineering logs for the cable percussive boreholes completed are included with this report in Appendix 1.

3.3 Rotary Core Boreholes:
Four rotary core boreholes were carried out to establish overburden conditions and rockhead and to establish the nature and integrity of the underlying rock.

The rotary core boreholes were predominantly carried out as 'extension follow-on' boreholes at locations where the cable percussive boreholes encountered 'refusals' at relatively shallow depths.

The boreholes were completed using wireline drilling techniques, and HQ size (64mm core diameter, 96mm hole diameter) drill strings to recover soil and rock core samples.

A water based flush system was used as the drilling medium while a biodegradable polymer gel was also used where necessary to aid the drilling and soil / rock recovery process.

The samples were stored in wooden boxes and returned to the laboratory where there were logged and photographed by a Geotechnical Engineer and presented for testing.

In-Situ testing consisting of Standard Penetration Tests were carried out in the overburden in a number of the boreholes.

The rotary core boreholes were carried out to depths ranging from 17.20m to 50.00m below ground level and the boreholes completed at the Main Site South Area are listed as follows:
BH 108
BH 113
BH 114
BH 115

A 50mm diameter standpipe was installed in rotary core borehole BH 113 and as instructed by the Client's Engineer, to allow for monitoring of groundwater levels over a prolonged period of time.

A summary of water levels recorded during the fieldwork period is included with this report as Appendix 7.

Detailed engineering logs for the rotary core boreholes completed are included with this report in Appendix 2.

3.4 Trial Pits:

Five trial pits were excavated on site using a 14T wide-padded tracked excavator.

The pits were logged and photographed by an Engineer with observations made on ground conditions, pit stability, water ingress and services encountered.

The pits were excavated to depths ranging from 1.50m to 4.50m below ground level and the trial pits completed at the Main Site Area are listed as follows:
TP 216
TP 217
TP 218
TP 219
TP 220

Small and bulk disturbed soil samples were recovered at each change in strata and returned to the laboratory and presented for testing.

In-Situ Tests consisting of plate bearing tests were carried out at many of the trial pit locations, as instructed by the client's representatives. A 610mm diameter steel plate was used and was jacked against a tracked excavator.

The Plate Test graphs were used to measure the co-efficient of subgrade reaction (k_s) and to estimate the CBR values. The records of these test are included in Appendix 8 of this report.

In-Situ tests consisting of shear vane tests and thermal resistivity tests were also carried out where possible in cohesive soils and a summary of the shear vane test results and thermal resistivity results are included on the trial pit logs.

Detailed engineering logs for the trial pits completed are included with this report in Appendix 3.

3.5 Cone Penetration Tests:

Static Cone Penetration tests were carried out at four locations using a 20 tonne Track-mounted CPT Rig.

The tests were carried out by In-Situ Site Investigations Ltd to depths ranging from 0.24m to 17.01m below ground level and the tests completed at the Main Site Area are listed as follows:
CPT 216
CPT 217
CPT 218
CPT 219

The records of the cone penetration tests are included as a 'stand-alone' report in appendix 6. This report contains data for tests carried out at both the Main Site Area and Main Site South Area.

3.6 Geophysical Surveys:
A Geophysical Survey was carried out by Minerex Geophysics Limited at the proposed thermal power site (Main Site Area and Main Site South Area).

The geophysical survey consisted of 2D-Resistivity and the main objectives of the survey were to determine ground conditions, estimate the depth to rock, overburden thickness and reduce the risk of encountering unknown subsurface conditions (including soft ground, shallow bedrock or bedrock karstification) during construction.

The geophysical models and interpretations give guidance about the geological ground and in conjunction with the boreholes a detailed picture of the subsurface conditions.

The records of the geophysical survey and interpretations are included as a 'stand-alone' report in appendix 4A.

Vertical Electrical Sounding tests were also carried out by Minerex Geophysics Limited at the proposed thermal power site.

The tests were carried out using the Wenner Electrode Configuration and the records of same are presented as a 'stand-alone' report in Appendix 4B of this factual report.

A Ground Penetration Radar (GPR) Utility Survey was also carried out by Scantech Geoscience Ltd in and around the vicinity of the existing plant infrastructure (Main Site Area and Main Site South Area).

The purpose of this survey was to identify the presence of any underground services on site (using non-intrusive fieldwork methods) and the records of this survey have been included as a 'stand-alone' report in Appendix 5 of this factual report.

3.7 General Summary:
The fieldwork locations were set out on site using a Trimble CU Bluetooth GPS Surveying Unit and the co-ordinates are included on the logs presented in the appendices.

All fieldwork co-ordinates are reported to Irish Transverse Mercator (ITM) with Reduced Levels recorded relative to Malin Head Datum and with an accuracy level of + or – 0.10m.

Ground conditions encountered during the completion of the fieldwork were typical and as expected for this region and predominantly consisted of Glacial Tills overlying Bedrock.

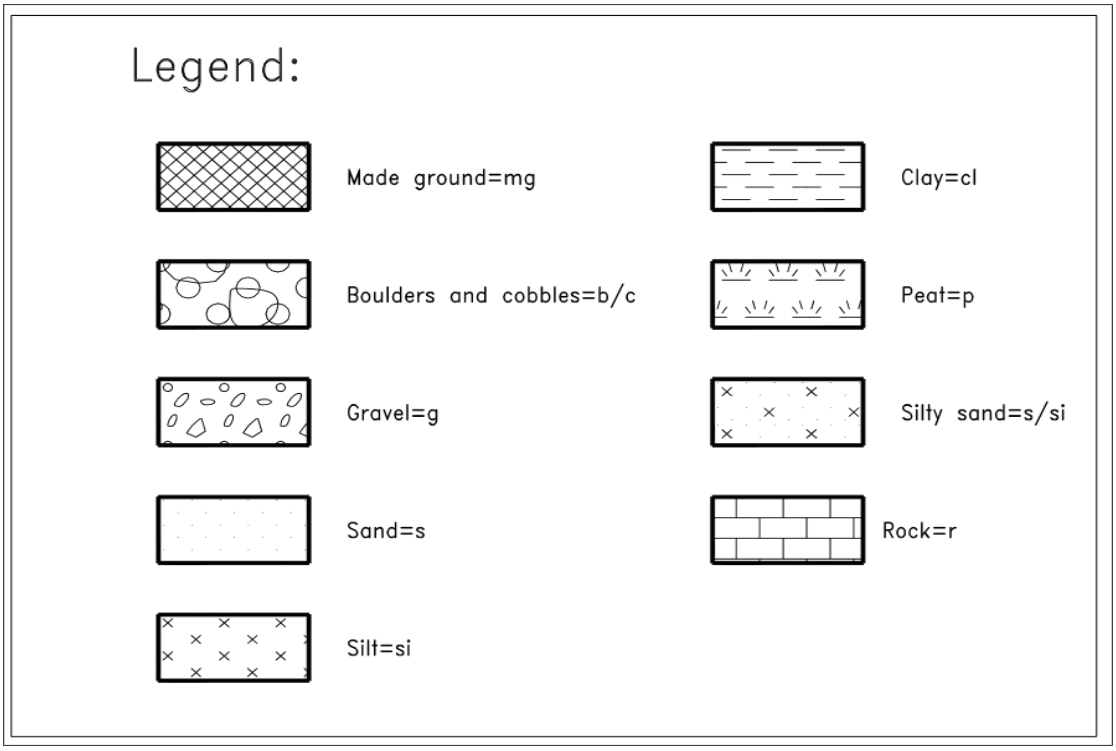
Made ground was also encountered at a number of fieldwork locations to depths of up to 2.20m below ground level.

The Glacial Tills in general consisted of slightly sandy slightly gravelly silt/clay with cobbles and boulders and/or silty sands and/or gravels with cobbles and boulders.

Intact bedrock was encountered in the rotary core borehole BH 108 at a depth of 11.70m below ground level. Bedrock is described as grey, thinly-bedded, fine grained limestone.

It is further noted that bedrock was not encountered in rotary core boreholes BH 113, BH 114 and BH 115 before borehole termination and for detailed descriptions of bedrock and ground conditions encountered please refer to the engineering logs included in the appendices of this report.

The following Key Legend Table details the symbology used on the engineering logs to describe ground conditions encountered:



The fieldwork was carried out in accordance with IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Site Investigations with precedence given to IS EN 1997-2 where applicable.

4.0 Laboratory Testing

Representative samples recovered from the boreholes and trial pits were scheduled for testing in the laboratory.

The test schedules were prepared by the Client's Engineer and included some or all of the following tests on disturbed and undisturbed soil samples:

* Natural Moisture Content.
* Atterberg Limits.
* Particle Density.
* Particle Size Distribution.
* Sedimentation.
* Organic Content / Loss on Ignition.
* Shearbox.
* Triaxial.
* Compaction (CBR).
* Consolidation.
* Chemical (pH, Sulphate (Total/Water), Chloride).
* BRE SD1
* Thermal Resistivity.

The test schedules included some or all of the following tests on rock core samples:

* Point Load.
* UCS.

The test schedules were carried out predominantly at the IDL Laboratory located at Loughrea, County Galway.

A number of specialist tests not available at the IDL laboratory were carried out by designated laboratories on a subcontract basis as follows:

Laboratory chemical tests were carried out by Alcontrol Laboratories, UK.
Shear Strength, Triaxial and Shear Box Tests were carried out by NMTL, County Carlow.

Soil samples (disturbed and undisturbed) in general were recovered from the excavation of trial pits and completion of cable percussive boreholes. Rock core samples were recovered from the completion of rotary core boreholes.

The records of soil and rock core laboratory test results carried out on same are reported in Appendix 10. The records of all laboratory tests completed on the fieldwork soil/rock samples for all three sites (Main Site Area, Main Site South Area and Cable/Pylon Route) are included in Appendix 10 and reference should be made only to the results relevant to this report, namely Main Site South Area.

Environmental laboratory tests were also carried out on many soil samples recovered from the boreholes and trial pits.

The environmental laboratory tests were carried out by Alcontrol Laboratories, UK and the records of same are included as Appendix 11 of this report. The records of all environmental laboratory tests completed on the fieldwork soil samples for all three sites (Main Site Area, Main Site South Area and Cable/Pylon Route) are included in Appendix 11 and reference should be made only to the results relevant to this report, namely Main Site South Area.

The soil and rock descriptions as noted on the borehole and trial pit logs are in general visual descriptions as observed and logged by our Engineers and are described in accordance with IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Site Investigations.

Soils descriptions (cohesive or otherwise) are also initially assessed based on the texture and ‘feel’ of the soil materials as witnessed by our Geotechnical Engineers and in accordance with IS EN 1997-2 and BS5930:2015+A1:2020.

Where laboratory classification tests have been carried out on soil or rock samples then these visual descriptions have been amended accordingly to take into account the results of these classification tests.

The records of all fieldwork, laboratory test results and photographs are included in the appendices of this Factual Report.

Ronan Killeen

Ronan Killeen
Chartered Engineer
Irish Drilling Limited
November 2nd 2023

Appendix 1
Borehole Records
(Cable Percussive)

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH108**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	25-04-23 25-04-23	88.49	E 649,453.2 N 738,120.0

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry; 2nd: ; 3rd: ; Rose to (@ 20 min.): ; Sealed at:	1 of 1 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.00-1.00	B1						Firm brown SILT with cobbles.	
1.00	SPT	N = 14 (3, 5, 4, 3, 2, 5)				(2.20)		
1.00	D2							
1.00-1.50	B4							
1.50	D5							
2.00	SPT	N = 17 (2, 3, 3, 4, 5, 5)		86.29		2.20		
2.00-2.50	B7						Stiff grey slightly sandy gravelly SILT with cobbles.	
3.00	SPT	50 for 150 mm (10, 15, 36, 14)				(1.10)		
3.00	D8			85.19		3.30		
3.00-3.50	B10			84.99		3.50	Obstruction as boulder.	
3.50	D11							

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
25-04-23	17.30	3.50	3.50	203		3.4	3.5	1:00			Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller BT	Logged By BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH113**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 25-04-23	88.90	E 649,571.4 N 738,123.2

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: Rose to (@ 20 min.): Sealed at: 1st: dry 2nd: 3rd:	1 of 1 Status FINAL

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.00-1.00	B1						Grass over firm brown sandy SILT with cobbles.	
1.00	SPT	N = 14 (2, 3, 3, 4, 3, 4)				(2.20)		
1.00	D2							
1.00-1.50	B4							
1.50	D5							
2.00	ES			86.70		2.20		
2.00-2.45	U1006	12 blows					Stiff greyish brown slightly sandy gravelly SILT with cobbles.	
2.00-2.50	B7							
3.00	SPT	N = 29 (4, 5, 6, 8, 8, 7)				(2.30)		
3.00	D8							
3.00-3.50	B10							
3.50	D11							
4.00	SPT	N = 18 (3, 5, 3, 6, 4, 5)					4.00-4.50: becoming slightly sandy slightly gravelly.	
4.00-4.50	B13			84.40		4.50		
4.50	D14						Stiff dark brown sandy SILT with bands of silty sand.	
5.00	SPT	N = 28 (4, 4, 5, 8, 6, 9)				(2.00)		
5.00-5.50	B16							
5.50	D17							
				82.40		6.50		
6.50	SPT	50 for 60 mm (25, 50)		82.30		6.60	Obstruction as boulder.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
24-04-23	17.30	6.60	6.50	203		0.7 3.4 6.5	0.9 3.6 6.6	0:30 0:30 1:00			Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller BT	Logged By BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH114**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-04-23 24-04-23	87.73	E 649,645.9 N 738,128.7

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry; 2nd: ; 3rd: ; Rose to (@ 20 min.): ; Sealed at:	1 of 1 Status FINAL

SAMPLES & TESTS / STRATA

Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	Instrument/ Backfill
0.00-1.00	B1			87.23		(0.50) 0.50	Firm brown SILT.	
1.00	SPT	N = 39 (6, 6, 12, 10, 9, 8)		84.83		(2.40) 2.90	Stiff orangish brown slightly sandy slightly gravelly SILT.	
1.00	ES							
1.00	D2							
1.50-2.00	B4							
2.00	SPT	N = 31 (3, 8, 7, 7, 7, 10)						
2.00	D5							
2.00-2.50	B7							
2.50	D8							
3.00	SPT	N = 26 (5, 6, 6, 8, 5, 7)		81.93		(2.90) 5.80	Stiff reddish brown sandy gravelly SILT.	
3.00-3.50	B10							
4.00	SPT	N = 27 (3, 3, 6, 6, 7, 8)						
4.00	D11							
4.00-4.50	B13							
5.00	SPT	N = 23 (4, 8, 8, 5, 5, 5)						
5.00	D14							
5.00-5.50	B16							
6.00	SPT	N = 28 (5, 10, 6, 5, 11, 6)		80.63		(1.30) 7.10	Medium dense orangish brown sandy silty GRAVEL with occasional cobbles. Cobbles are of black limestone.	
6.00	D17							
6.00-6.50	B19							
7.00	D20							
7.10		50 for 150 mm (22, 3, 25, 25)						

Boring Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m
24-04-23	17.30	7.10	6.00	203	

Chiselling

From	To	Hours
1.5	2	0:30
6	6.5	0:30
7.1		1:00

Water Added

From	To

GENERAL REMARKS

Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000		Driller: DK	Logged By: DK

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

BOREHOLE LOG

Project	Location	BOREHOLE No
Derrygreenagh Power	Co Offaly	**BH115**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	20-04-23 21-04-23	86.87	E 649,663.1 N 738,176.5

Engineer	GROUNDWATER STRIKES	Sheet
Fichtner	Water strikes: 1st: dry; 2nd: ; 3rd: ; Rose to (@ 20 min.): ; Sealed at:	1 of 1 Status FINAL

SAMPLES & TESTS / STRATA

Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	Instrument/ Backfill
0.00-1.00	B1						MADE GROUND: Grass over firm brown SILT fill with cobbles and boulders.	
1.00	SPT	N = 31 (2, 4, 7, 8, 6, 10)				(2.20)		
1.00	D2							
1.00-1.50	B4							
1.50	D5							
2.00	SPT	N = 50 (5, 5, 4, 8, 13, 25)		84.67		2.20		
2.00-2.50	B7						Firm orangish brown slightly sandy gravelly SILT with cobbles.	
2.50	D8							
3.00	SPT	N = 17 (3, 2, 4, 5, 4, 4)						
3.00-3.50	B10							
3.50	D11							
4.00	SPT	N = 25 (4, 5, 6, 6, 6, 7)				(3.50)		
4.00-4.50	B13							
4.50	D14							
5.00	SPT	50 for 190 mm (6, 10, 11, 17, 22)						
5.00-5.50	B16							
5.50	D17			81.17		5.70		
						(0.50)	Stiff greyish whitish brown sandy SILT.	
				80.67		6.20		
						(0.60)	Brown limestone COBBLES.	
6.50	SPT	16 for 75 mm (10, 10, 16)		80.07		6.80		
6.50-7.00	B19			79.87		7.00	Obstruction as boulder.	
7.00	D20							

Boring Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m
20-04-23	17.30	2.50	6.80	203	
21-04-23	08.00	2.50			
21-04-23	14.00	7.00			

Chiselling

From	To	Hours
2.5	2.7	1:00
5.3	5.5	0:30

Water Added

From	To

GENERAL REMARKS

Falling head test expedited in BH. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Dando 2000	Driller: BT	Logged By: BT

IDL AGS4 UK BH DERRYGREENAGHPS CP ALL FILE TO FINAL OCT 31 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Appendix 2
Borehole Records
(Rotary Core)

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH108**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	17-05-23 17-05-23	88.49	E 649,453.2 N 738,120.0

Engineer	Sheet
Fichtner	1 of 3 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
0.00	- - -				(1.50)	0.00 - 11.70 : overburden.		Open hole drilling. No recovery.	
1.50	27 - -		86.99		1.50			Grey slightly silty subangular to subrounded fine to coarse assorted grey limestone GRAVEL.	
2.90	27 - -				(4.40)				
4.40	13 - -								
5.90	7 - -	5.90 (50/150mm)	82.59		5.90			Very stiff very gravelly SILT. Gravel is subangular to subrounded fine to coarse of assorted grey limestone.	
7.40									

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
			1.50	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	17.2	Polymer	100

GENERAL REMARKS

1 litre polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH108**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	17-05-23 17-05-23	88.49	E 649,453.2 N 738,120.0

Engineer	Sheet
Fichtner	2 of 3 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	7 - -				(4.30)			Very stiff very gravelly SILT. Gravel is subangular to subrounded fine to coarse of assorted grey limestone. *(continued)*	
8.90		8.90 (36/75mm)							
	13 - -								
			78.29		10.20				
10.40								Orangish brown sandy silty subangular fine to coarse brown and ger siltstone and assorted grey limestone GRAVEL.	
	33 (11) 9				(1.50)				
			76.79		11.70				
11.90		3				11.70 - 17.20 Discontinuities, very closely and closely spaced, locally medium spaced, dipping 16 to 18 and 45 to 47°, stepped, smooth, with 0.5 to 10mm thick orangish brown clay smear. 12.05 - 12.15 Joint, dipping 60°, stepped, smooth, with 0.5 to 6mm thick orangish brown clay smear, open to moderately wide.		Very strong locally strong thinly bedded bluish grey fine grained LIMESTONE with subvertical and horizontal white calcite veinlets.	
	100 (67) 33	18							
13.40		22				12.70 - 12.70 Point Load Test: strong. 13.25 - 13.45 Joint, subvertical dip, stepped, smooth, with 0.5 to 2mm thick light orangish brown clay smear and minor orangish brown iron stain and powder, open.			
	100 (65) 32				(5.50)	14.15 - 14.15 Point Load Test: very strong.			
14.90		15							
	100 (75) 44	6				15.65 - 15.65 Point Load Test: strong.			

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	1 litre polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH108**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	17-05-23 17-05-23	88.49	E 649,453.2 N 738,120.0

Engineer	Sheet
Fichtner	3 of 3 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
16.30	100 (83) 31	16				16.50 - 16.50 Point Load Test: very strong. 16.80 - 17.00 Joint, subvertical dip, stepped, smooth, with 0.5 to 2mm thick light orangish brown clay smear, open.		Very strong locally strong thinly bedded bluish grey fine grained LIMESTONE with subvertical and horizontal white calcite veinlets. *(continued)*	
17.05 17.20			71.29		17.20				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
17/05/23	16.00	17.20										1 litre polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH113**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	18-05-23 19-05-23	88.90	E 649,571.4 N 738,123.2

Engineer	Sheet
Fichtner	1 of 5 Status FINAL

RUN DETAILS						STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 40.00 : overburden.		Open hole drilling. No recovery.	
	- - -				(6.00)				
6.00			82.90		6.00				
	40 - -				(1.50)			Subrounded to subangular fine to coarse assorted grey limestone GRAVEL with a little orangish brown clay.	
7.50			81.40		7.50			Very dense dark orangish brown silty fine and medium SAND.	

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
			6.00	96				0	40	Polymer	100	3 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH113**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	18-05-23 19-05-23	88.90	E 649,571.4 N 738,123.2

Engineer	Sheet	Status
Fichtner	2 of 5	FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
	15 - -							Very dense dark orangish brown silty fine and medium SAND. *(continued)*	
8.80		8.80 (50)			(2.80)				
	13 - -								
10.30			78.60		10.30				
	13 - -							Very stiff light orangish brown sandy gravelly SILT. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse of assorted brown siltstone and assorted grey limestone.	
11.80		11.80 (50/225mm)							
	13 - -								
13.30									
	13 - -								
14.80		14.80 (25/75mm)							
	13 - -								

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

3 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH113**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	18-05-23 19-05-23	88.90	E 649,571.4 N 738,123.2

Engineer	Sheet
Fichtner	3 of 5 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
16.30								Very stiff light orangish brown sandy gravelly SILT. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse of assorted brown siltstone and assorted grey limestone. *(continued)*	
	13 - -								
17.80		17.80 (25/75mm)							
	20 - -								
19.30									
	20 - -								
20.80		20.80 (25/75mm)			(20.90)				
	13 - -								
22.30									
	20 - -								
18.05 23.80 19.05		23.80 (25/75mm)							

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
18/05/23	17.30	23.80										3 litres polydrill used.
19/05/23	08.00	23.80										50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase	Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH113**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	18-05-23 19-05-23	88.90	E 649,571.4 N 738,123.2

Engineer	Sheet
Fichtner	4 of 5 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main (DESCRIPTION)	Instrument/ Backfill
	13 - -							Very stiff light orangish brown sandy gravelly SILT. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse of assorted brown siltstone and assorted grey limestone. *(continued)*	
25.30									
	20 - -								
26.80		26.80 (25/75mm)							
	7 - -								
28.30									
	20 - -								
29.80		29.80 (25/75mm)							
	7 - -								
			57.70		31.20				
31.30								Light brown silty fine and medium SAND.	
	7								

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

3 litres polydrill used.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH113**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	18-05-23 19-05-23	88.90	E 649,571.4 N 738,123.2

Engineer	Sheet
Fichtner	5 of 5 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	- -							Light brown silty fine and medium SAND. *(continued)*	
32.80		32.80 (25/75mm)							
	7 - -								
34.30									
	7 - -								
35.80		35.80 (25/75mm)			(8.80)				
	7 - -								
37.30									
	7 - -								
38.80		38.80 (25/75mm)							
	7 - -								
19.05 40.00			48.90		40.00				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
19/05/23	16.00	40.00										3 litres polydrill used. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH114**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-05-23 26-05-23	87.73	E 649,645.9 N 738,128.7

Engineer	Sheet
Fichtner	1 of 5 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 40.00 : overburden.		Open hole drilling. No recovery.	
	- - -				(6.00)				
6.00			81.73		6.00				
	27 - -							Light orangish brown subrounded fine to coarse light grey 'bleached' fine grained weakly dolomitised limestone and assorted grey siltstone and limestone GRAVEL with occasional cobbles. Cobbles are of whitish grey 'bleached' fine grained weakly dolomitised limestone.	
7.50					(2.80)				

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
			7.50	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	40	Polymer	100

GENERAL REMARKS

4 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH114**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-05-23 26-05-23	87.73	E 649,645.9 N 738,128.7

Engineer	Sheet
Fichtner	2 of 5 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	46 - -								
8.80		8.80 (50/150mm)	78.93		8.80			Light orangish brown silty fine and medium SAND.	
	7 - -								
10.30									
	7 - -								
24.05 25.05 11.80		11.80 (25/75mm)			(6.00)				
	7 - -								
13.30									
	7 - -								
14.80		14.80 (25/75mm)	72.93		14.80			Light orangish brown subrounded fine to coarse light grey 'bleached' fine grained weakly dolomitised limestone and assorted grey siltstone and limestone GRAVEL with occasional cobbles. Cobbles are of whitish grey 'bleached' fine grained weakly dolomitised limestone.	
	7 - -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
24/05/23	17.30	11.80										4 litres polydrill used. BH backfilled.
25/05/23	08.00	11.80										

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH114**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-05-23 26-05-23	87.73	E 649,645.9 N 738,128.7

Engineer	Sheet	Status
Fichtner	3 of 5	FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
16.30	13 - -				(3.00)			Light orangish brown subrounded fine to coarse light grey 'bleached' fine grained weakly dolomitised limestone and assorted grey siltstone and limestone GRAVEL with occasional cobbles. Cobbles are of whitish grey 'bleached' fine grained weakly dolomitised limestone. *(continued)*	
17.80		17.80 (25/75mm)	69.93		17.80			Light orangish brown fine and medium SAND.	
19.30	7 - -				(3.00)				
20.80	7 - -	20.80 (25/75mm)	66.93		20.80			Subangular fine to coarse brownish grey weakly dolomitised limestone GRAVEL.	
22.30	20 - -								
23.80	13 - -	23.80 (25/75mm)							

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	4 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH114**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-05-23 26-05-23	87.73	E 649,645.9 N 738,128.7

Engineer	Sheet	Status
Fichtner	4 of 5	FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	13							Subangular fine to coarse brownish grey weakly dolomitised limestone GRAVEL. *(continued)*	
25.30					(9.00)				
	7								
26.80		26.80 (25/75mm)							
	20								
28.30									
	20								
25.05 29.80 26.05		29.80 (25/75mm)	57.93		29.80			Dark orangish brown silty fine and medium SAND.	
	7								
31.30					(3.00)				
	7								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
25/05/23	17.30	29.80										4 litres polydrill used. BH backfilled.
26/05/23	08.00	29.80										

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH114**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	24-05-23 26-05-23	87.73	E 649,645.9 N 738,128.7

Engineer	Sheet
Fichtner	5 of 5 Status FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	Discontinuities	Detail	Main	Instrument/ Backfill
	- -							Dark orangish brown silty fine and medium SAND. *(continued)*	
32.80		32.80 (25/75mm)	54.93		32.80				
	27 - -							Subangular fine to coarse brownish grey weakly dolomitised limestone GRAVEL.	
34.30									
	27 - -				(4.40)				
35.80		35.80 (25/75mm)							
	13 - -								
37.30			50.53		37.20				
			50.13		(0.40) 37.60			Light orangish brown silty fine and medium SAND.	
	13 - -				(1.20)	37.60 - 37.60 becoming dark brown.		Subangular fine to coarse brownish grey weakly dolomitised limestone GRAVEL.	
38.80		38.80 (25/75mm)	48.93		38.80				
	17 - -				(1.20)			Dark grey silty fine and medium SAND.	
26.05 40.00			47.73		40.00				

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
26/05/23	16.00	40.00					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

4 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH115**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	22-05-23 24-05-23	86.87	E 649,663.1 N 738,176.5

Engineer	Sheet	Status
Fichtner	1 of 7	FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 50.00 : overburden.		Open hole drilling. No recovery.	
	- - -				(7.50)				
7.50			79.37		7.50			Angular fine to coarse dark grey and light grey limestone GRAVEL.	

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
			7.50	96				0	50	Polymer	100	7 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH115**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	22-05-23 24-05-23	86.87	E 649,663.1 N 738,176.5

Engineer	Sheet
Fichtner	2 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	33 - -				(1.30)			Angular fine to coarse dark grey and light grey limestone GRAVEL. *(continued)*	
8.80		8.80 (50/225mm)	78.07		8.80			Light orangish brown slightly gravelly silty fine to coarse SAND. Gravel is subangular fine and medium of light grey weakly dolomitised limestone.	
	7 - -								
10.30									
	7 - -								
11.80		11.80 (48/150mm)							
	7 - -								
13.30									
	7 - -								
14.80		14.80 (25/75mm)							
	7 - -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	7 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH115**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	22-05-23 24-05-23	86.87	E 649,663.1 N 738,176.5

Engineer	Sheet
Fichtner	3 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
16.30								Light orangish brown slightly gravelly silty fine to coarse SAND. Gravel is subangular fine and medium of light grey weakly dolomitised limestone. *(continued)*	
	7 - -								
17.80		17.80 (25/75mm)							
	7 - -								
19.30									
	7 - -								
20.80		20.80 (25/75mm)							
	7 - -								
22.30					(27.00)				
	7 - -								
23.80		23.80 (25/75mm)							

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
												7 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH115**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	22-05-23 24-05-23	86.87	E 649,663.1 N 738,176.5

Engineer	Sheet	Status
Fichtner	4 of 7	FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	7 - -							Light orangish brown slightly gravelly silty fine to coarse SAND. Gravel is subangular fine and medium of light grey weakly dolomitised limestone. *(continued)*	
25.30									
	7 - -								
26.80		26.80 (25/75mm)							
	7 - -								
28.30									
	7 - -								
22.05 23.05 29.80		29.80 (25/75mm)							
	7 - -								
31.30									
	7								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
22/05/23 23/05/23	17.30 08.00	29.80 29.80										7 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH115**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	22-05-23 24-05-23	86.87	E 649,663.1 N 738,176.5

Engineer	Sheet	Status
Fichtner	5 of 7	FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	- -							Light orangish brown slightly gravelly silty fine to coarse SAND. Gravel is subangular fine and medium of light grey weakly dolomitised limestone. *(continued)*	
32.80		32.80 (25/75mm)							
	7 - -								
34.30									
	13 - -								
35.80			51.07		35.80				
		35.80 (25/75mm)						Dark brownish black slightly sandy silty subangular fine light whitish grey 'bleached' fine grained weakly dolomitised limestone GRAVEL. Sand is coarse.	
	53 - -								
37.30					(3.00)				
	33 - -								
38.80			48.07		38.80				
		38.80 (25/75mm)						Pinkish brown silty fine and medium SAND.	
	7 - -								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	7 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used	Rotary Core/DB-DeltaBase		Driller AZ	Logged By EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH115**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	22-05-23 24-05-23	86.87	E 649,663.1 N 738,176.5

Engineer	Sheet	Status
Fichtner	6 of 7	FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thickness)	Discontinuities	Detail	Main	Instrument/ Backfill
40.30								Pinkish brown silty fine and medium SAND. *(continued)*	
	7 - -				(4.50)				
41.80		41.80 (25/75mm)							
	7 - -								
43.30			43.57		43.30				
	13 - -							Subangular fine and medium light whitish grey weakly dolomitised limestone GRAVEL with a little white silt.	
44.80		44.80 (25/75mm)							
	13 - -								
46.30					(6.70)				
	13 - -								
23.05 47.80 24.05		47.80 (25/75mm)							

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
23/05/23	17.30	47.80					
24/05/23	08.00	47.80					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

7 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase	Driller: AZ	Logged By: EAT

IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Derrygreenagh Power	Co Offaly	**BH115**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2023OY104	22-05-23 24-05-23	86.87	E 649,663.1 N 738,176.5

Engineer	Sheet
Fichtner	7 of 7 Status FINAL

RUN DETAILS						STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
49.00	17 - - 20 - -							Subangular fine and medium light whitish grey weakly dolomitised limestone GRAVEL with a little white silt. *(continued)*	
24.05 50.00			36.87		50.00				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
24/05/23	11.00	50.00										7 litres polydrill used. BH backfilled.

All dimensions in metres Scale 1:50	Client: Bord na Mona	Method/ Plant Used: Rotary Core/DB-DeltaBase		Driller: AZ	Logged By: EAT

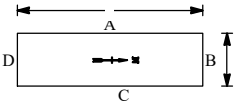
IDL AGS4 UK DH (SPTS) DERRYGREENAGHPS RC ALL FILE TO FINAL NOV 2 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Appendix 3
Trial Pit Records

PROJECT: Derrygreenagh Power	**TRIALPIT: TP216**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,482.2 N 738,084.1**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 90.07m O.D.	**DATE: 5.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 0°
PIT DIMENSION: 4.90m * 1.80
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							89.82	0.25	MADE GROUND: Firm brown CLAY with rootlets.	
			PHATE B 1 D 2	0.50 0.50-0.70 0.50-0.70			89.37	0.70	Stiff brown slightly gravelly sandy SILT with occasional cobbles. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse. Cobbles are angular to subrounded.	
1			ES B 3	1.10-1.20 1.20-1.40			88.87	1.20	Firm greenish brown slightly gravelly sandy SILT with frequent cobbles. Gravel is subangular to subrounded fine to coarse. Cobbles are subrounded of limestone.	
							88.57	1.50	Angular limestone COBBLES and angular limestone BOULDERS. Boulders are up to 1000mm in length.	
						END				
2										
3										
4										
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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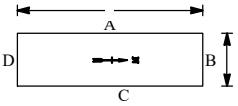
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT: TP217**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,514.0 N 738,130.4**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 89.47m O.D.	**DATE: 5.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 0°
PIT DIMENSION: 4.80m * 1.80
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							89.37	0.10	MADE GROUND: Soft brown SILT.	
			PLATE	0.50					Stiff orangish brown gravelly CLAY with frequent cobbles. Gravel is angular to subangular fine to coarse. Cobbles are angular to subrounded.	
			B 1	0.55-0.70						
			D 2	0.55-0.70			88.52	0.95		
1			B 3	1.00-1.20					Stiff grey slightly sandy SILT.	
			ES	1.10-1.20			88.27	1.20		
			B 4	1.60-1.80					Firm damp greenish brown slightly gravelly sandy SILT with frequent cobbles and frequent boulders. Gravel is angular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone. Boulders are subangular to subrounded of limestone. Boulders are up to 500mm in length.	
			D 5	1.60-1.80						
2							87.02	2.45		
									Stiff orangish brown slightly sandy SILT with rare cobbles. Cobbles are subrounded.	
			B 6	2.70-2.90						
			D 7	2.70-2.90						
3							86.17	3.30		
									Firm yellowish brown slightly gravelly sandy SILT with occasional cobbles. Sand is fine to coarse. Gravel is angular fine. Cobbles are subangular to subrounded.	
			B 8	3.80-4.00						
4							84.97	4.50		
						END				
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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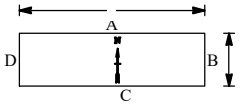
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT: TP218**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,617.5 N 738,097.4**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 88.86m O.D.	**DATE: 4.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 90°
PIT DIMENSION: 4.80m * 1.80
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							88.71	0.15	TOPSOIL: Grass over soft brown organic SILT.	
			PLATE	0.60					Stiff yellowish brown slightly sandy slightly gravelly SILT with frequent cobbles. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse. Cobbles are subrounded.	
			B 1	0.60-0.80						
			D 2	0.60-0.80			87.86	1.00		
1			ES	1.00-1.10					Orangish brown silty sandy angular to subrounded fine to coarse GRAVEL with frequent cobbles. Sand is fine to coarse. Cobbles are angular of limestone.	
			B 3	1.50-1.70			87.16	1.70		
2			B 4	2.00-2.20					Stiff reddish brown sandy gravelly SILT with frequent cobbles. Sand is fine to coarse. Gravel is angular to subrounded fine to medium. Cobbles are angular.	
			D 5	2.00-2.20						
							86.06	2.80		
3			B 6	3.10-3.30					Dark brownish black sandy angular to subangular fine to medium GRAVEL with frequent cobbles. Sand is coarse. Cobbles are angular.	
4									3.80-4.50: becoming mottled orangish brown.	
							84.36	4.50		
						END				
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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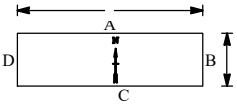
TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

PROJECT: Derrygreenagh Power	**TRIALPIT: TP219**
LOCATION: Co Offaly	**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates: E 649,714.5 N 738,152.0**
ENGINEER: Fichtner	**Rig: Hyundai HX 140**
	Rev: FINAL
Ground level: 86.72m O.D.	**DATE: 4.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 90°
PIT DIMENSION: 4.60m * 1.80
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							86.42	0.30	MADE GROUND: Briars over firm brown peaty SILT.	
			PLATE	0.60			85.92	0.80	Stiff yellowish brownish grey slightly gravelly slightly sandy SILT. Gravel is angular fine.	
			B 1	0.60-0.80						
			D 2	0.60-0.80			85.72	1.00	Stiff orangish brown sandy gravelly SILT with frequent cobbles. Gravel is angular to subangular fine to coarse. Cobbles are subangular.	
1			ES	1.00-1.10					Firm light grey sandy gravelly SILT with frequent cobbles and occasional boulders. Gravel is angular to subrounded fine to coarse. Cobbles are angular to subrounded. Boulders are subangular. Boulders are up to 350mm in length.	
			B 3	1.60-1.80						
			D 4	1.60-1.80						
2							84.52	2.20	Stiff orangish brown sandy gravelly SILT with frequent cobbles. Gravel is angular to subangular fine to coarse. Cobbles are angular to subrounded.	
3			B 5	3.00-3.20						
4							82.22	4.50		
						END				
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

Irish drilling LTD

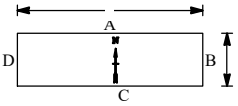
Ph.
Fax

TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

PROJECT: Derrygreenagh Power		**TRIALPIT: TP220**
LOCATION: Co Offaly		**Sheet 1 of 1**
CLIENT: Bord na Mona	**Co-ordinates:**	**Rig: Hyundai HX 140**
ENGINEER: Fichtner	**E 649,774.6 N 738,176.9**	**Rev: FINAL**
Ground level: 83.26m O.D.		**DATE: 4.5.23**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 90°
PIT DIMENSION: 6.00m * 1.80
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							82.96	0.30	MADE GROUND: Briars over black peaty fine to coarse SAND and subrounded to rounded fine to coarse GRAVEL.	
							82.76	0.50	MADE GROUND: Grey fine to coarse SAND and subrounded to rounded GRAVEL.	
1			ES B 1 D 2	1.00-1.10 1.00-1.20 1.00-1.20			81.56	1.70	MADE GROUND: Stiff brown and grey slightly gravelly sandy SILT with occasional boulders. Gravel is angular to subrounded fine to coarse. Boulders are subrounded of limestone.	
2			B 3	1.80-2.00			81.11	2.15	MADE GROUND: 10" concrete pipe with brown fine SAND.	
			B 4	2.40-2.60			80.56	2.70	Grey very silty medium to coarse SAND and subangular to subrounded fine to coarse GRAVEL with frequent cobbles. Cobbles are angular.	
3			B 5	3.30-3.50			78.76	4.50	Whitish grey and orangish brown slightly silty slightly sandy angular fine to coarse GRAVEL with frequent cobbles. Sand is fine to coarse. Cobbles are angular.	
4						END				
5										
6										
7										
8										
9										
10										

Remarks: TP dry on excavation. TP backfilled with arisings.

Scale: 1:50

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TRIALPIT DERRYGREENAGHPS TPS ALL FILE TO FINAL NOV 1 2023.GPJ ID GINT AGS 4_0_4.GDT 2/11/23

Appendix 4A
Geophysical Survey

Derrygreenagh Thermal Power Plant
Main Site, South Site and 220kV Substation, Co. Offaly

Geophysical Survey

Report Status: Final

MGX Project Number: 6695

MGX File Ref: 6695f-005.doc

31st October 2023

Confidential Report To:

Irish Drilling Ltd
Old Galway Road
Loughrea
Co. Galway

Report submitted by:
Minerex Geophysics Limited

Unit F4, Maynooth Business Campus
Maynooth, Co. Kildare, W23X7Y5
Ireland
Tel.: 01-6510030
Email: info@mgx.ie

Issued by:

Author: John Connaughton (Geophysicist)

Reviewer: Hartmut Krahn (Senior Geophysicist)

Minerex
Geophysics Limited

Subsurface Geophysical Investigations

EXECUTIVE SUMMARY

1. Minerex Geophysics Ltd. (MGX) carried out a geophysical survey consisting of 2D-Resistivity (ERT) surveying for the ground investigation for the proposed development at Derrygreenagh, County Offaly.
2. The survey area includes the main site, the south site and the 220kV substation site. This is where the cable/pylon route starts.
3. The main objective of the survey was to determining features of the underlying geology to a depth of 58m.
4. The data was interpreted based on the resistivity ranges using three layers.
5. Layer 1 is interpreted as peat or sandy gravelly clay and silt. This is the dominant overburden layer and extends to the maximum depth of 58m in many areas.
6. Layer 2 is interpreted as a clayey silty sand and gravel or weathered limestone.
7. Layer 3 is described as fresh limestone. The extent of this layer across the survey lines is shown on Map 2 where the top of the fresh limestone is present to depths of less than 13m (Blue) and 13 – 58m (Green).
8. The shallowest fresh rock is in the SW of the site close to the R400 road (Map 1).
9. Overall, the survey shows a lot of variation in the underlying geology with the top of rock ranging from very shallow to over 58m bgl.
10. Differential settlement of heavy structures might occur especially where the depth to rock changes suddenly.
11. Line R8 to the west of the R400 road was disturbed likely due to the railway tracks in this area. It is unclear if the shallow rock extends to the west of the road.
12. Direct ground investigation results have been added to the report and tie in well with the interpretation.

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1.2 Objectives 1
1.3 Site Description 1
1.4 Geology 1
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Table 1: Geophysical Survey Locations and Acquisition Parameters	In text	In text
Table 2: Summary of Interpretation	In text	In text
Map 1: Geophysical Survey Location Map	1 x A3	6695f_Drawings.dwg
Map 2: Geophysical Survey Interpretation Map	1 x A3	6695f_Drawings.dwg
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Figure 1b: Models of Geophysical Survey	1 x A3	6695f_Drawings.dwg
Figure 2a: Interpretation of Geophysical Survey	1 x A3	6695f_Drawings.dwg
Figure 2b: Interpretation of Geophysical Survey	1 x A3	6695f_Drawings.dwg

1. INTRODUCTION

1.1 Background

Minerex Geophysics Ltd. (MGX) carried out a geophysical survey for the Derrygreenagh Thermal Power Plant in Co. Offaly. The survey consisted of 2D-Resistivity (ERT) measurements. The survey was commissioned by Irish Drilling Ltd. The survey here covers the Main Site, the South Site and the 220kV substation.

The role of geophysics as a non-destructive fast method is to provide a geological interpretation over a wide area to complement direct ground investigations at specific locations. The direct ground investigation results have been used to improve the initial geophysical results and interpretation.

The proposed development is a Thermal Power Plant and an associated 220kV substation.

1.2 Objectives

The aim stated in the tender was determining features of the underlying geology to a depth of 58m.

Our main objectives of the geophysical survey were:

- To determine the ground conditions under the site
- To determine the depth to rock and the overburden thickness
- To determine the type of overburden and rock
- To detect lateral changes within the geological layers

1.3 Site Description

The site is located on the Bord Na Mona Derrygreenagh site which contains offices, stores, workshop complex and hardstanding areas. There are disused railway tracks crossing the site. The peripheral land consisted of scrubland and the site is surrounded by bog. The R400 Road runs along the west of the site.

1.4 Geology

Online geological maps of Ireland (GSI, 2022) give the following information:

The overburden geology consists of till derived from limestones with cut over raised peat in the NW of the site and surrounding the site.

In terms of rock the survey area is underlain by the Lucan Formation, described as dark limestone and shale.

The Lucan formation is generally not karstifiable.

There are no faults or karst features recorded near the site.

1.5 Report

This report includes the results and interpretation of the geophysical survey. Maps, figures and tables are included to illustrate the results of the survey. More detailed descriptions of geophysical methods and measurements can be found in GSEG (2002), Milsom (1989) and Reynolds (1997).

The description of soil, rock and the use of geotechnical terms (soft, stiff, dense etc) follows Eurocode (2007) and BSI (2015) standards. The terms are defined in the standards and the physical parameters are related from experience. This geophysical survey has been acquired, processed, interpreted and reported in accordance with these guidelines.

Elevations were surveyed on site and are used in the vertical sections.

The interpretative nature and the non-invasive survey methods must be taken into account when considering the results of this survey and Minerex Geophysics Limited, while using appropriate practice to execute, interpret and present the data, give no guarantees in relation to the existing subsurface.

2. GEOPHYSICAL SURVEY

2.1 Methodology

The methodology consisted of using 2D-Resistivity surveying along proposed lines across the site. The tender document required surveying depths of 58m below ground level.

The survey locations are indicated on Map 1. The lines and parameters are tabulated in Table 1.

Table 1: Geophysical Survey Locations and Acquisition Parameters

Resistivity Line	**Electrode Spacing/m**	**Number of Electrodes**	**Line Length/m**
R1	5	89	440
R2	5	75	370
R3	5	87	450
R4	5	83	430
R5	5	80	395
R6	5	92	475
R7	5	64	315
R8	5	64	315
SUM			**3,190**

2.2 2D-Resistivity (ERT)

2D-Resistivity lines were surveyed with electrode spacing of 5m, up to 64 electrodes per set-up and a maximum length of 315m per set-up. The readings were taken with a Tigre Resistivity Meter, Imager Cables, stainless steel electrodes and a laptop with ImagerPro acquisition software.

The 2D-Resistivity lines were carried out as overlapping lines surveyed to a maximum depth of 58m below ground level.

During 2D-Resistivity surveying, data is acquired in the form of linear arrays using a suite of metal electrodes. A current is induced into the ground via a pair of electrodes whilst a potential difference is measured across a second pair of electrodes. This allows for the recording of the apparent resistivity in a two-dimensional arrangement below the line. The data is inverted after the survey to obtain a model of

subsurface resistivities. The generated model resistivity values and their spatial distribution can then be related to typical values for different geological materials.

The presence of metal underground services like water or gas pipes or other metal items may influence the results of the survey. Line R7 was stopped short in the south of the line due to the presence of reinforced concrete which would have disrupted the data. Line R6 was moved to the north to avoid the reinforced concrete.

Line R8 on the west side of the R8 likely shows significant interference due to the tracks in this area.

2D-Resistivity has previously proven zones of anomalous or karstified rock with lateral extents of 5m and more.

2.3 Site Work

The data acquisition was carried out between the 11th and 17th of April 2023. The weather conditions were fair throughout the acquisition period. Health and safety standards were adhered to at all times. The locations and elevations were surveyed with a Carlson NR3 RTK-GPS to accuracy < 0.05m.

3. RESULTS AND INTERPRETATION

The interpretation of geophysical data was executed utilizing the known response of geophysical measurements, typical physical parameters for subsurface features that may underlay the site, and the experience of the authors.

Ground investigation results were provided after the survey and the abbreviated borehole logs are indicated on the sections. The overburden was abbreviated as peat, cobbles, silt, sand and gravel. The rock was generally divided into weathered limestone (based on RQD value < 50%) and limestone rock (> 50%). This can be done only to a certain extend as the rock can be very variable. RQD values, fracture indices and non-intact zones often change rapidly with depth. The small size of a borehole only represents a very small volume of ground while the geophysical survey on the other end of the scale averages over a large volume of ground.

3.1 2D-Resistivity (ERT)

The 2D-Resistivity data was positioned and inverted with the RES2DINV inversion package. Overlapping set-ups were concatenated for a joint inversion. The programme uses a smoothness constrained least-squares inversion method to produce a 2D model of the subsurface resistivities from the recorded apparent resistivity values. Three variations of the least squares method are available and for this project the Jacobian Matrix was recalculated for the first three iterations, then a Quasi-Newton approximation was used for subsequent iterations. Each dataset was inverted using seven iterations resulting in a typical RMS error of <3.0%. The resulting models were colour contoured with the same resistivity scale for all lines and they are displayed as cross sections (Figure 1a and 1b).

The models are drawn as a ‘visual stack’ to allow cross-correlation by eye between them.

Resistivities are characteristic for certain overburden and rock types. If there is a high content of clay minerals (which are electrically conductive) then the overburden resistivity will be lower than as if there is a high content of clastic grains like sand or gravel. The purer the clay and the lower the sand and gravel content, the lower the resistivity. Water content in overburden layers can influence the resistivities, but generally clay content has a more dominating effect.

Within bedrock types like clean limestone, high resistivities indicate a fresh, strong, unweathered rock. As the weathering in the rock increases the resistivity gets lower because of weathering products, remineralisation of rock and infill of cracks, faults and voids with clay and water. Weathering within rock is typically indicated by lower resistivity values in the cross sections.

The resistivities cover a range typical for materials from clay rich overburden or peat (low resistivities) to fresh strong unweathered bedrock (high resistivities). The ranges have been taken into the consideration for the interpretation. Low resistivity values (<250 Ohmm) typically indicate peat and sandy gravelly clay

and silt. Medium values (250 to 500 Ohmm) show a clayey silty sand and gravel overburden or weathered bedrock. High resistivities (>500 Ohmm) indicate bedrock types like limestone.

3.2 Interpretation of Resistivity

Table 2 summarises the interpretation. The interpretation has been made solely from the 2D-Resistivity data. The majority of resistivities across the survey lines are low and indicate overburden material such as peat or a sandy gravelly clay and silt. Across lines R6 and R1 there are pockets of medium resistivities which are most likely areas of clayey silty sand and gravel. At depths of 15 – 40m across all the survey lines there are medium resistivities which may indicate clayey silty sand and gravel overburden or a weathered limestone.

Where high resistivities are present at depth, this indicates a fresh limestone. High resistivities are seen on lines R1, R2 and R5 in the SW of the site near the R400 where the fresh limestone may be very shallow and on lines R3, R4 and R7 in the NE of the site where the fresh limestone is interpreted as deeper than 25m.

Table 2: Summary of Interpretation (Resistivity only)

Layer	General Resistivity Range (Ohmm)	Interpretation
A	<250	Peat or sandy gravelly Clay and Silt
B	250 – 500	Clayey silty Sand and Gravel, or weathered Limestone
C	>500	Fresh Limestone

3.3 Interpretation Map

Map 2 shows areas where the fresh limestone is shallower than 13m (Blue) and where the limestone is between 13 and 58m below ground level (Green). Across other areas, no fresh rock was noted to a depth of 58m. This map is solely based on the 2D-Reistivity interpretation. Data was interpolated between lines and the data cannot be extrapolated away from lines where no data exists.

The area where the fresh limestone is interpreted as shallower than 13m deep is located in the SW of the power plant site near the R400. BH108, in this area shows limestone at 11.7m while BH111 indicates limestone at 5m bgl. Close to this area, BH110 shows rock at 16.2m bgl while BH113 does not show any rock to its depth of 40m bgl.

The data along R8 to the west of the R400 road was disturbed and was not interpreted so the extent of the rock on the western side of the R400 is not confirmed. The northern extent of the fresh limestone shallower than 13m has not been determined but it does not extend as far north as lines R6 or R7.

Boreholes carried out to the west of the R400 indicate deep overburden. BHSS03 describes possible weathered rock recovered as gravel and cobbles at a depth of 23.8m while BHSS05, 35m to the south describes gravel to a depth of 40m bgl.

The fresh limestone at a depth of between 13 – 58m is in two distinct areas near the shallow rock and in the NE corner of the site which matches with results from boreholes in these areas. It is possible that the two zones of rock between 13 – 58m could continue closer to the middle of the site. BH106, between these two areas does not show rock to a maximum depth of 25m bgl.

There is a data gap in the west of the site between lines R1 and R6/R7.

4. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are made:

- The geophysical surveys carried out at the Derrygreenagh Plant consisted of 2D-Resistivity lines which surveyed to depths of 58m across the site.
- The survey area includes the main site, the south site and the 220kV substation site. This is where the cable/pylon route starts.
- The survey indicates very deep overburden across much of the site, extending to over 58m depth in many places.
- An area where the top of rock is interpreted shallower that 13m is identified close to the east side of the R400 in the SW corner of the site. The rock may be very shallow in this area.
- Two areas where the top of fresh limestone was indicated at depths of between 13 and 58m are shown in the SW and NE of the site.
- Line R8 is located to the west of the R400 road the data may be disturbed by the railway tracks in this area. It is unclear if the shallow rock extends to the west of the road.
- Ground conditions are very variable with undulating rockhead across the site. Differential settlement of heavy structures might occur.
- Direct ground investigation results were provided after the survey and tie in well with the geophysical survey interpretation.

5. REFERENCES

1. **BSI, 2015.** BS5930, Code of Practice for Ground Investigations, British Standards Institute 2015

2. **Eurocode, 2007.** EN 1997-2:2007. Eurocode 7. Part 2 Ground Investigation and Testing 2007

3. **GSEG, 2002.** Geophysics in Engineering Investigations. Geological Society Engineering Geology Special Publication 19, London, 2002

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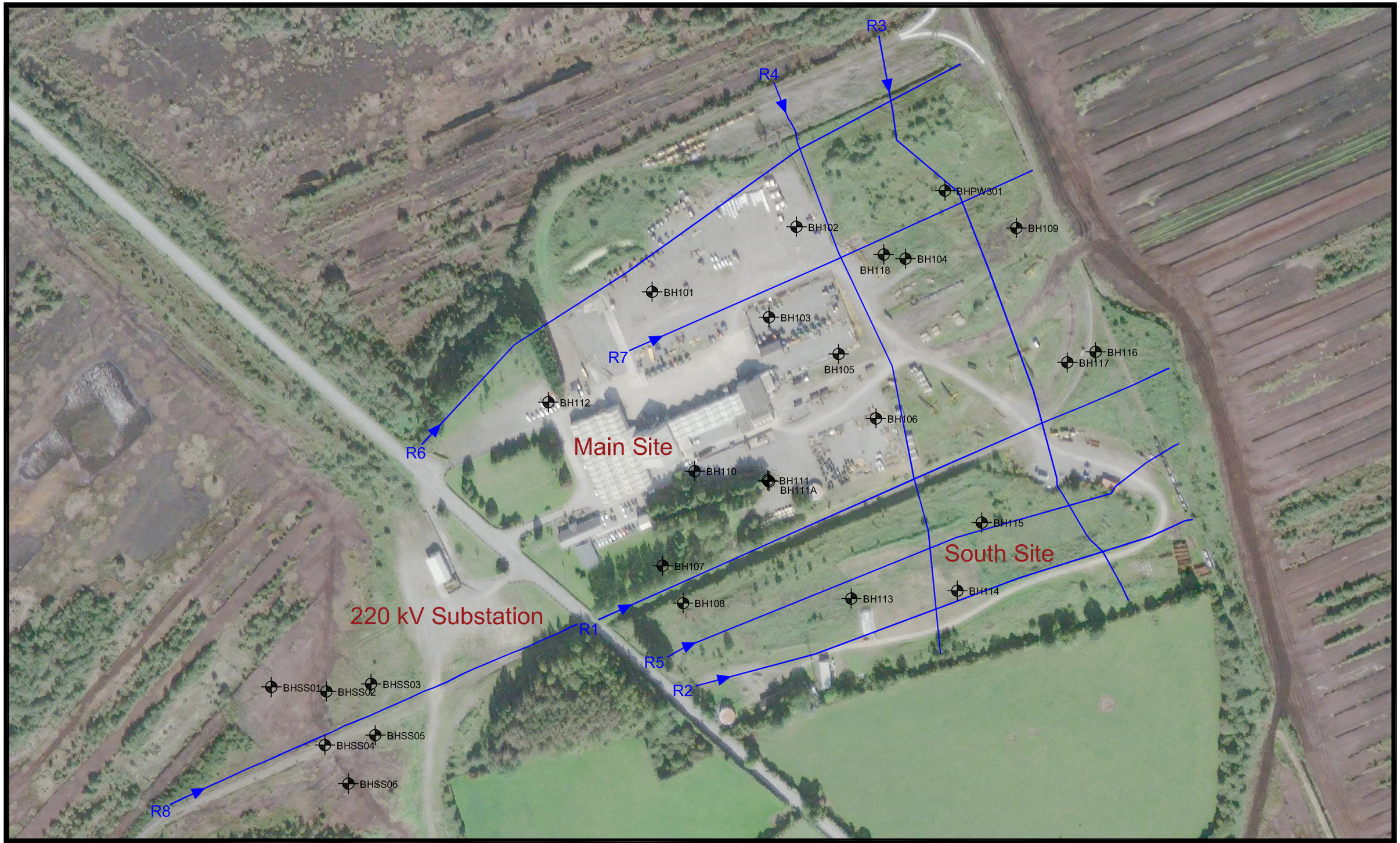
5. **Milsom, 1989.** Field Geophysics. John Wiley and Sons, 1989

6. **Reynolds, 1997.** An Introduction to Applied and Environmental Geophysics. John Wiley and Son, 1997

7. **Weaver, 1975.** Geological Factors significant in the Assessment of Rippability, 1975



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CLIENT	Irish Drilling Ltd.
PROJECT	Derrygreenagh Thermal Power Plant County Offaly Geophysical Survey
TITLE	Map 1: Geophysical Survey Location Map

SCALE:	1:2500 @ A3
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695f_Drawings.dwg
STATUS:	Final

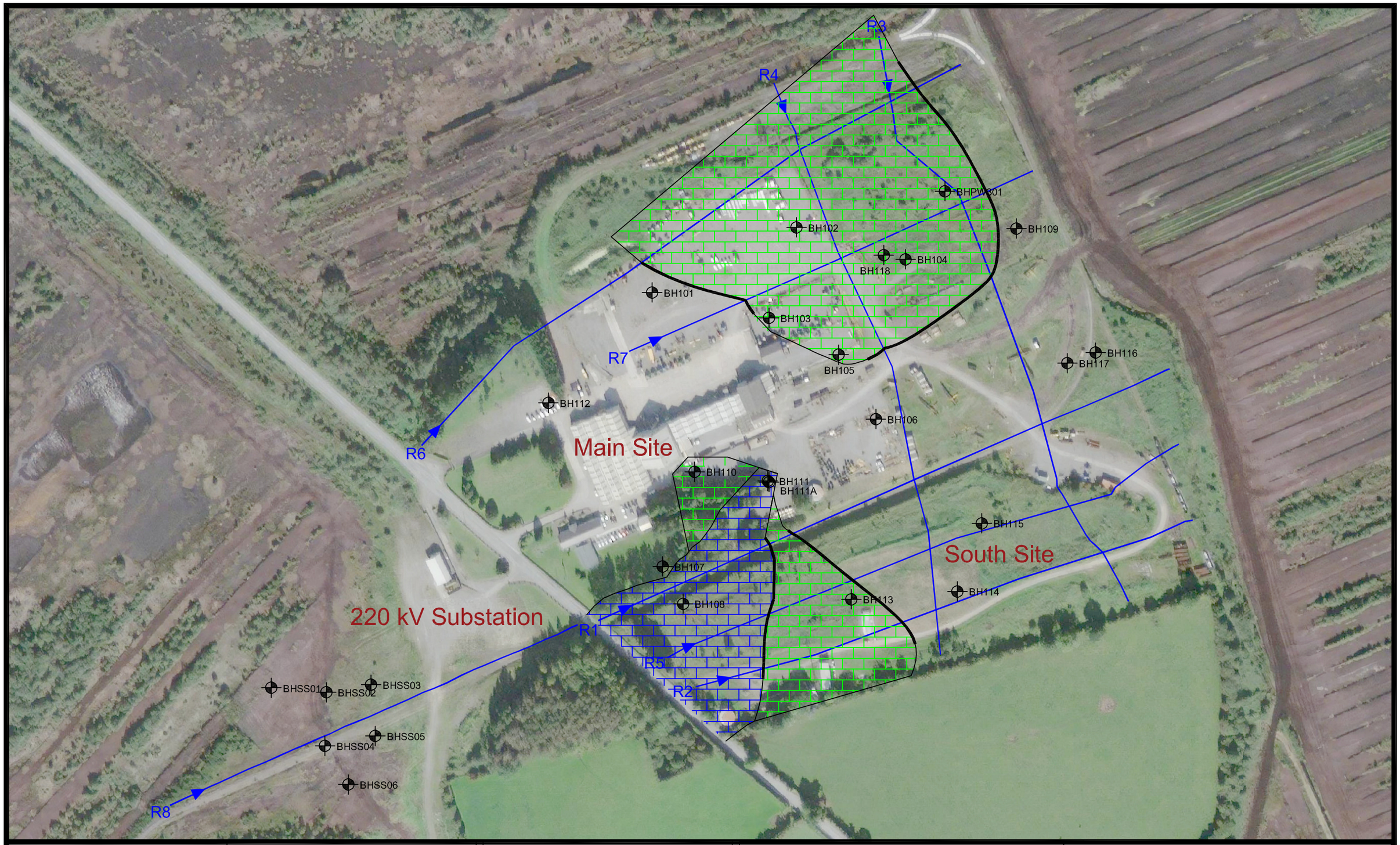
Geophysical Survey Locations:

R2 — 2D-Resistivity Line

Direct Ground Investigation Locations:

BH101 — Rotary Corehole

Locations are in Irish Transverse Mercator (ITM), Elevations are in mOD (Malin Head)



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CLIENT	Irish Drilling Ltd.
PROJECT	Derrygreenagh Thermal Power Plant County Offaly Geophysical Survey
TITLE	Map 2: Geophysical Survey Interpretation Map

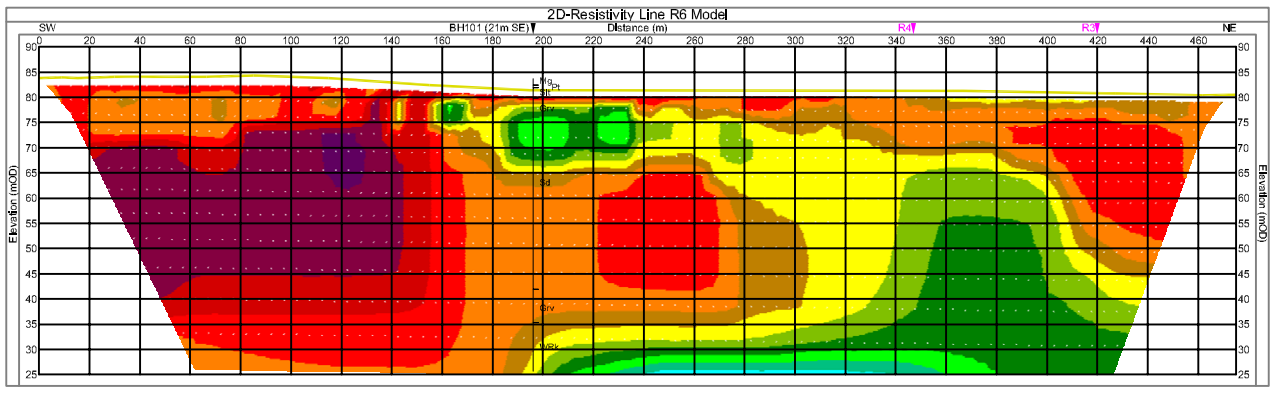
SCALE:	1:2500 @ A3
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695f_Drawings.dwg
STATUS:	Final

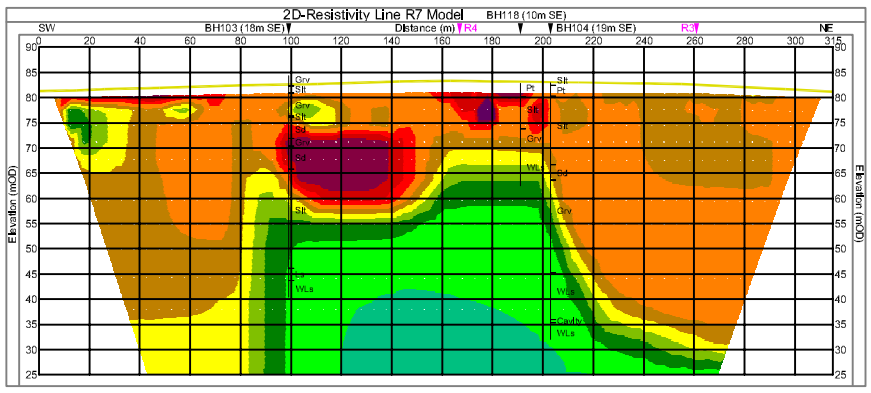
Interpretation:

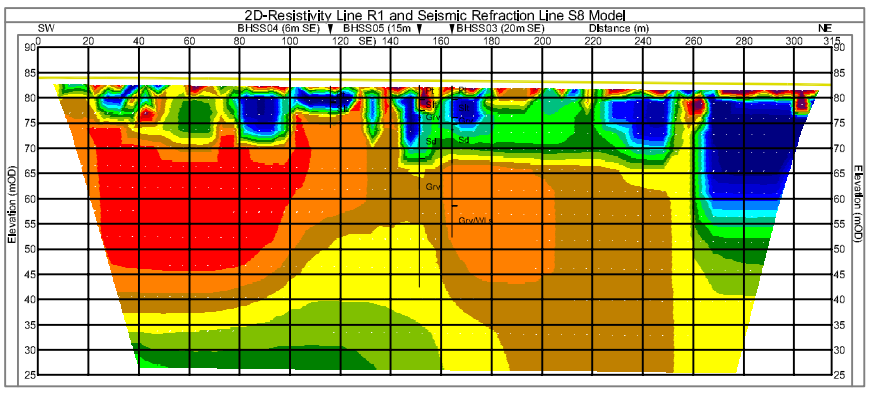
- Depth to Top of Fresh Limestone <13m
- Depth to Top of Fresh Limestone 13-58m
- Depth to Top of Fresh Limestone >58m

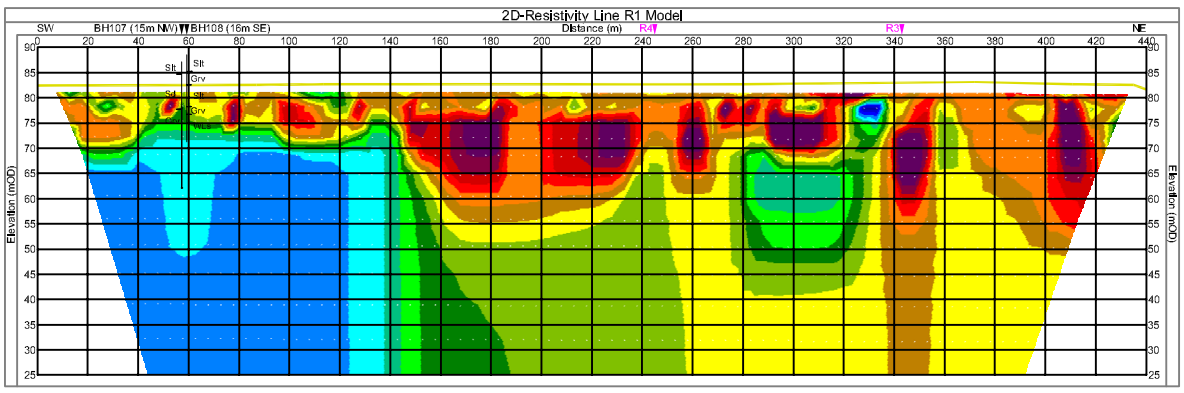
Direct Ground Investigation Locations:

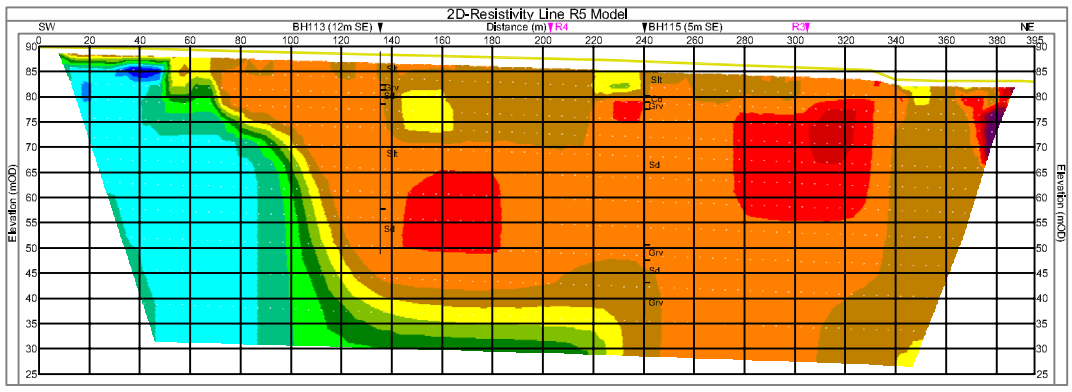
- BH101 Rotary Corehole

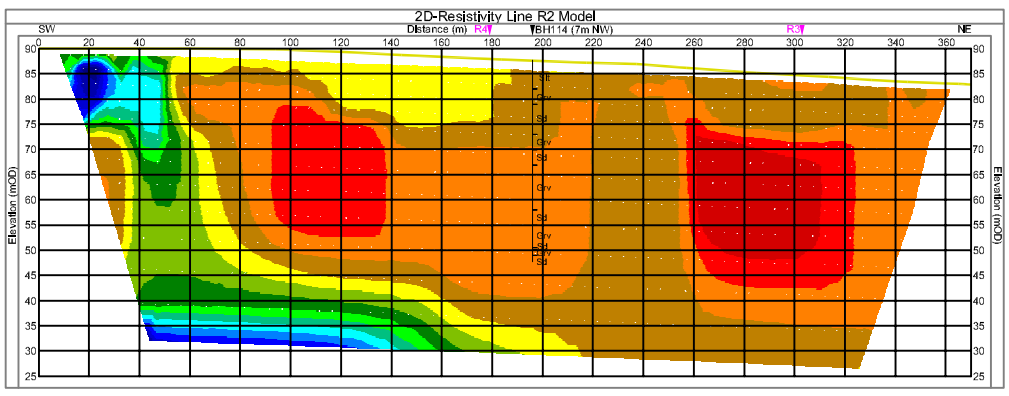












Abbreviated GI Logs:

BH101 Borehole Name and Location

Pt	Peat	Mg	Made Ground
Grv	Gravel	Co	Cobbles
Sd	Sand	Slt	Silt
Ob	Overburden	Ls	Limestone
WRk	Weathered Rock		
WLt	Weathered Limestone		

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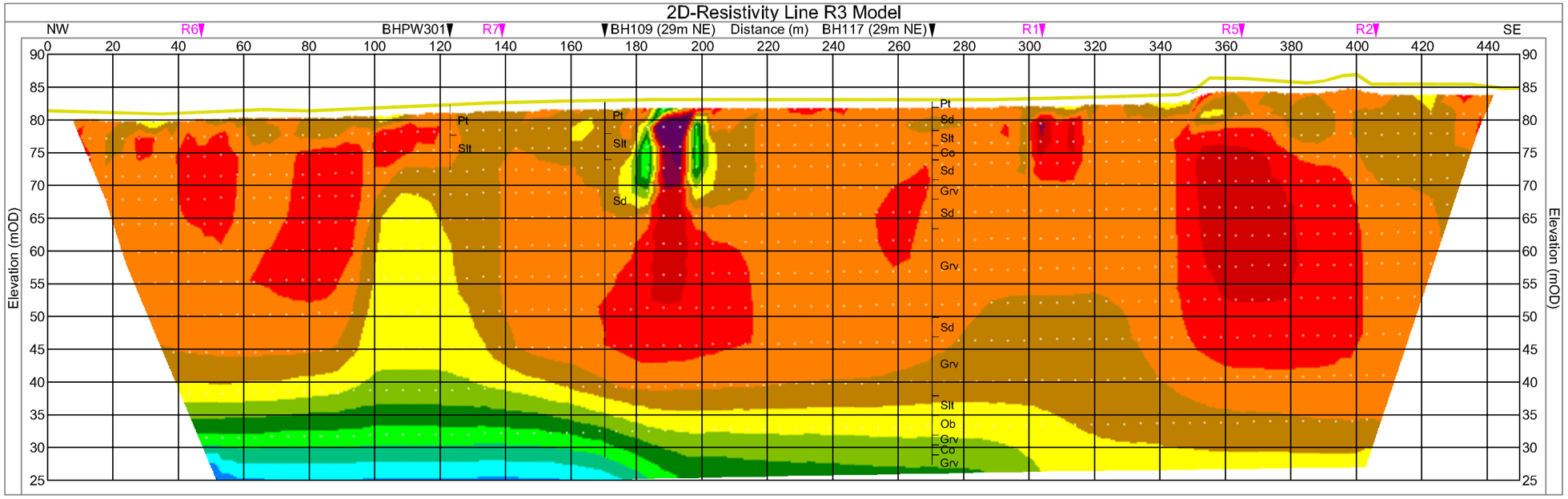
CLIENT	Irish Drilling Ltd.
PROJECT	Derrygreenagh Thermal Power Plant County Offaly Geophysical Survey
TITLE	Figure 1a: Models of Geophysical Survey

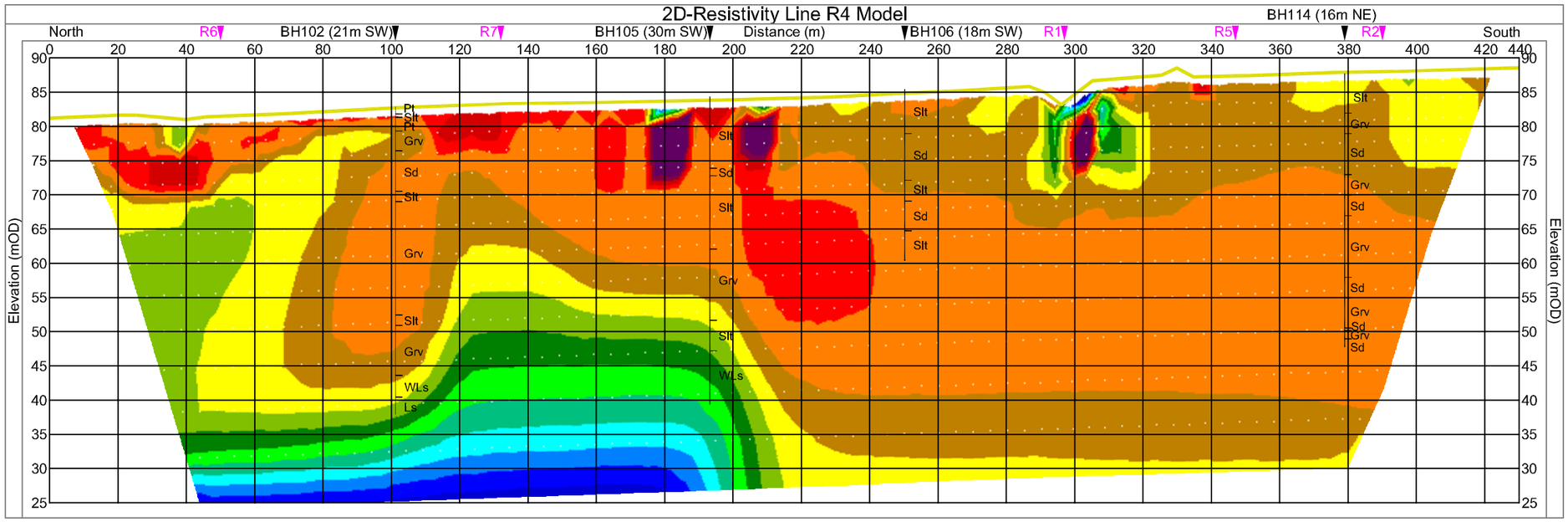
SCALE:	1:3000 @ A3, VE x 2
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695f_Drawings.dwg
STATUS:	Final

2D-Resistivity Model Values:

Resistivities (Ohmm)

31.2 62.5 125 250 500 1000 2000 4000





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CLIENT	Irish Drilling Ltd.
PROJECT	Derrygreenagh Thermal Power Plant County Offaly Geophysical Survey
TITLE	Figure 1b: Models of Geophysical Survey

SCALE:	1:1500 @ A3, VE x 2
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695f_Drawings.dwg
STATUS:	Final

2D-Resistivity Model Values:

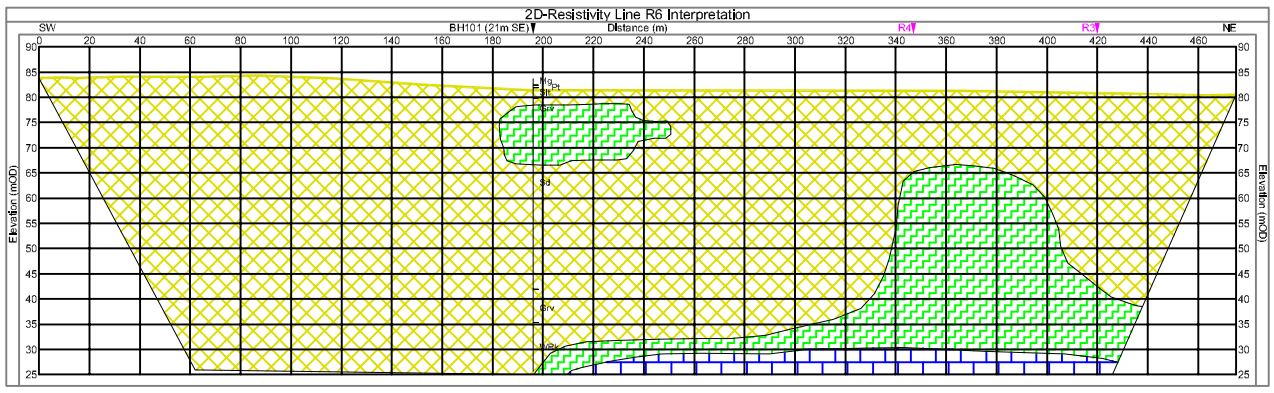
Resistivities (Ohmm)

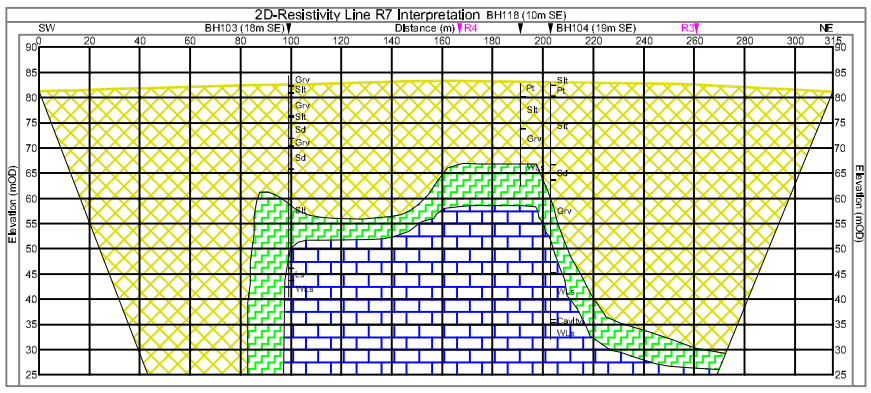
31.2 62.5 125 250 500 1000 2000 4000

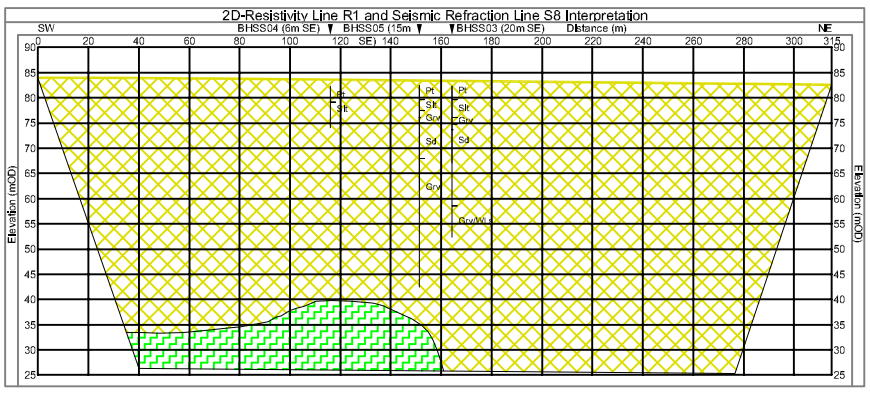
Abbreviated GI Logs:

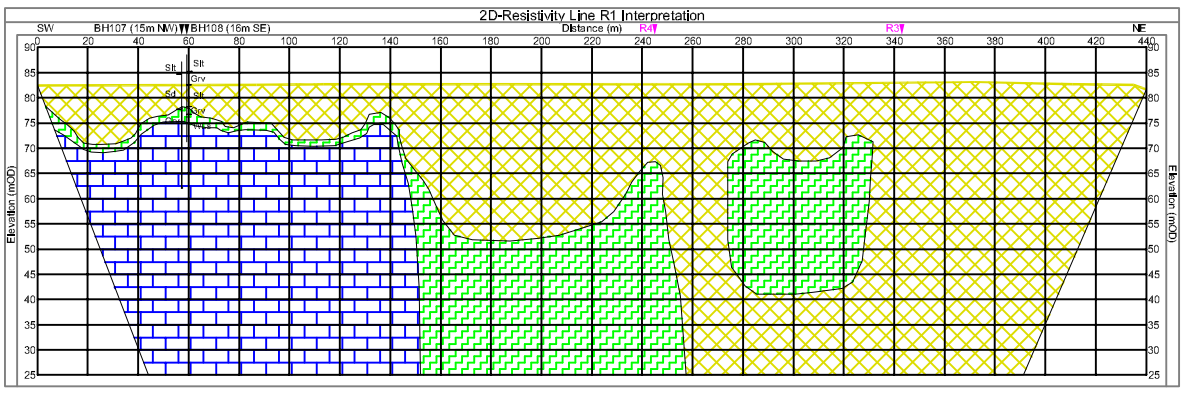
BH101 Borehole Name and Location

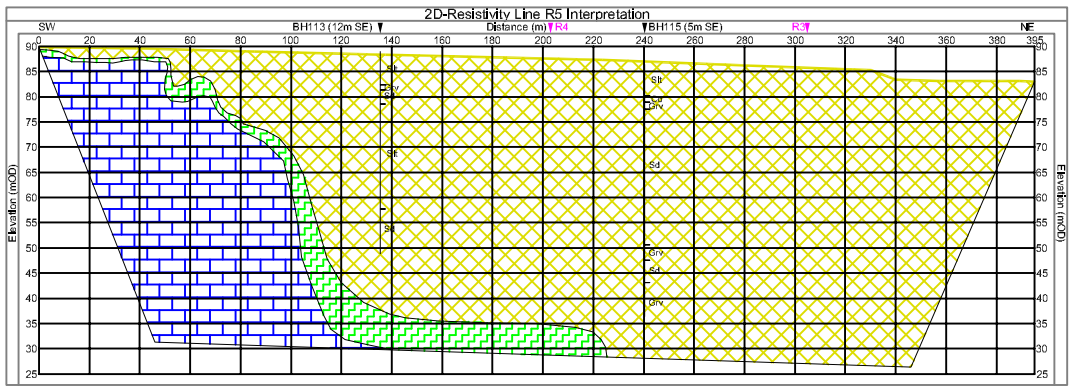
Pt	Peat	Mg	Made Ground
Grv	Gravel	Co	Cobbles
Sd	Sand	Slt	Silt
Ob	Overburden	Ls	Limestone
WRk	Weathered Rock		
WLt	Weathered Limestone		

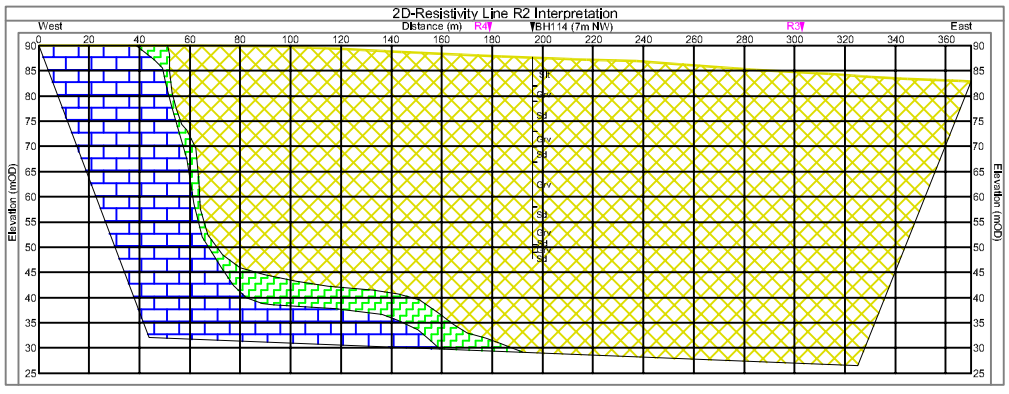












Abbreviated GI Logs:

BH101 Borehole Name and Location

Pt	Peat	Mg	Made Ground
Grv	Gravel	Co	Cobbles
Sd	Sand	Slt	Silt
Ob	Overburden	Ls	Limestone
WRk	Weathered Rock		
WLt	Weathered Limestone		

Minerex Geophysics Limited
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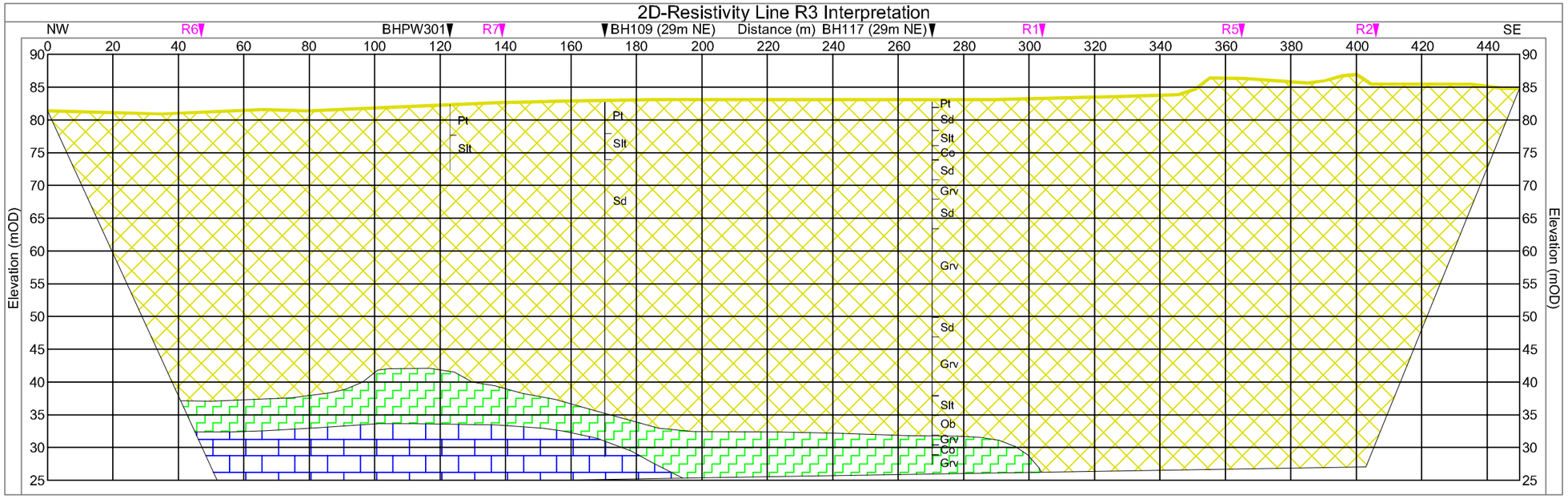
CLIENT	Irish Drilling Ltd.
PROJECT	Derrygreenagh Thermal Power Plant County Offaly Geophysical Survey
TITLE	Figure 2a: Interpretation of Geophysical Survey

SCALE:	1:3000 @ A3, VE x 2
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695f_Drawings.dwg
STATUS:	Final

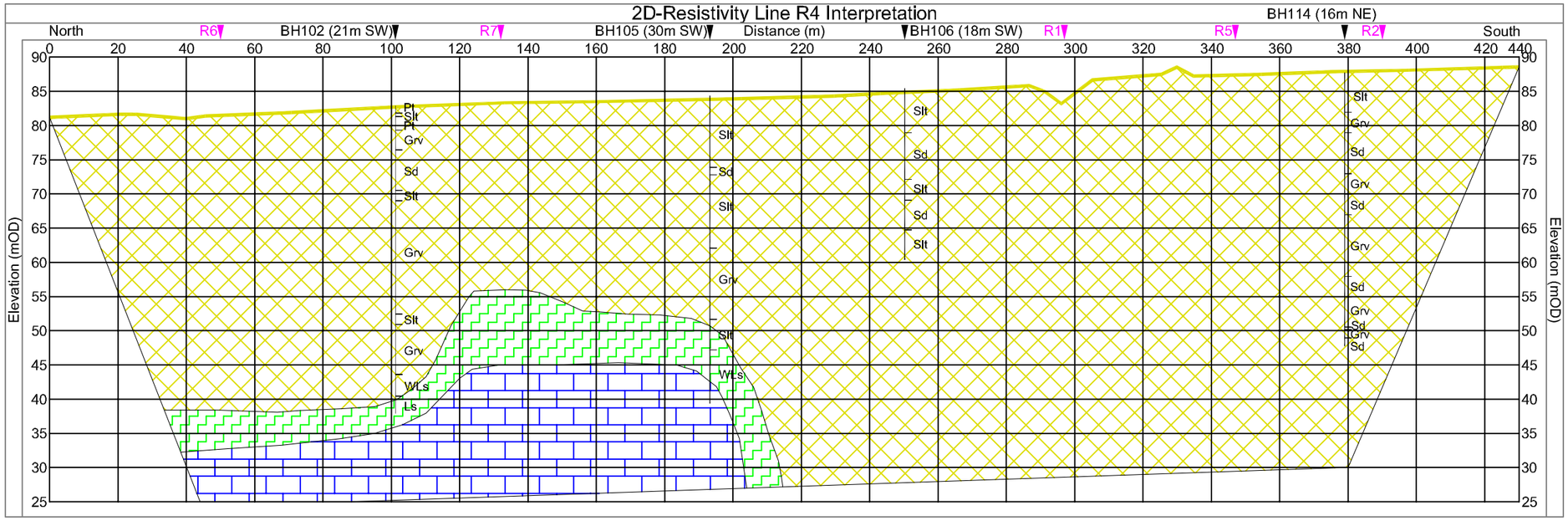
Interpretation:

1 Peat and sandy gravelly Clay and Silt
2 Clayey silty Sand and Gravel or weathered Limestone
3 Fresh Limestone

2D-Resistivity Line R3 Interpretation



2D-Resistivity Line R4 Interpretation



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CLIENT	Irish Drilling Ltd
PROJECT	Derrygreenagh Thermal Power Plant County Offaly Geophysical Survey
TITLE	Figure 2b: Interpretation of Geophysical Survey

SCALE:	1:1500 @ A3, VE x 2
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695f_Drawings.dwg
STATUS:	Final

Interpretation:

1 Peat and sandy gravelly Clay and Silt
2 Clayey silty Sand and Gravel or weathered Limestone
3 Fresh Limestone

Abbreviated GI Logs:

BH101 Borehole Name and Location

Pt	Peat	Mg	Made Ground
Grv	Gravel	Co	Cobbles
Sd	Sand	Slt	Silt
Ob	Overburden	Ls	Limestone
WRk	Weathered Rock		
WLt	Weathered Limestone		

Appendix 4B
Ground Electrical Resistivity Tests

Derrygreenagh Thermal Power Plant

South Site, Co. Offaly

Ground Electrical Resistivity Testing

Report Status: Draft

MGX Project Number: 6695

MGX File Ref: 6695b-005.doc

31st October 2023

Confidential Report To:

Irish Drilling Ltd.
Old Galway Road
Pollroebuck
Loughrea
Co. Galway

Report submitted by:
Minerex Geophysics Limited

Unit F4, Maynooth Business Campus
Maynooth, Co. Kildare
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Email: info@mgx.ie

Issued by:

Hartmut Krahn (Senior Geophysicist)

Minerex
Geophysics Limited

Subsurface Geophysical Investigations

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1.4 Report 1

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Table 1: Ground Resistivity Testing Results	1 x A4	6695b-Tab1.xls
Figure 1: Resistivity Testing using the Wenner Array	In Text	In Text

1. INTRODUCTION

1.1 Background

Minerex Geophysics Ltd. (MGX) conducted Vertical Electrical Sounding (VES) using the Wenner electrode configuration at 1 test locations at the South Site for the proposed thermal power plant at Derrygreenagh, Co. Offaly. The name of the test location is VES3.

The purpose of the survey was to provide information to be used in the design and construction phases of the project.

These tests are conducted in order to increase the knowledge of the resistivity of the soil and rock and to assist with the design and installation of earthing systems and underground cabling systems. Soil resistivity depends on a number of factors like soil type, mineral content, temperature, moisture, salt content and compaction.

The methodology specified here encompasses onsite in–situ measurements and the presentation of the results, but does not include the design of the earthing or cabling system.

1.2 Objectives

The main objective of the geophysical survey was:

- To determine the electrical resistivity at a range of depths for each test location

1.3 Site Description

The site is shown on Map 1, and the survey areas consists of the south site of the Derrygreenagh compound.

1.4 Report

This report includes tables of VES results. The indirect nature and the non-invasive survey methods must be taken into account when considering the results of this survey and Minerex Geophysics Limited, while using appropriate practice to execute the measurements and to present the data, give no guarantees in relation to the existing subsurface.

2. TESTING ON SITE

2.1 Methodology

The methodology consisted of using Vertical Electrical Sounding (VES) in the Wenner electrode configuration at a range of electrode spacing agreed with the client prior to the fieldwork. The increase in the electrode spacing leads to an increase in the depth.

VES - Vertical Electrical Sounding

Objective:	Determine the resistivity for ground, soil and rock
Purpose:	This test is generally done to deliver values for the design of an earthing or grounding system
Test Method:	Four probe array in Wenner electrode configuration with expanding electrode spacing
Spacings:	0.3, 0.5, 0.7, 1, 2, 3, 4, 5, 7, 10, 15, 20, 30, 40, 50, 60, 70, 80 and 100m
	(less if there is not enough physical space 'Boundary')
Instrument:	Tigre Resistivity Meter (high power)

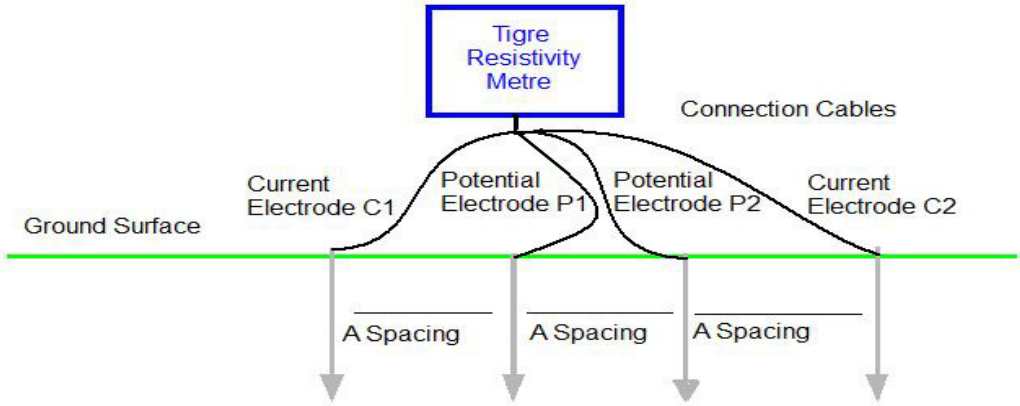
2.2 Measurements

Vertical Electrical Soundings were conducted at 9 locations across the site.

All measurements were acquired in accordance with Minerex Geophysics Ltd. procedures, protocols, QC procedures and in compliance with appropriate IEEE and British Standards. The relevant IEEE standards are 81-1983 part 1 – Guide to Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of Ground Systems (ANSI/IEEE Std 81-1983) for the resistivity testing (IEEE 1983).

The Vertical Electrical Sounding (VES) was conducted using a Tigre Resistivity Meter with variable current input, a suite of four cables and four stainless steel electrodes. This 'four probe array' is called a **Wenner Array** as the spacing (A) between the four electrodes was the same for each measurement. At each electrode spacing, the test resistance in Ohms (Ω) was recorded in a detailed field sheet for later office-based computing of ground resistivities.

Figure 1: Resistivity Testing using the Wenner Array.



2.3 Testing Equipment

All equipment used was portable and intrinsically safe. The method is non-destructive and non-intrusive. Only low voltage power requirements of 12V or less were needed on site and were supplied by batteries. The following equipment was used:

- An ALLIED Tigre Resistivity Meter
- A suite of cables with 4 reels and distance marks for resistivity readings
- Stainless Steel Electrodes
- Measuring tapes
- Handheld GPS

Equipment checks and QC procedures were applied prior to the commencement of data acquisition.

2.4 Site Work

The data acquisition was carried out on the 9th and 10th of August 2023 in good weather conditions. Health and safety standards were adhered to at all times.

3. RESULTS

The recorded test resistance in Ω allows for the calculation of the resistivity value in Ωm for each individual electrode spacing.

The resistivity at a given electrode spacing was calculated using the following formula:

$\rho = 2^{*}\pi * A * R$

Where:

ρ = Resistivity in Ωm

π = Pi = 3.141592

A = electrode spacing in m

R = Measured Resistance value in Ω

The survey results with electrode spacing, resistances and resistivities are displayed in Table 1. Where the physical space was too short for the long VES lines the reason is stated in Table 1.

The resistivity values recorded at given electrode spacing can be allocated to approximate depth values. For the Wenner array, the average resistivity taken at a particular A-spacing is equal to the average resistivity for a depth range between the ground surface and the A-spacing. Therefore, the average resistivity value recorded in the last column of Table 1 corresponds to the depth range between 0m bgl and the value in the first column. The depth mentioned in this report is given for visualisation purpose but may change when using the resistivity values in the design of the earthing system.

4. REFERENCES

1. **IEEE, 1983.** ANSI/IEEE Std. 83-1983. IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potential of a Ground System. The Institute of Electrical and Electronics Engineers Inc.

Table 1: Ground Resistivity Testing Results

Location/Name:	Direction:	ITM Coordinates East:	ITM Coordinates North:	Date:	Instrument:
VES 3	**SW-NE**	**649596**	**738148**	**09/10/2023**	**Tigre**
Wenner Electrode Spacing a (m)	Inner Electrode P Distance to Centre (m)	Outer Electrode C Distance to Centre (m)	Total Distance (m)	Measured Resistance (Ohm)	Apparent Resistivity (Ohm*m)
0.3	0.15	0.45	0.9	43.06	81
0.5	0.25	0.75	1.5	24.9	78
0.7	0.35	1.05	2.1	22.08	97
1	0.5	1.5	3	17.24	108
2	1	3	6	8.763	110
3	1.5	4.5	9	5.869	111
4	2	6	12	4.578	115
5	2.5	7.5	15	3.923	123
7	3.5	10.5	21	2.874	126
10	5	15	30	1.986	125
15	7.5	22.5	45	1.452	137
20	10	30	60	1.089	137
30	15	45	90	0.715	135
40	20	60	120	0.573	144
50	25	75	150	0.53	166
60	30	90	180	0.589	222
70	35	105	210	0.483	212
80	40	120	240	0.436	219
100	50	150	300	0.373	234

Minerex
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CLIENT	Irish Drilling Ltd. South Site
PROJECT	Derrygreenagh Thermal Power Plant Ground Electrical Resistivity Survey
TITLE	Map 1: VES Wenner Survey Location Map

SCALE:	1:1000 @ A3
PROJECT:	6695
DRAWN:	JS
DATE:	31/10/2023
MGX FILE:	6695b_Drawings.dwg
STATUS:	Final

Ground Electrical Resistivity Location:

VES1 — Location1 with Cable Layout and Center Point

Locations are in Irish Transverse Mercator (ITM)

Appendix 5
GPR Survey

GPR-Utility Surveys | Chartered Geophysicists

SURVEY REPORT

GPR-UTILITY SURVEY

At

Bord Na Mona Facility

Derrygreenagh, Co.Offaly

for

Irish Drilling Ltd.

July 2023

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PRIVATE AND CONFIDENTIAL

THIS REPORT IS THE RESULT OF A GEOPHYSICAL SURVEY USING NON-INVASIVE ELECTROMAGNETIC/ GROUND PENETRATING RADAR SURVEY TECHNIQUES CARRIED OUT AT THE GROUND SURFACE. INTERPRETATIONS CONTAINED IN THIS REPORT ARE DERIVED FROM KNOWLEDGE OF THE GROUND CONDITIONS, THE GEOPHYSICAL RESPONSE OF THE SUBSURFACE AND THE EXPERIENCE OF THE AUTHOR. SCANTECH GEOSCIENCE LIMITED HAS PREPARED THIS REPORT IN LINE WITH BEST CURRENT PRACTICE AND WITH ALL REASONABLE SKILL, CARE AND DILIGENCE IN CONSIDERATION OF THE LIMITS IMPOSED BY THE SURVEY TECHNIQUE USED AND THE RESOURCES DEVOTED TO IT BY AGREEMENT WITH THE CLIENT. THE INTERPRETATIVE BASIS OF THE INFORMATION CONTAINED IN THIS REPORT SHOULD BE TAKEN INTO ACCOUNT IN ANY FUTURE USE OF THIS REPORT. WHILE THIS REPORT IS PRESENTED IN GOOD FAITH AND WITH PROFESSIONAL INTEGRITY, SCANTECH GEOSCIENCE LIMITED GIVES NO WARRANTY AS TO THE ACCURACY OF THE INTERPRETATIONS AND ASSUMES NO LIABILITY FOR HOW THIS REPORT IS UTILISED.

Author	Checked	Report Version	Date
Ronan Gaffney, BSc Surv	Declan Timlin, BSc Surv	1.0	July 18th, 2023

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1 Executive Summary

- Scantech Geoscience was requested by Irish Drilling Ltd. to carry out a GPR-Utility survey at a Bord Na Mona facility at Derrygreenagh, Co. Offaly.

- The objective of the survey was to map the location of underground services within the survey areas.

- The GPR-Utility survey results have been presented in the final AutoCAD drawing file associated with this report.

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2 Survey Acquisition

2.1 Objectives

The objective of the survey was to map the location of underground services at Bord Na Mona facility at Derrygreenagh, Co. Offaly.

2.2 Survey Area, Site Conditions and Survey Comments

Figure 1. The survey area.

Survey Conditions/Comments:

The survey area mainly consisted of asphalt roads, concrete hard standing, paths and grassed areas. Most areas were generally accessible. Some areas had some traffic.

Water: Scantech have identified water from manhole/hydrant/SV information together with GPR data. Water record location has also been shown where GPR was unable to locate possible location of water service according to the record information. Small feeds off main lines to buildings have not been located.

Gas: Gas was not identified on site.

Telecoms: A consistent signal was picked up while carrying out a power and radio sweep to the west of the site and we believe this to be a Telecom feed to the facility.

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Other Telecoms: No other Telecoms information was collected.

Power: Scantech have identified Power from manhole/Mini Pillar and Substation information together with GPR data. Opened accessible manholes were logged, clamped and traced. A power sweep was carried out across the site to locate power lines. Where a record power line could not be verified on site using EML or GPR, the possible location of the power has been shown as per the record drawing.

Foul/Storm: Scantech have identified Drainage from manhole information together with GPR data. Opened accessible manholes were logged and photographed. Where possible, they were linked through sound-link and traced with sondes.

Traffic: No Traffic information was collected.

Fibre Optic: No Fibre Optic information was collected.

General: Scantech have also shown some Unknown Services which were picked up using the GPR equipment. The Unknown Services are represented on the drawing with an Orange coloured line.

2.3 Survey Crew

The fieldwork crew was as follows:

Name	Role	
Brice Le Comte	Lead Surveyor	Manhole Surveys & GPR Acquisition
Pat Judge	Surveyor	Manhole Surveys & EML
Ellen Lavelle	Surveyor	Manhole Surveys & GPR Acquisition
Andrew Whyte	Surveyor	Manhole Surveys & GPS Surveying

2.4 Survey Type, Methodology and Limitations

The main survey areas were carried out to a Category B survey (PAS 128:2014 Specification for underground Utility detection, verification and Location, BSI 2014)

Survey was carried out in April 2023.

2.4.1 Existing Data Review

Scantech requested existing services information from Utility providers.

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2.4.2 EM Location Survey

Electromagnetic location (EML) surveying was carried out using Radiodetection RD8100 EM passive and active radio frequency transmitters and receivers. This method is used to detect metallic/conducting utilities e.g., power, telecoms, metallic services.

The absence of CAT signal response is not conclusive proof of the absence of cables in the ground.

2.4.3 Manhole Survey

Visible manholes and access chambers on-site were inspected and surveyed. This involved opening each lid where possible and recording all relevant information; utility type, size, material, direction, invert levels etc. Manholes were not entered.

2.4.4 GPR Geophysical Survey

Ground Penetrating Radar is a geophysical technique used by geophysicists to image the subsurface. A high frequency electromagnetic pulse is transmitted into the ground. The pulse is reflected at the boundaries between materials of different dielectric permittivity and the receiver records the returned energy. Combining the impulse response traces along a profile allows the geophysicist to build up a 2D or 3D geophysical image of the subsurface (radargram). Careful data analysis and interpretation is required for GPR application.

The survey was carried out using Mala Ground Explorer ground penetrating radar (GPR) antenna system with central frequency of 450MHz.

GPR profiles were recorded in the survey area. Profiles were acquired in orthogonal directions within the survey area. All GPR data was recorded and saved for off-site post processing. GPR recording times ranging from 0 to 90 nanoseconds were used.

GPR is effective in resolving sub surface utilities, but its effectiveness is reduced by the presence of highly conductive materials e.g. wet clay/soil, reinforced concrete. Clay or plastic material pipes in wet or clay rich soil are unlikely to be identified. Pipes of diameter less than 100mm are difficult to identify. The absence of features on the recorded GPR data is not conclusive proof of the absence of these features as they may lie outside the range or resolution of the GPR signal lie between GPR profiles or masked by shallower services or poor ground conditions. We therefore cannot accept liability for damage caused to utilities not identified by GPR survey.

2.4.5 Site Mark-up

Utilities were marked on the ground to indicate the utility location based on the detected signal return in the field. The survey area was marked using non-permanent spray paint and chalk.

2.5 Base Map and Survey Location Mapping

A base AutoCAD topographical map was not provided.

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The survey equipment used was a GQM8 RTK GPS receiver with K8 Field Controller. This equipment was also used to survey all utility ground marks and GPR profiles.

3 Data processing

3.1 Off-Site GPR Analysis

All GPR data was processed and interpreted in the office. Off-site GPR analysis, also referred to as post-processing, involves applying a range of mathematical filters to the data to improve the signal to noise ratio which facilitates effective interpretation. It also involves velocity analysis for depth conversions, see 3.3 below. The quality of the data processing and interpretation is directly dependent on the qualification of the personnel involved and their experience.

3.2 GPR Data Processing

Data processing included the following steps;

a.) DC adjustment
b.) Time-zero adjustment
c.) 2D spatial filtering
d.) Amplitude correction
e.) Predictive deconvolution
f.) Bandpass filtering
g.) Background removal
h.) F-K Migration

The GPR profiles were then processed using time varying gain functions to improve the target signal to noise ratio. This process aids interpretation of the enhanced GPR signatures.

3.3 GPR Depth Calibration

The speed of a radar wave through the subsurface will vary depending on the type of material it travels through. Velocities can be highly variable and depend strongly on the clay and water content of the subsurface.

In order to determine the depth to a GPR anomaly, the recorded two way travel times must be converted to depth using an accurate estimate of the average subsurface velocity.

The velocity ranges for the survey were determined using a combination of direct calibration (from manholes) and hyperbolic curve fitting algorithms applied to radargrams with reflection signatures which indicated different ground conditions.

A direct velocity calibration was carried out on site. All GPR profiles acquired during the survey was converted from travel time to depth using velocities ranging between 90 cm/ns and 100 cm/ns.

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To convert the measured two way time to depth, the following formula is used:

Depth [m] = Velocity [cm/ns] * Two-Way-Time [ns] * 0.005

The depth values presented should be checked and revised once additional trial pit or other excavation information within the enclosed site becomes available. The effective depth of penetration varied across the site and ranged from 0.2 m to 2.2 m bgl.

4 Data interpretation

4.1 GPR Data Interpretation

Interpretation of GPR data involves the identification and characterisation of anomalies with respect to amplitude, frequency, phase, position, depth, geometry and coherency. Anomalies with similar attributes are interpolated across profiles. These linear features can then be constrained by manhole information or other ground truthing.

GPR anomalies consistent with known services were identified in the specific Utility layer.

GPR anomalies consistent with unknown possible services were identified and these have been shown on survey drawing in orange as ‘unknown services’.

Some isolated GPR anomalies were identified and these have been shown as drawing as Unknown GPR anomolies.

4.2 Data Merge/Quality Control

Information from all sources (GPR, EML, Manholes) were correlated and merged onto the final drawing.

4.3 Metadata and Drawing File Nomenclature

The final survey drawings are called SCT-23123_Derrygreenagh-01_01 to SCT-23123_Derrygreenagh-01_09 and contain layers as listed below.

Utility Type	Line Colour
Foul Sewer	Green
Cable TV	Purple
Telecom - Eircom	Magenta
Water	Blue
Power	Red
Unknown Service	Orange
Fibre Optic	Blue/Green

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Alternate Telecom	Pink
Combined Sewer	Brown
Storm Sewer	Cyan
Gas	Yellow

Notes:

- Unknowns are linear GPR anomalies identified across some GPR profiles but of unknown source.
- R denotes sections of services that have been taken from record.
- UTT denotes services that we have been “Unable to Trace” usually due to blockages or poor signal quality.
- UTO denotes services lids that we have been “Unable to Open”.

5 Conclusions & Recommendations

A GPR-Utility survey was carried out at a Bord Na Mona facility at Derrygreenagh, Co. Offaly. The objective of the survey was to map the location of underground services within the survey area. The survey has achieved this principle objective as shown on the survey drawings together with this associated survey report. Scantech reserves the right to revise the interpretation if additional relevant information is provided.

Respectfully submitted,

Ronan Gaffney, BSc. Surv.

_____

Scantech Geoscience Ltd.

Enterprise Centre

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Appendix 6
CPT Records

IN SITU
SITE INVESTIGATION

STATIC CONE PENETRATION TEST

FACTUAL REPORT

CLIENT: Irish Drilling Limited

PROJECT: Derrygreenagh Power

Project	**Derrygreenagh Power**
Project No.	**1230267**
Client	**Irish Drilling Limited**

Attention: Mr Ronan Killeen

Dear Mr Killeen,

We have pleasure in providing a digital copy of our report and data in AGS format for the above project.

We hope that you are satisfied with the performance of our staff, equipment and reporting on this project. If you should have any queries about any aspect of the works carried out, please do not hesitate to contact us. We look forward to being of service to you in the future.

Yours faithfully,

In Situ Site Investigation Limited

Darren Ward

Director

Report Issue

Issue	Date	Prepared	Sign	Checked	Sign	Approved	Sign
01	03/07/2023	Chloe Donovan		Darren Ward		Darren Ward	

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1.0 INTRODUCTION

In Situ Site Investigation Limited (In Situ) was engaged in a geotechnical site investigation at Derrygreenagh Power at the request of Irish Drilling Ltd. The site investigation consisted of completing 18 Static Piezocone Penetration Tests (CPTU), to provide information on the soil conditions and derived geotechnical parameters at:

Derrygreenagh Power
County Offaly

All test locations were provided by the client. A site map is included in the end of Appendix A of this report (if provided by the client). The tests were stopped when they reached the target depth as per the client's technical specifications or for other technical reasons, as detailed in the *Project Summary Table* in *Appendix A.1* and on each CPTU log included in Appendix B of this report.

The fieldwork was carried out from 20th June 2023 to 21st June 2023 as per the client's request.

The work on site and the final factual reporting have been undertaken in accordance with the international technical standard *ISO 22476-1:2022(E)*.

2.0 FIELDWORK

2.1 CONE PENETRATION TESTS

The fieldwork activity is summarised in Table 2.1.

Table 2.1 Fieldwork Summary	
CPT Operator/s	Roger Shepherd
Date Started	20th June 2023
Date Finished	21st June 2023
In Situ S.I. Project Manager	Darren Ward
Main Contractor's Site Manager	Maurice Murray

2.1.1 Rig Information

Details of CPTU rig used in this project are shown in Table 2.2. Full data sheet for the rig is presented in *Appendix A.2*.

Table 2.2 Rig Summary	
Rig Name	**Rig Description**
CPT017	20 Tonne Track Mounted CPT Rig

2.1.2 CPTU Cone

Details of electric CPTU cone (Type TE2) used in this project conforming to the requirements of Application Class 2 of *ISO 22476-1:2022*, are shown in Table 2.3.

Table 2.3 Cone Summary		
Number	**Cross-section area**	**Filter position**
S15-CFIP.2175	15cm^2	u_2

A full datasheet of the cone used is shown in *Appendix A.3*.

The cone's measured parameters are shown in Table 2.4.

Table 2.4 Completed Fieldwork Summary
18 CPTU to a maximum depth of 17.01m. Each test measured Cone Resistance, q_c, Sleeve Friction, f_s, Porewater Pressure in the shoulder position, u_2, Inclination in X and Y axes.
Provision of factual report with estimated soil type, derived geotechnical parameters & AGS data file.

2.1.3 CPTU Cone Calibration

The cone resistance and sleeve friction are recorded by calibrated load cells in the cone. The CPTU load cells and pressure transducers are regularly calibrated in line with *ISO 22476-1:2022(E)* standard by the cone manufacturer. The cone calibration certificate for the cone used at this site are presented in *Appendix A.4*.

2.1.4 CPTU Cone Saturation

The pore water pressure is recorded using a calibrated pressure transducer located in the piezocone. To ensure pore water pressure measurements are not affected by the presence of air in the measuring transducer, a de-airing procedure is carried out prior to each test. The cone and filter are saturated using a glycerine fluid with a viscosity of 10,000 CST.

2.1.5 Test Procedure

The tests are carried out in accordance with the *International Standard for Electrical Cone and Piezocone Penetration Test ISO 22476-1:2022(E)*.

The final depths of the tests were determined by either completion to the specified test depth or when the maximal safe capacity of the equipment was reached. A schedule of the tests performed is shown in *Appendix A.1*, which has been compiled from the operators' daily progress reports.

The data is transmitted from the digital CPTU through an umbilical cable that runs through the push rods to the data acquisition system. Results are displayed instantaneously on the computer logging screen. The results are recorded on the computer hard disc.

The rate of penetration is kept constant at 20 mm/s ± 5 mm/s except when penetrating very dense or hard strata. Before each test is carried out zero values are taken of the cone to check if it is within calibration. At the end of each test, zero values are taken again to see if there has been any drift during the test. These values are inspected during the post processing stage. This is a quality check on the data and the testing procedure. Individual test zero values are shown on their corresponding test results in *Appendix B*.

2.1.6 In Situ Pore Pressure (u_0)

The in situ or hydrostatic pore pressure is required for the calculation of several derived parameters included in this report. For this report, the groundwater level is assumed at 0.5m below ground surface, for calculation purposes. The in situ pore pressure, u_0 values are presented on the pore pressure plot, on *CPT Log 01,* which is included in *Appendix B*.

2.2 POSITIONING

Positioning and surveying of all investigated locations was the responsibility of the client. The site map and position of the tests are presented in Appendix A.9. All tests coordinates are included in the summary sheet in Appendix A.1.

3.0 CONE PENETRATION MEASURED PARAMETERS

All measured parameters of tests carried with the CPTU cone are shown in *Appendix B* and all the information about data processing and results are given in sections *3.1*, *3.2* and *3.3*.

3.1 DATA PROCESSING

The measured parameters, cone end resistance, q_c, sleeve friction, f_s, porewater pressure measurements with filter in shoulder position, u_2 and inclination for *x* and *y* axis, I_x, I_y, were recorded for every *10 mm* of penetration keeping a constant speed of *20 mm/s ± 5 mm/s*, which may slightly change when the cone is penetrating hard strata.

The measured data from the site works is processed and presented using specialised CPT software. The interpretations on the CPTU results were carried out following the recommendations of *ISO 22476-1:2022(E)*, *Lunne et al. (1997)* and *Robertson (2015)*. Measured parameters, mentioned in *Sections 3.2* and *3.3*, were used to derive all the geotechnical parameters, which are presented in *Chapter 4.0*. The soil behaviour type method used on this report is *Robertson et al. (1986)*, shown in *Figure 3.2*.

3.1.1 Zero Measurements

Before and after each CPTU test, zero measurements are recorded for each channel of the cone. The zero measurements are presented on the logs in *Appendix B*. This is a routine quality check carried out on site.

3.2 MEASURED PARAMETERS

3.2.1 Cone Resistance (q_c)

Cone resistance, q_c, is measured as the total force acting on the cone, divided by the projected area of the cone. The results are presented in *MPa*, on *CPT Log 01*, in *Appendix B*, scale *0-20 MPa* with a minor scale printing on the same graph at *0-4 MPa*.

3.2.2 Sleeve Friction (f_s)

Sleeve friction, f_s, is measured as the total frictional force acting on the friction sleeve divided by its surface area. The results are presented in *kPa*, on *CPT Log 01*, in *Appendix B*, using a scale of *0-500 kPa*.

3.2.3 Porewater pressure (u_2)

The pore pressure, u_2, is measured during the test. If the material is free draining and saturation is maintained it will normally measure hydrostatic pore pressure. In materials that are not free draining, it will record the total pore pressure (hydrostatic plus any excess pore pressures generated) created by the cone penetration through this material.

The filter element can be mounted in one of three positions. For all tests carried out in this project the filter was mounted in the u_2 position (see *Figure 3.1*).

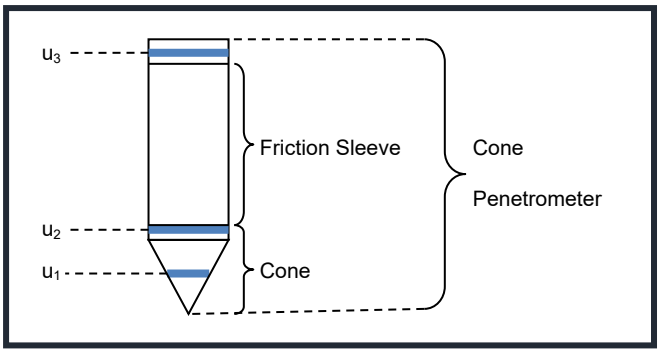

Figure 3.1: *Diagram showing pore pressure filter locations (after Lunne et al., 1997)*

3.2.4 Inclination (I_x, I_y)

The CPT rig was set up to obtain a thrust direction as near as possible to vertical. The CPTU cones have inclinometers incorporated to measure the non-verticality of the test. For test depths less than *15 m*, significant non-verticality is unusual, provided the initial thrust direction is vertical.

3.3 ESTIMATED SOIL BEHAVIOUR TYPE

3.3.1 Friction Ratio (R_f)

The friction ratio, R_f is the ratio between the sleeve friction and the cone resistance (Lunne *et al.,* 1997).

$$Fricton\ Ratio\ (R_f) = \left(\frac{Sleeve\ Friction\ (f_s)}{Cone\ Resistance\ (q_c)}\right) \times 100$$

3.3.2 Estimated Soil Behaviour Type (SBT)

The estimation of soil behaviour type, *SBT*, using measurements of cone resistance and sleeve friction is based upon the variations of the friction ratio and cone resistance. The friction

ratio varies depending upon whether the soil is cohesive or granular. The cone resistance varies depending on the strength and densities of the soil.

The interpretation used in this report is *Robertson et al. (1986)*, which is shown in Figure 3.2. The results are presented on *CPT Log 01*, in *Appendix B*.

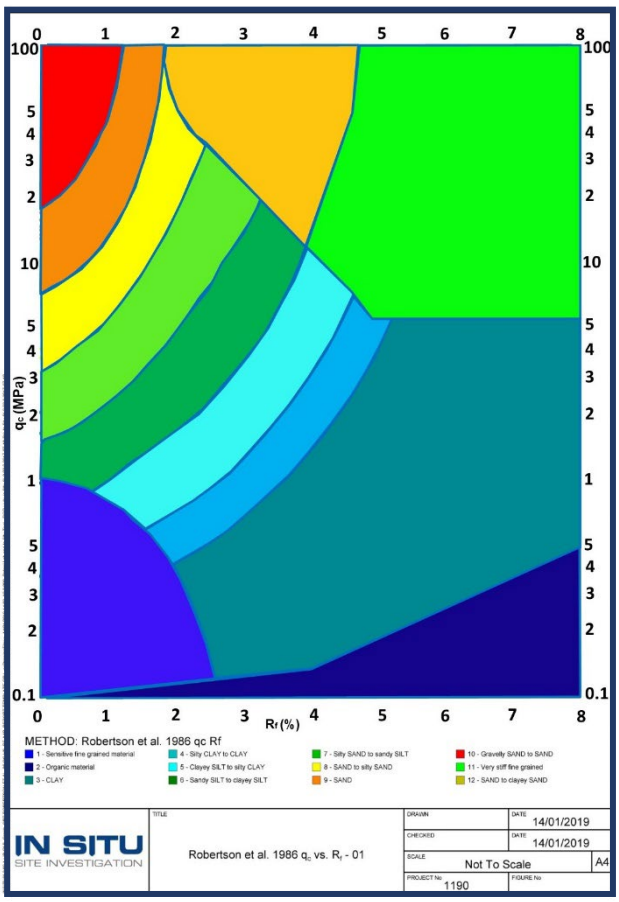

Figure 3.2: *Robertson et al., 1986 soil behaviour type chart.*

3.3.3 Pore Pressure Ratio (B_q)

Pore pressure ratio, B_q is the ratio between the measured pore pressure generated during penetration and the corrected cone resistance minus the total overburden stress.

Pore pressure ratio as defined by *Senneset and Janbu (1985)* is defined as:

$$B_q = \frac{u_2 - u_0}{q_t - \sigma_{vo}}$$

where

u_2	is pore pressure measured between the cone and the friction sleeve
u_0	is equilibrium pore pressure
σ_{vo}	is total overburden stress
q_t	is cone resistance corrected for unequal end area effects

3.4 APPLIED CORRECTIONS

3.4.1 Corrected Cone Resistance (q_t)

For each penetration test, the measured cone resistance, q_c, can be corrected for the ''unequal area effect'' due to the influence of the ambient pore water pressure acting on the cone.

The correction has been applied using the following equation by Lunne et *al.,* 1997:

$$q_t = q_c + [u_2.(1 - \alpha)]$$

where

α is the cone area ratio

The cone area ratio used for this project is stated on both the cone calibration certificate and the data footer. This value is geometrically measured.

3.4.2 Depth Correction

All tests in the report have been corrected for depth difference caused by inclination. This has been calculated using the method described in *ISO 22476-1:2022*.

To calculate the corrected depth the following formula is used:

$$z = \int_0^l C_{inc} \cdot dl$$

where

z is penetration depth, in *m*

l is penetration length, in *m*

C_{inc} is correction factor for the effect of the inclination of the CPTU relative to the vertical axis.

The equation for calculating the correction factor for the influence of the inclination for a bi-axial inclinometer is:

$$C_{inc} = \frac{1}{\sqrt{(1 + tan^2\beta_1 + tan^2\beta_2}}$$

where

β_1 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees

β_2 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees

4.0 GEOTECHNICAL DERIVED PARAMETERS

A number of empirical correlations can be used to derive geotechnical parameters from CPTU data. This report includes only the parameters which are described in this chapter. The results of all correlations used to obtain the geotechnical derived parameters are presented on *CPT Log 02* and *CPT Log 03* in *Appendix B*.

Please, note that each empirical correlation is derived for a certain type of soil, and may not be appropriate for all the soil types encountered on this project.

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c)

The soil behaviour type index, I_c, was derived by *Jefferies and Davies (1991)*, and was created to simplify the application of CPTU SBT chart shown in *Chapter 3*, *Figure 3.2*. This approach has been modified for use with the *Robertson (1990)* normalised CPT soil classification chart, *Figure 4.1*. The normalised cone parameters Q_t and F_r (for definitions see *Appendix A5* Symbol List) can be combined into one Soil Behaviour Type Index, I_c, *(Lunne et al., 1997)*.

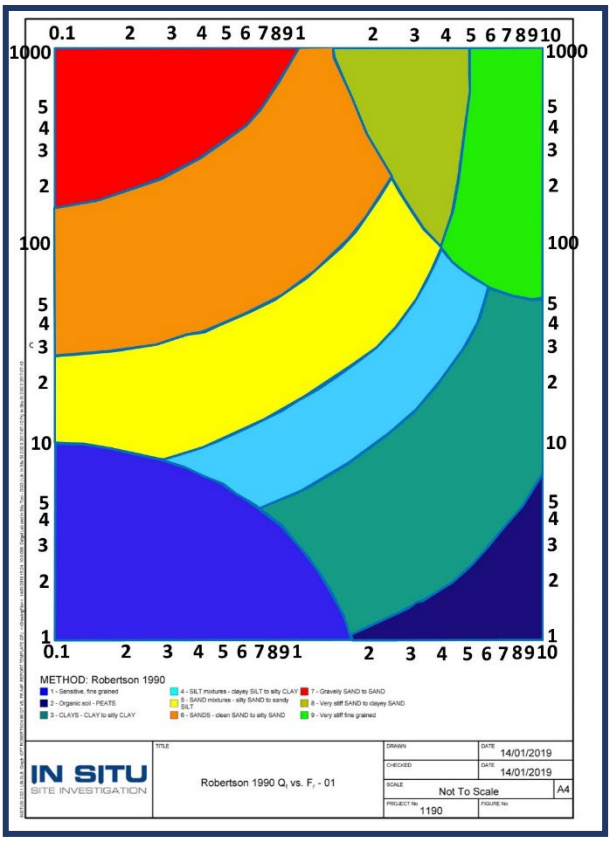

Figure 4.1: *Robertson 1990 soil behaviour type chart.*

The soil behaviour type index, I_c, can then be defined using *Robertson (2010)* formula, given below:

$$I_c = ((3.47 - logQ_t)^2 + (logF_r + 1.22)^2)^{0.5}$$

where

Q_t is the normalized cone resistance which represents the simple normalization with a stress exponent (n) of *1.0*, which applies well to clay-like soils

F_R is the normalized friction ratio, in *%*

The boundaries of soil behaviour type are then given in terms of the index, I_c, presented in *Table 4.1* below.

The soils behaviour type index does not apply to zones *1*, *8* and *9*. The profiles of I_c provide a simple guide to the continuous variation of soil behaviour type in a given soil profile based on CPTU results, with a reliability greater than *80%* compared with soil samples *(Robertson, 2015).*

Zone	Soil Behaviour Type	I_c
1	Sensitive fine grained	N/A
2	Organic Soils – clay	>3.6
3	Clays – silty clay to clay	2.95 – 3.6
4	Silt mixtures – clayey silt to silty clay	2.60 – 2.95
5	Sand mixtures – silty sand to sandy silt	2.05 – 2.6
6	Sands – clean sand to silty sand	1.31 – 2.05
7	Gravelly sand to dense sand	<1.31
8	Very stiff sand to clayey sand*	N/A
9	Very stiff fine grained *	N/A

** Heavily over consolidated or cemented*

Table 4.1: *Normalized CPTU Soil Behaviour Type (SBT_n) Index values, I_c.(Robertson, 2010)*

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60})

The derived *N* value of *SPT*, N_{60}, is strongly and directly related to the cone resistance, q_c.

In this report the N_{60} value is derived using the following correlations, developed by *Robertson and Wride (1998)*, *Jefferies and Davies (1998)* and Robertson (2012):

1) *Robertson & Wride (1998)*

$$N_{60} = \frac{q_c}{8.5 \cdot p_a \left(1 - \frac{I_C}{4.6}\right)}$$

2) *Jefferies and Davies (1993)*

$$N_{60} = \frac{q_c}{0.85 \cdot \left(1 - \frac{I_C}{4.75}\right)}$$

3) *Robertson (2012)*

$$N_{60} = \frac{\frac{q_c}{p_a}}{10^{1.1268 - 0.2817 I_C}}$$

where

q_c	is the cone resistance
p_a	is the atmospheric pressure equal to *100 kPa*
I_c	is the soil behaviour type index calculated as given in *section 4.1*

It is suggested that these methods provide a better estimation of the N_{60} value than the actual measured *N*, due to the poor repeatability of SPT test. However, in fine grained soil with high sensitivity these methods may overestimate N_{60} *(Jefferies and Davies, 1991).* The third method suggested by *Robertson (2012)* provides improved estimates of N_{60} for insensitive clays.

4.3 RELATIVE DENSITY (D_r)

Relative density, D_r, is an intermediate parameter for coarse grained soils, widely used to describe sand deposits. All the research on deriving the relative density from CPTU tests results are carried out for ***clean predominantly quartz sands***. The studies have shown that CPTU resistance in granular soils is controlled by sand relative density, in situ effective stresses and compressibility. The more compressible sands tend to give lower penetration resistance for a given relative density then less compressible sands.

In this report relative density is calculated using the methods suggested by *Baldi et al., (1986)*, *Jamiolkowski et al., (2001)* and *Kulhawy and Mayne (1990)* as shown in the equations below:

1) Baldi et al., (1986)

$$D_r = \frac{1}{C_2} \cdot ln\left(\frac{q_c \cdot Wehr}{C_1 \cdot (\sigma'_{v0})^{0.55}}\right) \cdot 100$$

where

C_1 is a consolidation coefficient which is *157* for normally consolidated soils and *181* for over consolidated soils

C_2 is a consolidation coefficient which is *2.41* for normally consolidated soils and *2.46* for over consolidated soils

Wehr is a correction coefficient for calcareous soils

2) Jamiolkowski et al., (2001)

$$D_r = 100 \cdot \left[0.268 \cdot ln\left(\frac{q_t/\sigma_{atm}}{\sqrt{\sigma'_{v0}/\sigma_{atm}}}\right) + C_1\right]$$

where

C_1 is a compressibility coefficient which is *-0.675* for average compressible soils, *≤1.0* for high compressible soils and carbonate or calcareous sands and *≥-2.0* for low compressible soils

q_t is corrected cone resistance

σ_{atm} is the atmospheric pressure

3) Kulhawy and Mayne, (1990)

$$D_r = \left[\frac{q_{c1}}{305 \cdot C_1 \cdot OCR^{0.18} \cdot \left(1.2 + 0.05 \cdot log(t/100)\right)}\right]^{0.5} \cdot 100$$

where

q_{c1} is the cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{c1} = \frac{q_c}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

C_1 is a compressibility coefficient which is *-0.91* for low compressible sands, *1.0* for medium compressible sands and *1.09* for high compressible sands

t is time in years

4.4 FRICTION ANGLE (φ')

Friction angle, *φ*', is used to express the shear strength of uncemented, coarse grained soils. In this report friction angle is derived by the correlations of *Mayne and Campanella (2005)*, *Robertson and Campanella (1983)* and *Kulhawy and Mayne (1990)*.

1) Mayne and Campanella, (2005)

$$\varphi' = 29.5^0 \cdot B_q^{0.121} \cdot \left[0.256 + 0.336 \cdot B_q + logQ_t\right]$$

where

B_q is the pore pressure ratio, calculated as in Session 3.3

Q_t is the normalized cone resistance

2) Robertson and Campanella, (1983)

$$\varphi' = \tan^{-1}\left(0.1 + 0.38 \cdot log\left(\frac{q_t}{\sigma'_{v0}}\right)\right)$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

3) Kulhawy and Mayne, (1990)

$$\varphi' = 17.6^0 + 11.0^0 \cdot log(q_{t1})$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

The method suggested by *Mayne and Campanella (2005)* will not provide reliable results for heavily over consolidated soils, fissured geomaterials and highly cemented or structures clays. This approach gives reliable results when pore pressure is positive and varies $0.1 < B_q < 1.0$. The correlation suggested by *Robertson and Campanella (1983)* estimates the peak friction angle for uncemented, unaged, moderately compressible, predominately quartz sands. For sands of higher compressibility, the method will tend to predict low friction angles. The method suggested by *Kulhawy and Mayne (1990)* is an alternate relationship for clean, rounded, uncemented, quartz sands.

4.5 FINES CONTENT (*FC*)

The fines content, *FC*, in this report is estimated using two different methods, one from *Robertson and Wride (1998)* and the other, *Suzuki et al. (1998)* as presented below:

1) Robertson and Wride (1998)

$$I_C < 1.26: FC = 0$$

$$1.26 \leq I_C \leq 3.5: FC(\%) = 1.75 I_C^{3.25} - 3.7$$

$$3.5 < I_C: \ FC = 100\%$$

2) Suzuki et al. (1998)

$$FC(\%) = 2.8 I_C^{2.6}$$

where

I_c is the soil behaviour type index, calculated as in section 4.1

4.6 UNDRAINED SHEAR STRENGTH (s_u)

Estimation of undrained shear strength, s_u, from CPTU tests using corrected cone resistance is carried out using the following correlation from *Lunne et al. (1981)*:

$$S_u = \frac{(q_t - \sigma_{v0})}{N_{kt}}$$

where

N_{kt} is the empirical cone factor, which varies from *10* (*6* for very soft sensitive fine grained soils) to *20*. In this report 3 values are considered: *15*, *17.5* and *20*. N_{kt} tends to increase with increasing plasticity and decrease with increasing soil sensitivity. It decreases as B_q increases. (*Lunne et al., 1997*)

σ_{vo} = total overburden stress.

This report only presents the undrained shear strength data on soils with soil behaviour type index, I_c values greater than *2.60*.

The value of undrained shear strength, s_u to be used in analysis depends on the design problem. In general, the simple shear in the direction of loading often represents the average undrained strength. For larger, moderate to high risk projects, where high quality field and laboratory data may be available, site specific correlations should be developed based on appropriate and reliable values of s_u.

4.7 SENSITIVITY (S_t)

The sensitivity, S_t of clays is defined as the ratio of undisturbed peak undrained shear strength to totally remoulded undrained shear strength.

In this report S_t is calculated using two correlations developed by *Schmertmann (1978)* and *Mayne (2007)*.

1) Schmertmann (1978)

$$S_t = \frac{s_u}{s_{u(rem)}} = \frac{q_t - \sigma_v}{N_{kt}} \left(\frac{1}{f_s}\right)$$

where

$s_{u(rem)}$ is the remoulded undrained shear strength. It can be assumed equal to the sleeve resistance, f_s.

2) Mayne (2007)

$$S_t = \frac{0.073 \cdot (q_t - \sigma_{v0})}{f_s}$$

For relatively sensitive clays, $S_t > 10$, the value of f_s can be very low and not very accurate, hence the estimate of sensitivity should be used as a guide only.

4.8 SOIL UNIT WEIGHT (γ)

Soil unit weight, γ in this report is calculated by using one method for sands, considered under dry conditions and two methods for clays, considered under saturated conditions. These relationships are developed by *Mayne (2007)* and the equations are presented below:

Dry unit weight for sands:

$$\gamma_{dry} = 1.89 \cdot log(q_{t1}) + 11.82$$

Saturated unit weight for clays method 1

$$\gamma_{sat} = 8.32 \cdot log(V_S) - 1.61 \cdot log(z)$$

Saturated unit for clays method 2

$$\gamma_{sat} = 2.60 \cdot log(f_s) + 15 \cdot G_s - 26.5$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula:

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

z is the depth

V_s is the shear wave velocity, calculated as $V_S = 118.8 \cdot log(f_s) + 18.5$

G_s is the specific gravity of solids, typically between *2.40* and *2.90*

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APPENDIX A

APPENDIX A1 – Project Summary Sheet

Piezocone Tests Summary Sheet

HOLE ID	Final Depth (m)	Date of Test	Cone Used	Test Remarks
CPT201	7.04	21/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT202	8.55	20/06/2023	S15-CFIP.2175	Test stopped due to buckling
CPT203	17.01	21/06/2023	S15-CFIP.2175	Test stopped due to buckling
CPT204	3.50	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT205	7.40	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT206	4.57	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT207	6.10	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT209	1.82	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT211	1.75	21/06/2023	S15-CFIP.2175	Test refused on inclination.
CPT211A	4.26	21/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT212	2.89	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT213	0.24	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT213A	1.18	20/06/2023	S15-CFIP.2175	Test refused on inclination.
CPT213B	1.30	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT216	1.52	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT217	4.62	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT218	2.51	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.
CPT219	4.19	20/06/2023	S15-CFIP.2175	Test refused on tip resistance.

Piezocone Test Coordinates

HOLE ID	Eastings	Northings
CPT201	649372.34	738411.92
CPT202	649497.16	738454.09
CPT203	649588.85	738470.97
CPT204	649370.35	738330.96
CPT205	649424.96	738387.46
CPT206	649305.32	738253.41
CPT207	649641.76	738293.38
CPT209	649665.74	738226.95
CPT211	649419.63	738168.54
CPT211A	649419.63	738168.54
CPT212	649349.21	738191.27
CPT213	649295.36	738124.93
CPT213A	649295.36	738124.93
CPT213B	649295.36	738124.93
CPT216	649477.73	738069.49
CPT217	649514.27	738131.05
CPT218	649615.44	738107.62
CPT219	649714.46	738144.61

APPENDIX A2 – CPT Rig Datasheet

RIGS

20 TONNE CPT TRACK MOUNTED RIG (CPT017)

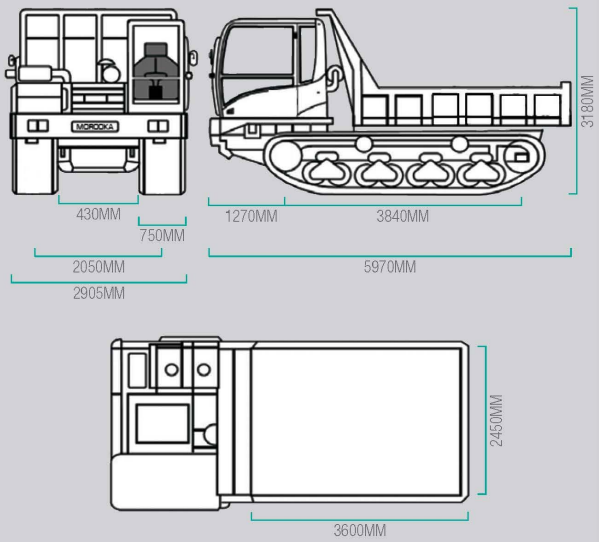
We have a variety of rigs giving us the capacity to meet our clients' needs and specifications for each individual project.

This rubber tracked rig weighs 20 tonnes and is able to push up to a depth of 40 metres, depending on the ground conditions. It has low ground bearing pressure and is ideal for soft, boggy sites which are inaccessible for our wheeled rigs.

CPT RIG DETAILS

DRIVE SYSTEM	RUBBER TRACKED
TOTAL WEIGHT	20 TONNES
GROUND BEARING PRESSURE	35kPA
CPT RAM THRUST CAPACITY	20 TONNES
MAXIMUM PENETRATION	30-40M DEPENDING ON THE GROUND CONDITIONS.
PERFORMANCE RATES	100-150M OF TESTING A DAY, DEPENDING ON ACCESS TO POSITIONS.
TYPICAL SITES FOR THIS RIG	SOFT, BOGGY SITES. THE RIG HAS LOW GROUND BEARING PRESSURE.

CPT RIG DIMENSIONS



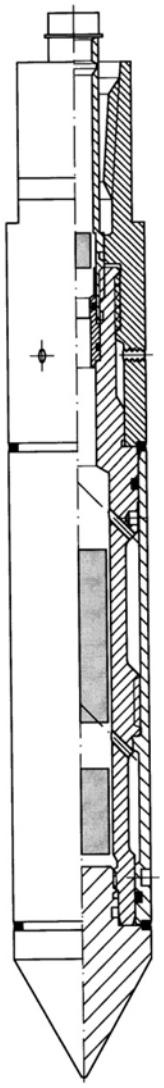
Shrewsbury

Heading North on our low loader

Falkirk, Scotland

APPENDIX A3 – Cone Datasheet

GeoPoint Systems bv
Rijksstraatweg 22F
2171 AL Sassenheim
Tel. : +31 71 301 92 51
Fax : +31 71 301 92 52
E-mail : info@geopoint.nl
ING bank : 68.23.01.396
Postbank : 5226758
BTW nr. : NL806331677B01



SPECIFICATIONS S15 SERIES ELECTRICAL CONES

The electronic subtraction cones have been developed to address the durability problems inherent in other cone designs. The unit consists of a single element temperature compensated strain gauge transducer for measuring both cone resistance and local sleeve friction. This design is therefore more robust than a compression type cone. The cone support electronics package is located directly behind the transducer. The precision strain gauge amplifiers and power supply eliminate the effects of cable resistance on the measurements. A standard subtraction cone is capable of measuring simultaneously the following channels: Tip, Local friction, Pore pressure, Temperature and Inclination.

GENERAL SPECIFICATIONS

Cone Tip Section Area	1,500 mm2
Friction Sleeve Surface	22,500 mm2
Total Length	325 mm
Weight	4200 g
Power Supply	± 15 VDC, 100 mA.
Output	0 – 10 VDC*
Working Temperature	0 - 60˚C
Storage Temperature	- 40 to + 85˚C
Connector	Lemo 10 pins (others on request)

TIP RESISTANCE

Range	100/150* kN
Accuracy	0.25 % FS
Maximum Load	150 % of range
Cone Area Ratio	0.75

LOCAL SLEEVE FRICTION

Range	100/150* kN
Accuracy	0.50 % FS
Maximum Load	150 %
Sleeve Area Ratio	1.0 (EA)

PORE PRESSURE

Range	1/2/5/10* MPa
Accuracy	0.5 % FS
Maximum Load	150 % of range

INCLINATION

Range	25 ˚ (biaxial)
Accuracy	< 2 ˚

All our equipment complies with the ISSMGE, ASTM, DIN and NEN Standards.

**Other output and voltage ranges available on request. Loadcells may be calibrated for lower ranges.*

APPENDIX A4 – Cone Calibration Certificate

Eijkelkamp GeoPoint
SoilSolutions

Rijkstraatweg 22F
2171 AL Sassenheim
The Netherlands

T +31 71 301 9251
E info@eijkelkamp-geopoint.com
I eijkelkamp-geopoint.com

Cone Calibration Certificate

Certificate:	**GS-2175-002**	
Instrument Type:	Electric Subtraction Cone	
Model:	S15-CFIIP	
Serial number:	2175	
Calibration date:	06-04-2023	
Client:	In Situ	
Calibrated by:	R.Wesselink	
Calibration instruments		
Manufacturer:	Hottinger Baldwin Messtechnik GmbH	
NMi certificate	2461165.00501	
Calibration conditions		
Ambient temperature:	21	°C
Atmospheric pressure:	1015	mBar
Cone specifications		
Cone base area:	1500	mm2
Load tip resistance (nom.):	100	kN
Friction sleeve area:	22500	mm2
Load tip + local friction (nom.):	100	kN
Load friction sleeve (nom.):	22.5	kN
Load pore pressure (nom.):	2	MPa
Inclination (nom.):	+/- 20	°
Temperature compensation (all channels):	0...+40	°C
Maximum overload capacity (all channels):	100	%
Cone area ratio (a):	0.79	
Max. Inaccuracy, relative to measurement value:	1.0	%

	Tip:		Sleeve:		Pore Pressure:		Inclinometer:		
	qc in kN	mV	fs in kN	mV	MPa	mV	Degrees	X (mV)	Y (mV)
Zero points:		0241		0237		0315			
	0	0	0	0	0	0	0	2395	2343
	5	0290	5	0298	0.4	1519	-20	0423	0442
	10	0580	10	0598	0.8	3026	20	4431	4270
	15	0868	15	0896	1.2	4532			
	20	1159	20	1197	1.6	6027			
	25	1449	25	1495	2	7525			
	30	1737	30	1794					
	35	2025	35	2093					
	40	2315	40	2391					
	45	2604	45	2690					
	50	2893	50	2988					
	75	4337	75	4480					
	100	5778	100	5969					

Max. eror, abs. qc:	35 kPa
Max. error, abs. fs:	5 kPa
Max. error, abs. u2:	10 kPa
Max. error, abs. I:	1 °

This calibration is compliant with Eijkelkamp GeoPoint SoilSolutions internal quality system, internal calibration procedures and meets the requirements of NEN2649, NEN-EN-ISO 22476-1, NORSOK G-001, ISSMFE and ASTM using calibration equipment traceable to (Inter-)National Standards.

Approved by: R. Mosterd
Date: 06-04-2023

Eijkelkamp GeoPoint SoilSolutions
V.A.T. NO. NL 8584.21.422.B01
Trade Reg. Arnhem no. 70686149

IBAN NL43 RABO 0326 7904 38
BIC: RABONL2U

APPENDIX A5 – Symbol List

English

a	is area ratio of the cone ($= {A_n}/{A_c}$)
A	is area
A_c	is projected area of the cone
A_n	is cross sectional area of load cell or shaft
A_s	is area of friction sleeve
A_{sb}	is bottom end area of friction sleeve
A_{st}	is top end area of friction sleeve
B_q	is pore pressure parameter ($= {(u_2 - u_0)}/{(q_t - \sigma_{v0})}$)
c_h	is horizontal coefficient of consolidation
c_v	is vertical coefficient of consolidation
D	is diameter
D_r	is relative density ($= \frac{e_{max} - e}{e_{max} - e_{min}} x100\%$)
e	is void ratio
e_{max}	is maximum void ratio
e_{min}	is minimum void ratio
E	is Young's modulus
f_s	is unit sleeve friction resistance
f_t	is sleeve friction corrected for pore pressure effects
F_s	is total force acting on friction sleeve
F_R	is normalized friction ratio ($= {f_s}/{(q_t - \sigma_{v0})}$)
FoS	is factor of safety
FC	is fines content
g	is acceleration due to gravity
G_0	is initial or maximum shear modulus, shear stiffness
I_c	is soil behavior type index
I_r	is rigidity index ($= {G}/{s_u}$)
I_p	is plasticity index
k	is coefficient of permeability
k_h	is coefficient of permeability in horizontal direction
k_v	is coefficient of permeability in vertical direction
K_0	is coefficient of earth pressure at rest ($= {\sigma'_{h0}}/{\sigma'_{v0}}$)
L	is length
m_v	is coefficient of volume change
M	is constrained deformation modulus
M7.5	is earthquake magnitude of 7.5 Richter scale
N	is number of blows of SPT
N_{60}	is SPT energy ratio
N_k	is cone factor
N_{ke}	is cone factor
N_{kt}	is cone factor
$N_{\Delta u}$	is cone factor
p_a	is reference stress ($= 100\ kPa$)
q_c	is measured cone resistance
q_e	is effective cone resistance ($= q_t - u_2$)
q_n	is net cone resistance ($= q_t - \sigma_{v0}$)
q_t	is corrected cone resistance ($= q_c - (1 - a)u_2$)
Q_c	is total force acting on the cone
Q_t	is normalized cone resistance ($= {q_t - \sigma_{v0}}/{\sigma'_{v0}}$)

R_f	is friction ratio ($= \left({f_t}/{q_t}\right) x100\%$ or alternatively $= \left({f_t}/{q_t}\right) x100\%$)
s_u	is undrained shear strength
s_{ur}	is remoulded undrained shear strength
S_t	is sensitivity
t	is time
t_{50}	is time for 50% dissipation of excess pore water pressure
T_{50}	is time factor at $U = 50\ \%$
u	is pore water pressure
u_0	is in situ pore pressure
u_1	is pore pressure measured on the cone
u_2	is pore pressure measured behind the cone
u_3	is pore pressure measured behind sleeve friction
Δu	is excess pore water pressure
U	is normalized excess pore pressure
V_s	is shear wave velocity
z	is depth

Greek

α	is constant
α	is cone roughness
β	is constant
β_1	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1, in degrees
γ	is unit weight of soil
γ_w	unit weight of water
Δ	is change
Δu	is excess pore pressure ($= u - u_0$)
μ	is Poisson's ratio
ρ	is density
ψ	is state parameter
σ, σ'	is normal stress (total, effective)
σ_h, σ_h'	is horizontal stress (total, effective)
σ_v, σ_v'	is horizontal stress (total, effective)
σ_{v0},σ_{v0}'	is overburden stress (total, effective)
τ_{av}	is average cyclic shear stress
τ_{cy}	is cyclic shear stress
φ'	is effective friction angle

APPENDIX A6 – Abbreviations

ASTM	American Society for Testing and Materials
CPTU	Cone Penetration Test with Pore Pressure Measurement (Piezocone Test)
CRR	Cyclic Resistance Ratio
CSR	Cyclic Stress Ratio
GWT	Ground Water Table
NC	Normally Consolidated
OC	Over consolidated
OCR	Over consolidation Ratio
PL	Limit Pressure
SCPT	Seismic Cone Penetration
SDMT	Seismic Dilatometer Marchetti
SPT	Standard Penetration Test
TC	Technical Committee

APPENDIX A7 – Glossary

CPT
Cone Penetration Test.

Cone
The part of the cone penetrometer on which the end bearing is developed.

Cone Penetrometer
The assembly containing the *cone*, *friction sleeve*, any other sensors and measuring systems, as well as the connections to the *push-rods.*

Cone resistance, q_c
The total force acting on the cone, Q_c, divided by the projected area of the cone, A_c. $q_c = {Q_c}/{A_c}$

Corrected cone resistance, q_t
The *cone resistance*, q_c corrected for pore water pressure effects.

Corrected sleeve friction, f_t
The *sleeve friction* corrected for pore water pressure effects on the ends of the *friction sleeve*.

Data acquisition system
The system used to measure and record the measurements made by the *cone penetrometer*.

Dissipation Test
A test when the decay of the pore water pressure is monitored during a pause in penetration.

Filter element
The porous element inserted into the cone penetrometer to allow transmission of the pore water pressure to the pore pressure sensor, while maintaining the correct profile of the *cone penetrometer*.

Friction ratio, R_f
The ratio, expressed as a percentage of the *sleeve friction*, f_s, to the *cone resistance*, q_c, both measured at the same depth.

Friction reducer
A local enlargement on the push-rod surface, placed at a distance above the cone penetrometer, and provided to reduce the friction on the *push-rods*.

Friction sleeve
The section of the *cone penetrometer* upon which the *sleeve friction* is measured.

Normalized cone resistance, Q_c or Q_t
The *cone resistance* expressed in a non-dimensional form and taking account of stress changes *in situ*, $Q_c = {(q_c - \sigma_{v0})}/{\sigma'_{v0}}$, or when the *corrected cone resistance* is used $Q_t = {(q_t - \sigma_{v0})}/{\sigma'_{v0}}$. where σ_{v0} and σ'_{v0} are the total and effective vertical stress respectively.

Net cone resistance, q_n
The *corrected cone resistance* minus the vertical total stress. $q_n = q_t - \sigma_{v0}$

Normalized friction ratio, F_r
The *sleeve friction* normalized by the *net cone resistance*.

Piezocone
A *cone penetrometer* containing a pore pressure sensor.

Pore pressure, *u*
The pore pressure generated during penetration and measured by a pore pressure sensor, u_1 when measured on the cone, u_2 when measured just behind the cone and u_3 when measured just behind the friction sleeve.

Pore pressure ratio, B_q
The *net pore pressure* normalized with respect to the *net cone resistance*.

Push-rods
The thick-walled tubes or rods used for advancing the cone penetrometer.

Rig machine
The equipment which pushes the cone penetrometer and rods into the ground.

Sleeve friction, f_s
The total frictional force acting on the *friction sleeve*, F_s, divided by its *surface area*, A_s. $f_s = {}^{F_s}/_{A_s}$

APPENDIX A8 – Soils Description Tables

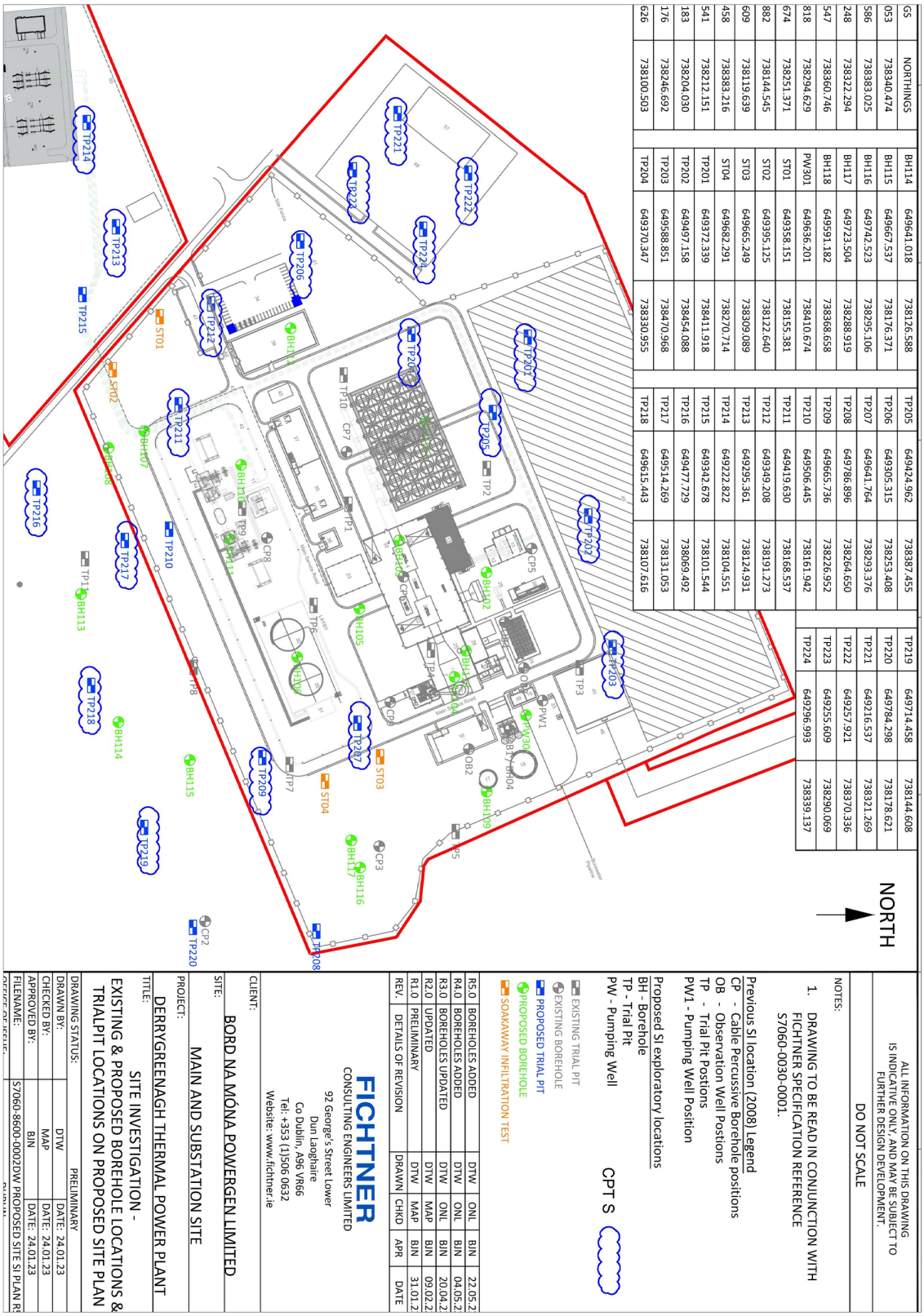
GRANULAR SOILS (Sands and Gravels)

Description	Relative Density D_r (%)	SPT N value, N_{SPT}
Very Loose	0 – 15	0 - 4
Loose	15 – 35	4 - 10
Medium Dense	35 – 65	10 - 30
Dense	65 – 85	30 - 50
Very Dense	>85	>50

COHESIVE SOILS (Clays and Silts)

Term based on measurement	Undrained Shear Strength Classification, s_u (kPa)
Extremely low	<10
Very low	10 - 20
Low	20 - 40
Medium	40 - 75
High	75 - 150
Very high	150 - 300
Extremely high	>300

APPENDIX A9 – Site Map



GS	NORTHINGS										
053	738340.474	BH115	649667.537	738176.371	TP206	649305.315	738253.408	TP220	649784.298	738178.621
586	738383.025	BH116	649742.523	738295.106	TP207	649641.764	738293.376	TP221	649216.537	738321.269
248	738322.294	BH117	649723.504	738288.919	TP208	649786.896	738264.650	TP222	649257.921	738370.336
547	738360.746	BH118	649591.182	738368.658	TP209	649665.736	738226.952	TP223	649255.609	738290.069
818	738294.629	PW301	649636.201	738410.674	TP210	649506.445	738161.942	TP224	649296.993	738339.137
674	738251.371	ST01	649358.151	738155.381	TP211	649419.630	738168.537			
882	738144.545	ST02	649395.125	738122.640	TP212	649349.208	738191.273			
609	738119.639	ST03	649665.249	738309.089	TP213	649295.361	738124.931			
458	738383.216	ST04	649682.291	738270.714	TP214	649222.822	738104.551			
541	738212.151	TP201	649372.339	738411.918	TP215	649342.678	738101.544			
183	738204.030	TP202	649497.158	738454.088	TP216	649477.729	738069.492			
176	738246.692	TP203	649588.851	738470.968	TP217	649514.269	738131.053			
626	738100.503	TP204	649370.347	738330.955	TP218	649615.443	738107.616			

APPENDIX B

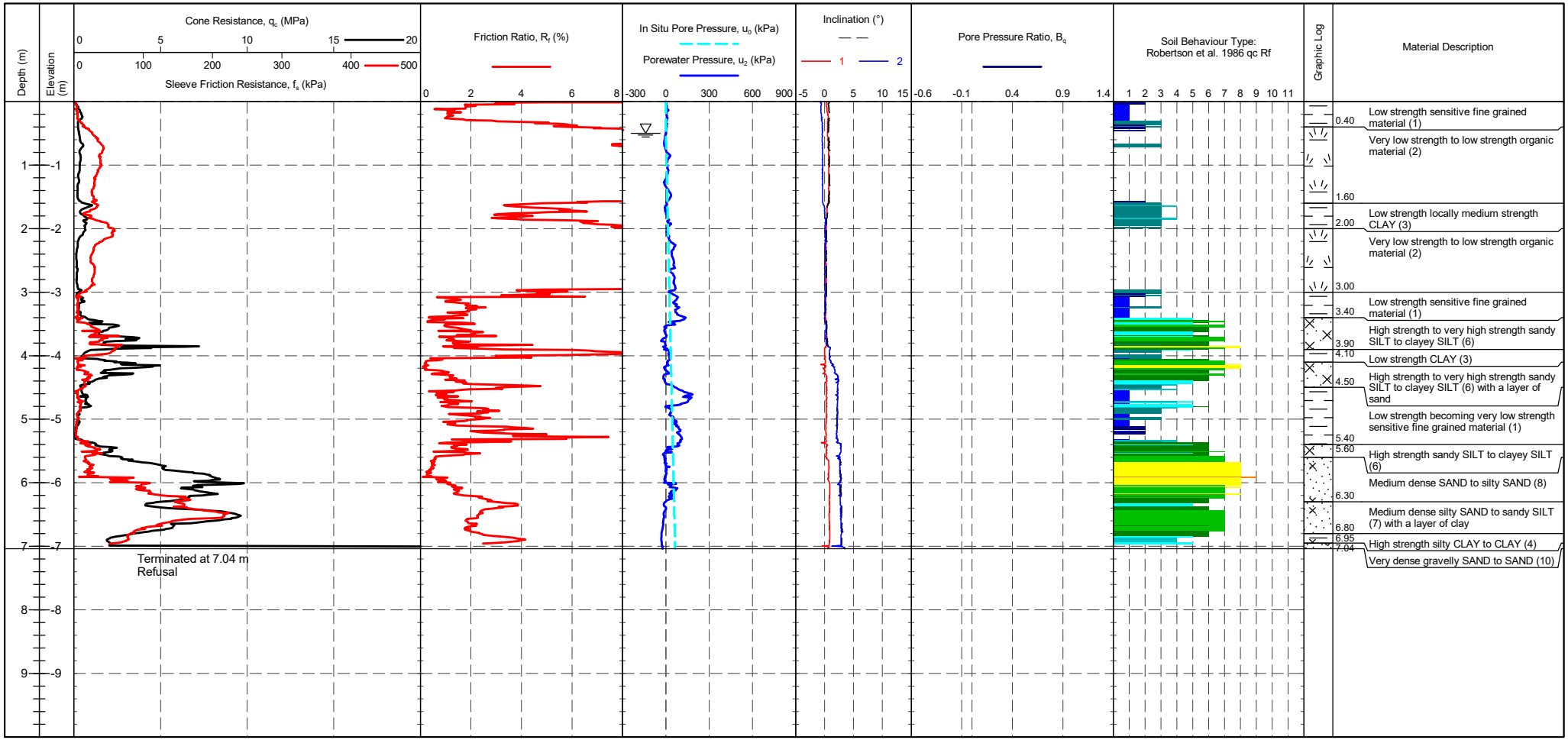
Cone Penetration Measured Parameters and Geotechnical Derived Parameters

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT201

CLIENT : Irish Drilling	EASTING : 649372.339 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738411.918 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 21/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2
CALIBRATION DATE	: 05/12/2022	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm²	OPERATOR	: RS
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Sunny & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	227 mV	-0.012 MPa
Sleeve	191 mV	191 mV	0 kPa
Pore Pressure 2	286 mV	312 mV	0.007 kPa
X-Y Inclinometer	2442 mV	2445 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

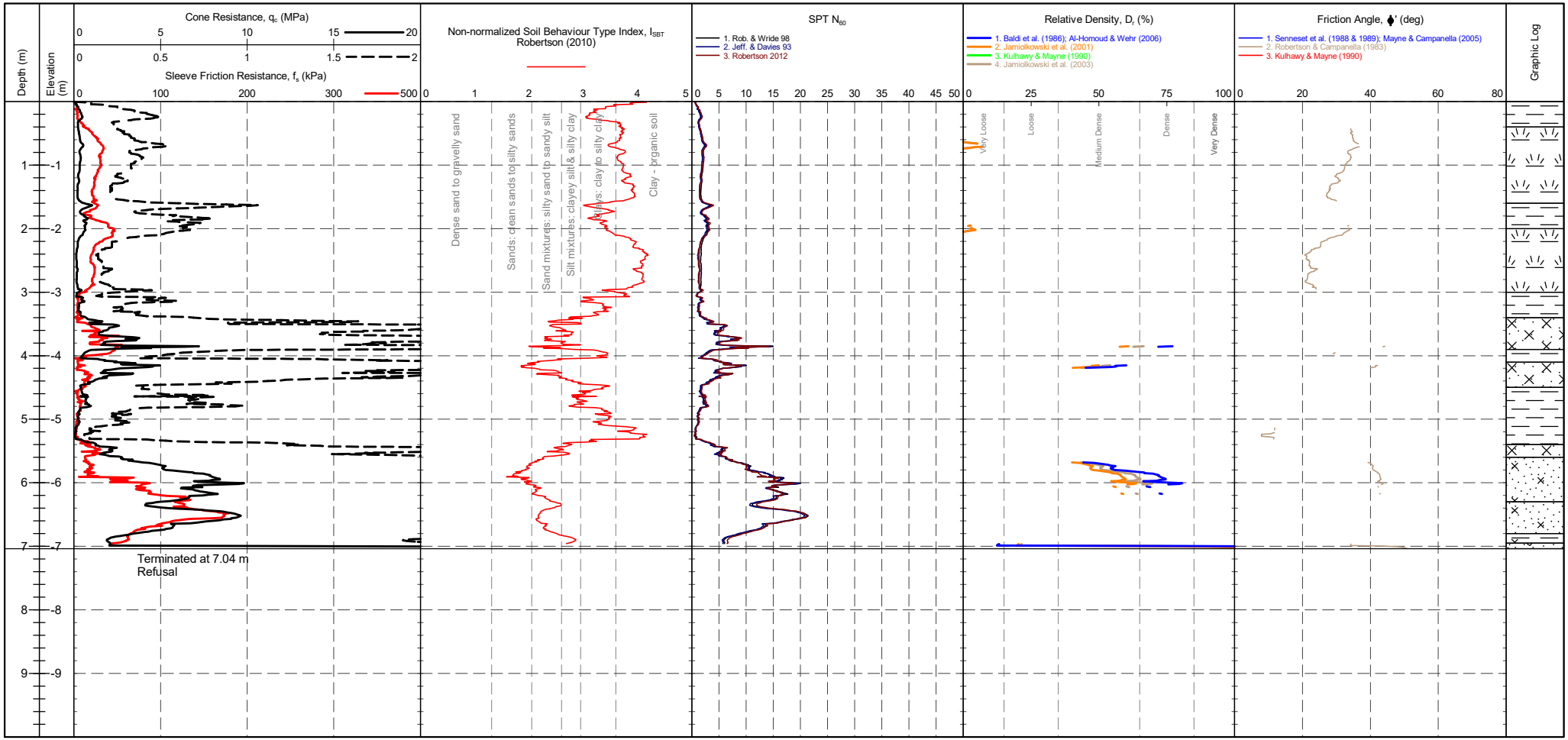
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT201**

CLIENT : Irish Drilling	EASTING : 649372.339 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738411.918 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 21/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	227 mV	-0.012 MPa
Sleeve	191 mV	191 mV	0 kPa
Pore Pressure 2	286 mV	312 mV	0.007 kPa
X-Y Inclinometer	2442 mV	2445 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

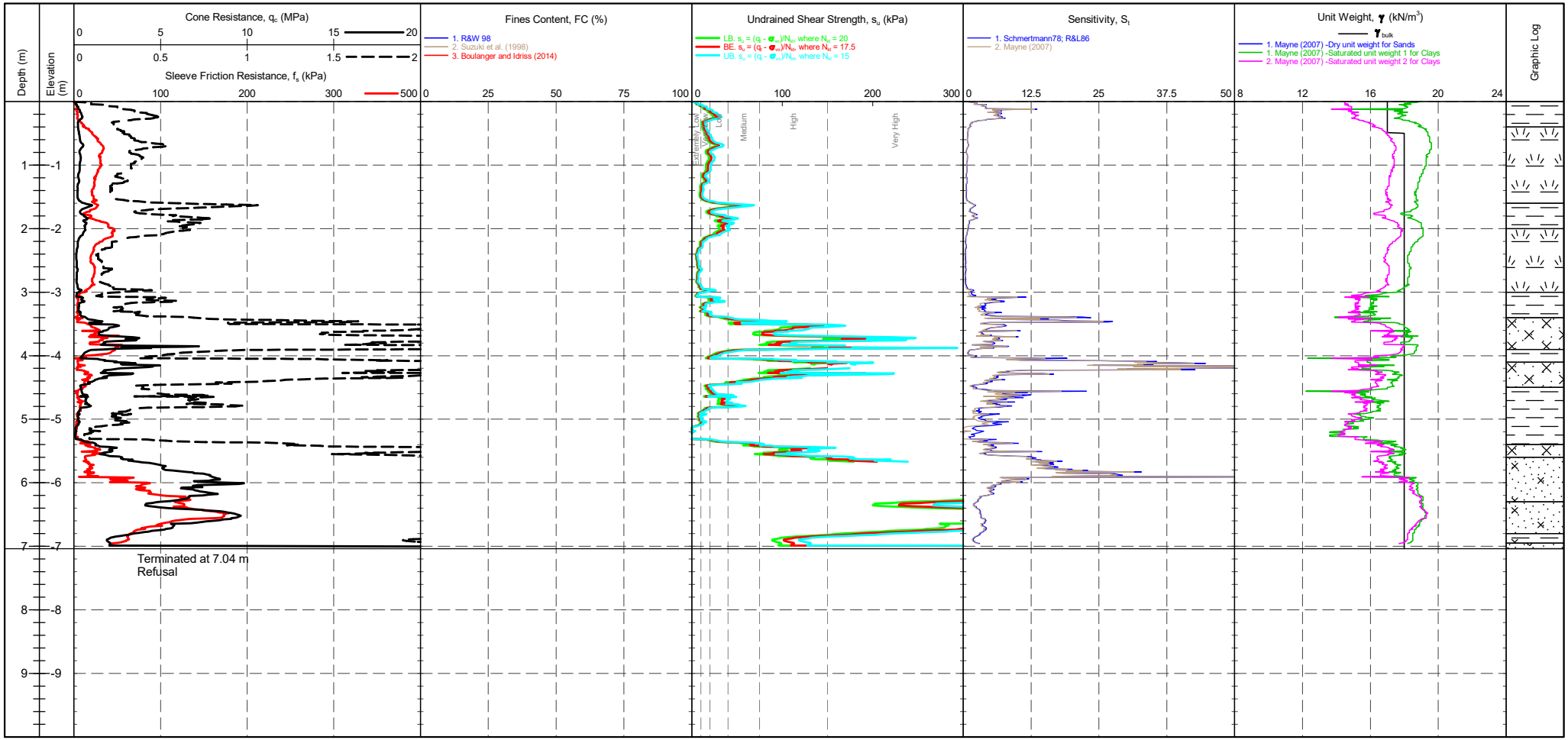
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

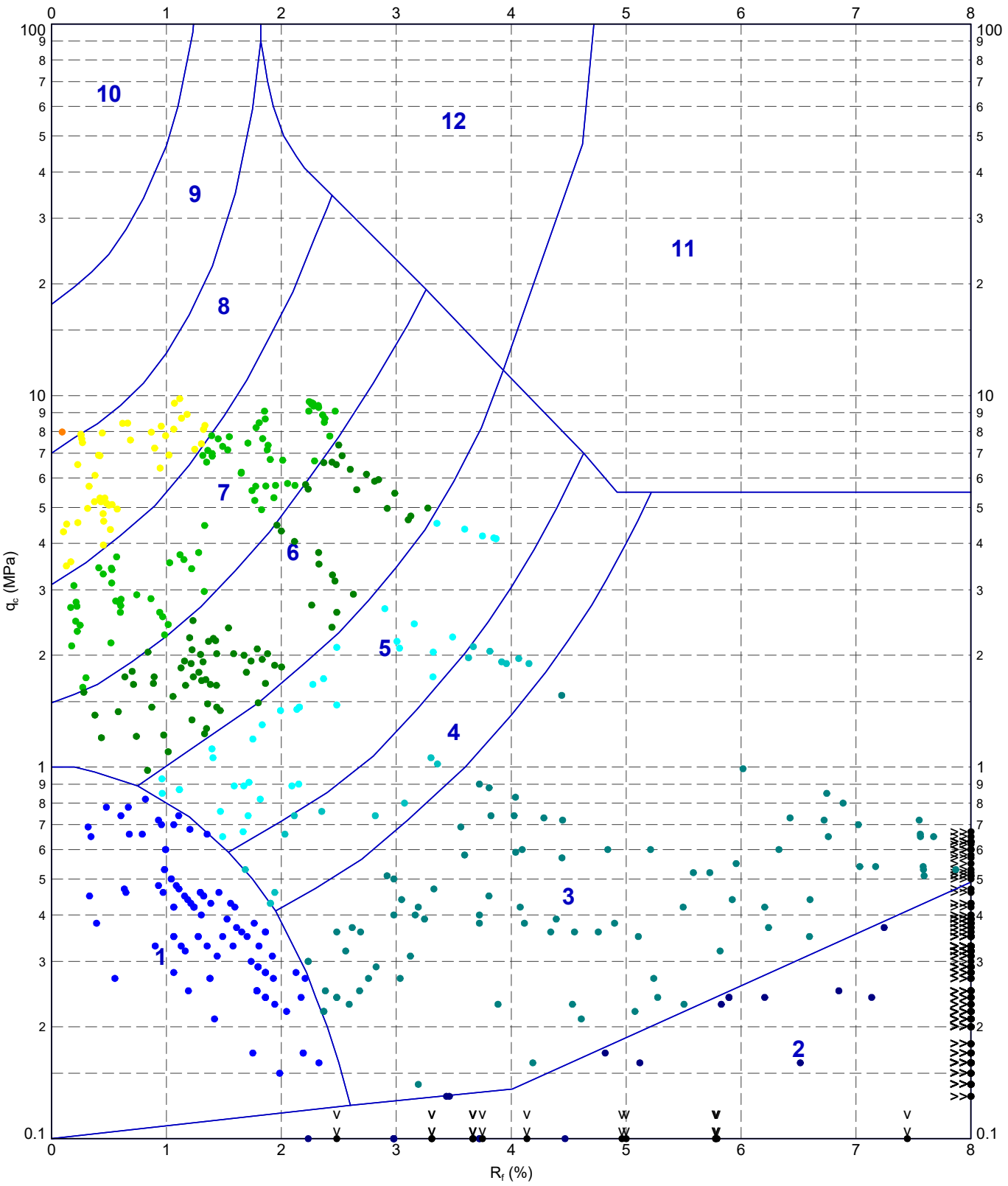
CPT LOG 03

PointID: **CPT201**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649372.339 m NORTHING : 738411.918 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 228 mV / 227 mV / -0.012 MPa Sleeve / 191 mV / 191 mV / 0 kPa Pore Pressure 2 / 286 mV / 312 mV / 0.007 kPa X-Y Inclinometer / 2442 mV / 2445 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT201	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 13:58 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

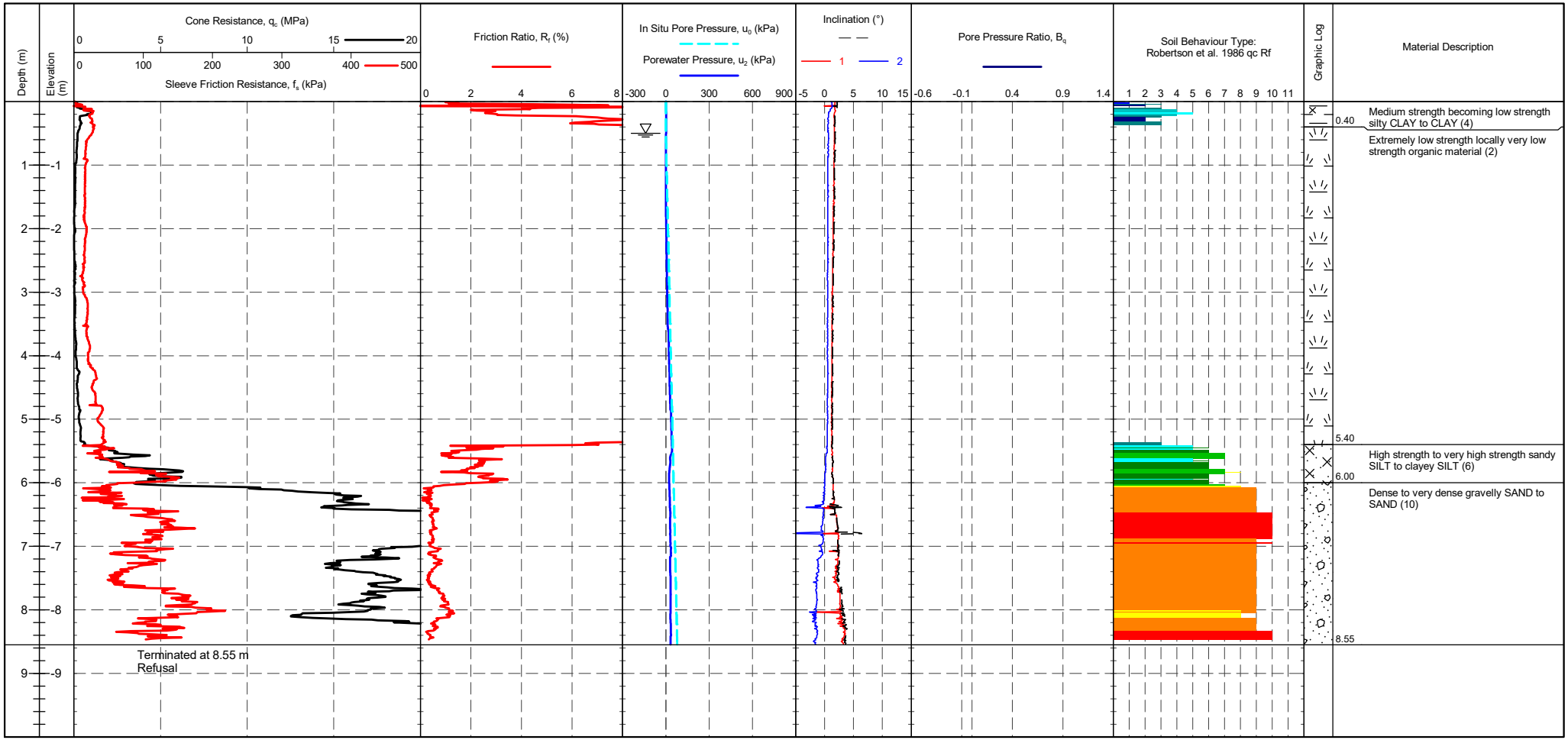
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT202**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649497.158 m NORTHING : 738454.088 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	222 mV	-0.035 MPa
Sleeve	187 mV	183 mV	-0.003 kPa
Pore Pressure 2	288 mV	359 mV	0.019 kPa
X-Y Inclinometer	2597 mV	2569 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

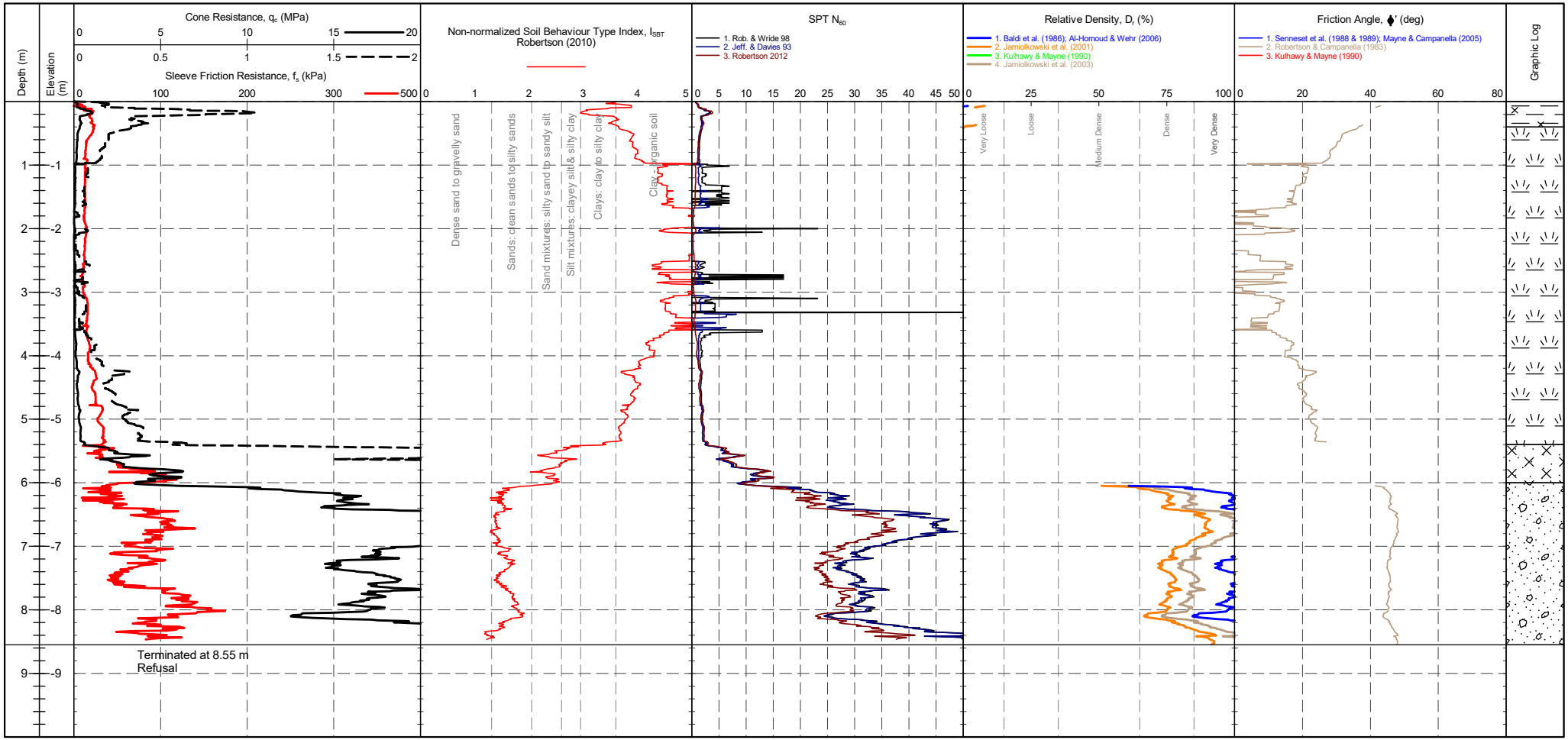
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT202**

CLIENT : Irish Drilling	EASTING : 649497.158 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738454.088 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2	CPTU ZERO VALUES	
CONE MODEL : Subtraction	APPLICATION CLASS : 2	Transducer / Pre / Post / Difference	
CONE AREA : 15cm²	RIG : CPT 017 - Griffen	Tip: 225 mV / 222 mV / -0.035 MPa	
CONE AREA RATIO : 0.79	OPERATOR : RS	Sleeve: 187 mV / 183 mV / -0.003 kPa	
FILTER POSITION : u2	FRICTION REDUCER : None	Pore Pressure 2: 288 mV / 359 mV / 0.019 kPa	
FILTER TYPE : HDPE	WEATHER : Sunny & Mild	X-Y Inclinometer: 2597 mV / 2569 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

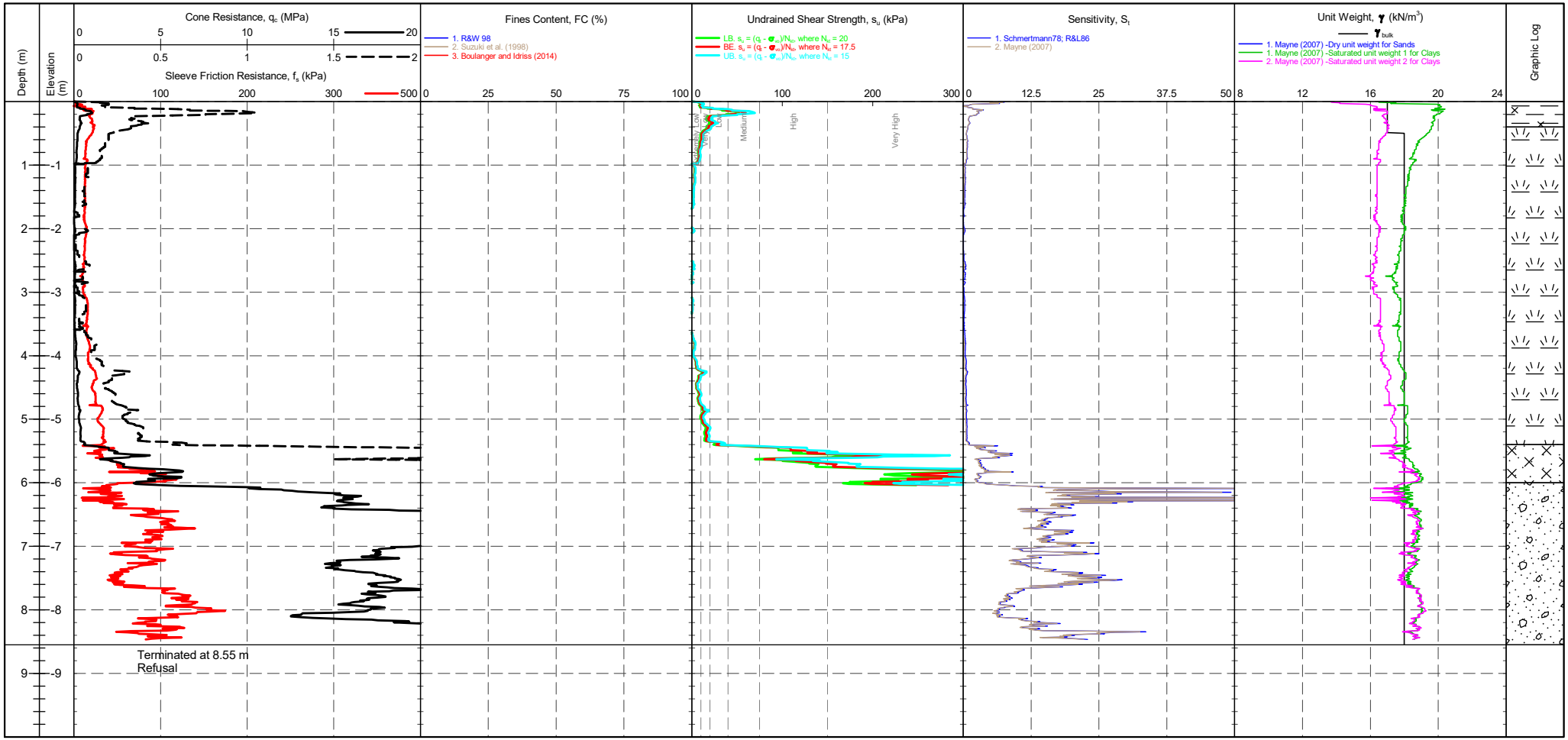
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 03

PointID: **CPT202**

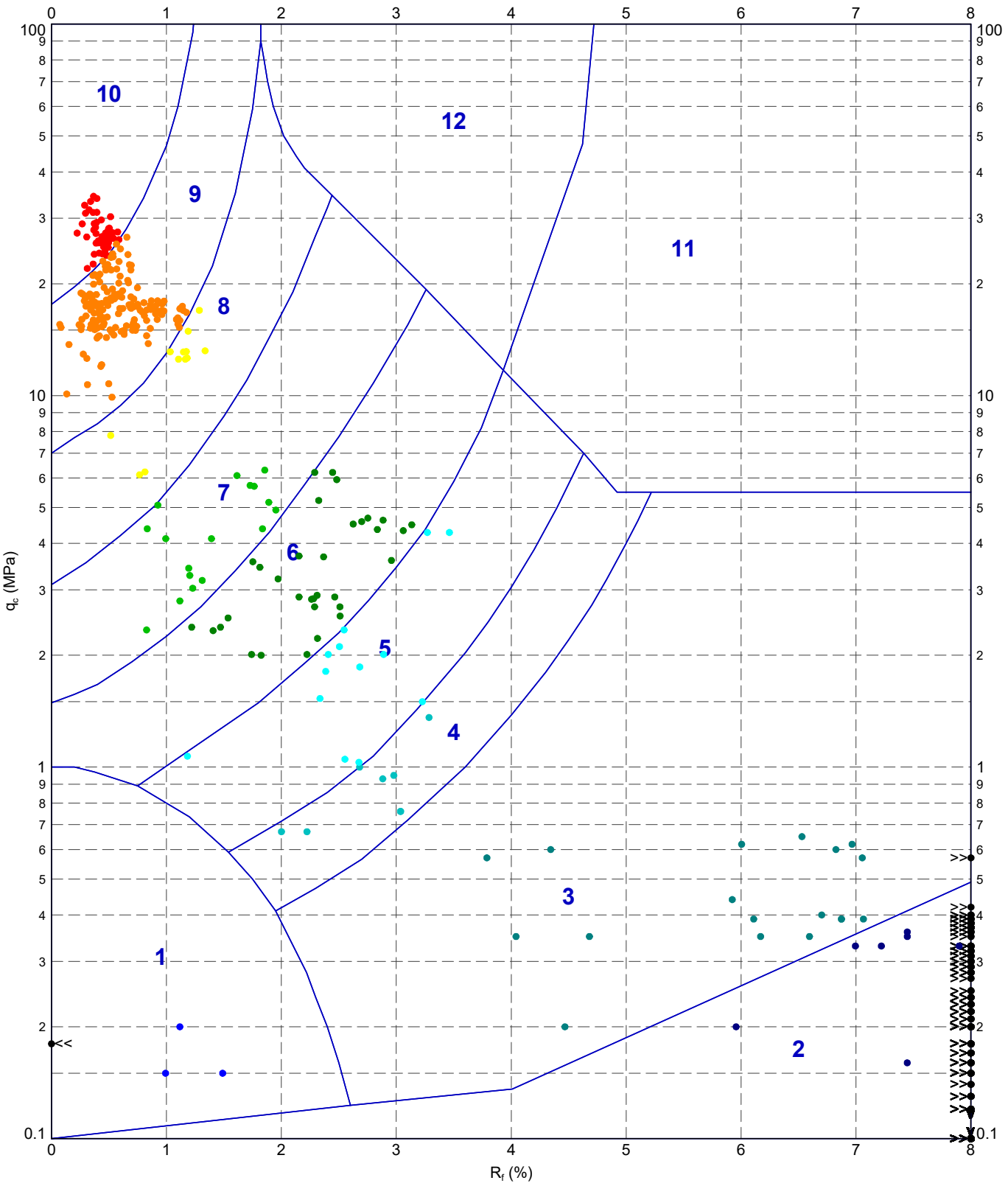
CLIENT : Irish Drilling	EASTING : 649497.158 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738454.088 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2	CPTU ZERO VALUES			COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11
CONE MODEL : Subtraction	APPLICATION CLASS : 2	Transducer / Pre / Post / Difference			Term based on measurement / su (kPa) / Term based on measurement / su (kPa)
CONE AREA : 15cm^2	RIG : CPT 017 - Griffen	Tip: 225 mV / 222 mV / -0.035 MPa			Extremely low strength <10 / Medium strength 40-75
CONE AREA RATIO : 0.79	OPERATOR : RS	Sleeve: 187 mV / 183 mV / -0.003 kPa			Very low strength 10-20 / High strength 75-150
FILTER POSITION : u2	FRICTION REDUCER : None	Pore Pressure 2: 288 mV / 359 mV / 0.019 kPa			Low strength 20-40 / Very high strength 150-300
FILTER TYPE : HDPE	WEATHER : Sunny & Mild	X-Y Inclinometer: 2597 mV / 2569 mV			Extremely high strength >300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT202	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 13:59 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

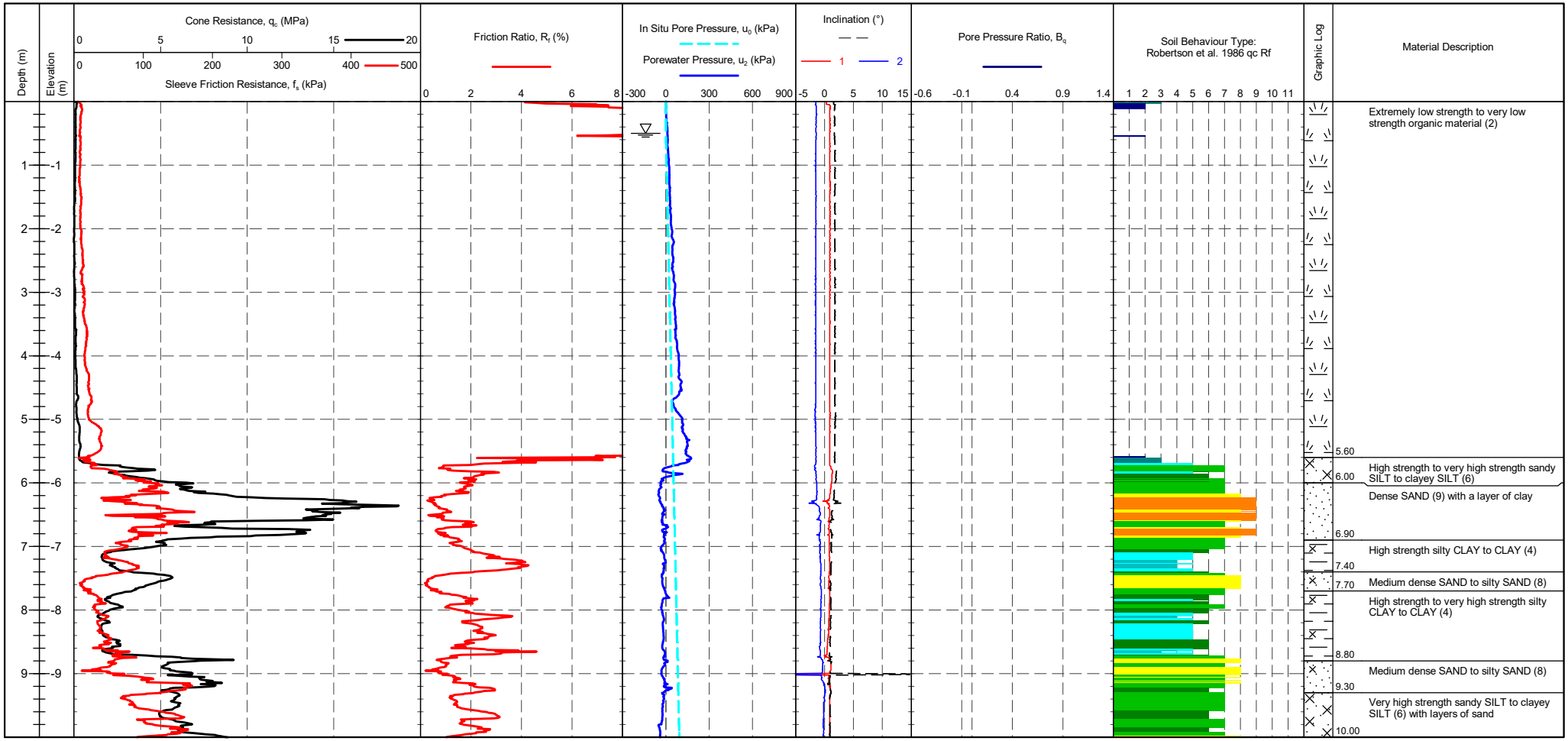
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT203**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649588.851 m NORTHING : 738470.968 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	225 mV	-0.035 MPa
Sleeve	192 mV	189 mV	-0.002 kPa
Pore Pressure 2	288 mV	317 mV	0.008 kPa
X-Y Inclinometer	2436 mV	2498 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

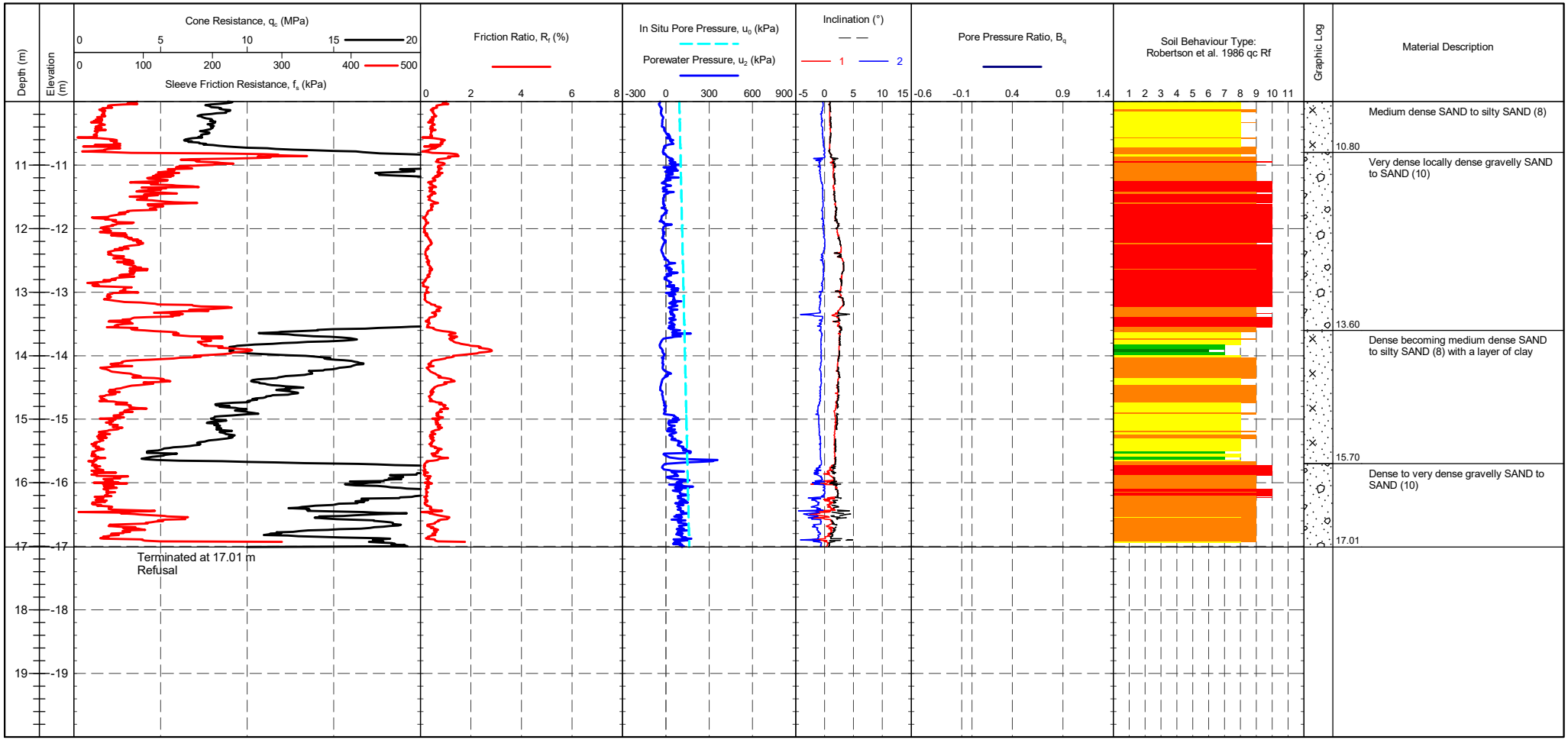
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT203**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649588.851 m NORTHING : 738470.968 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test stopped due to buckling rods.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CALIBRATION DATE : 05/12/2022 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES	METHOD: Robertson et al. 1986 qc Rf

Transducer	Pre	Post	Difference
Tip	228 mV	225 mV	-0.035 MPa
Sleeve	192 mV	189 mV	-0.002 kPa
Pore Pressure 2	288 mV	317 mV	0.008 kPa
X-Y Inclinometer	2436 mV	2498 mV	

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

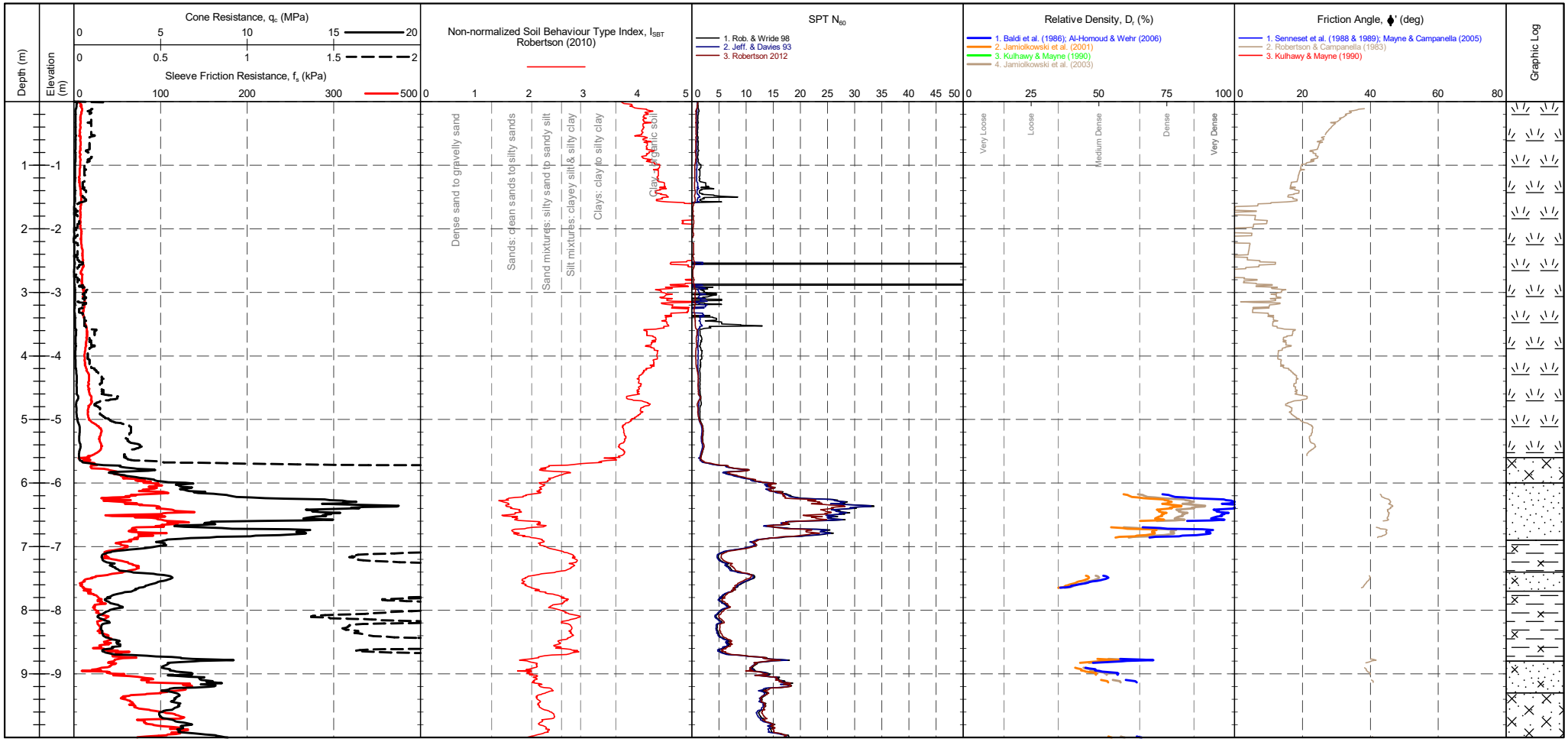
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT203**

CLIENT : Irish Drilling	EASTING : 649588.851 m	Remark:	SHEET : 1 OF 2
PROJECT : Derrygreenagh Power	NORTHING : 738470.968 m	Test stopped due to buckling rods.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 21/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CONE MODEL : Subtraction	APPLICATION CLASS : 2		
CONE AREA : 15cm²	RIG : CPT 017 - Griffen		
CONE AREA RATIO : 0.79	OPERATOR : RS		
FILTER POSITION : u2	FRICTION REDUCER : None		
FILTER TYPE : HDPE	WEATHER : Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	225 mV	-0.035 MPa
Sleeve	192 mV	189 mV	-0.002 kPa
Pore Pressure 2	288 mV	317 mV	0.008 kPa
X-Y Inclinometer	2436 mV	2498 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

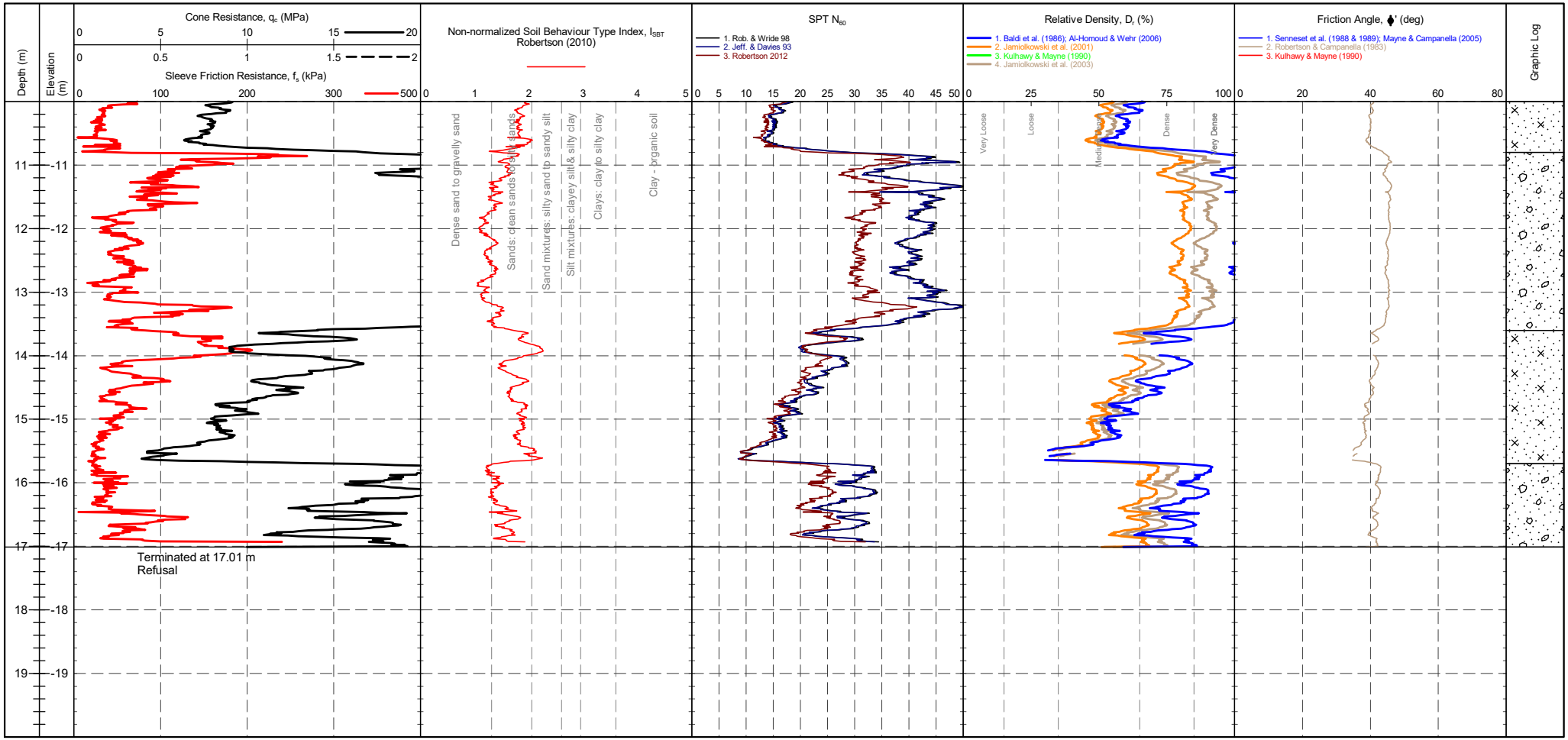
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT203**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649588.851 m NORTHING : 738470.968 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test stopped due to buckling rods.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES	

Transducer	Pre	Post	Difference
Tip	228 mV	225 mV	-0.035 MPa
Sleeve	192 mV	189 mV	-0.002 kPa
Pore Pressure 2	288 mV	317 mV	0.008 kPa
X-Y Inclinometer	2436 mV	2498 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

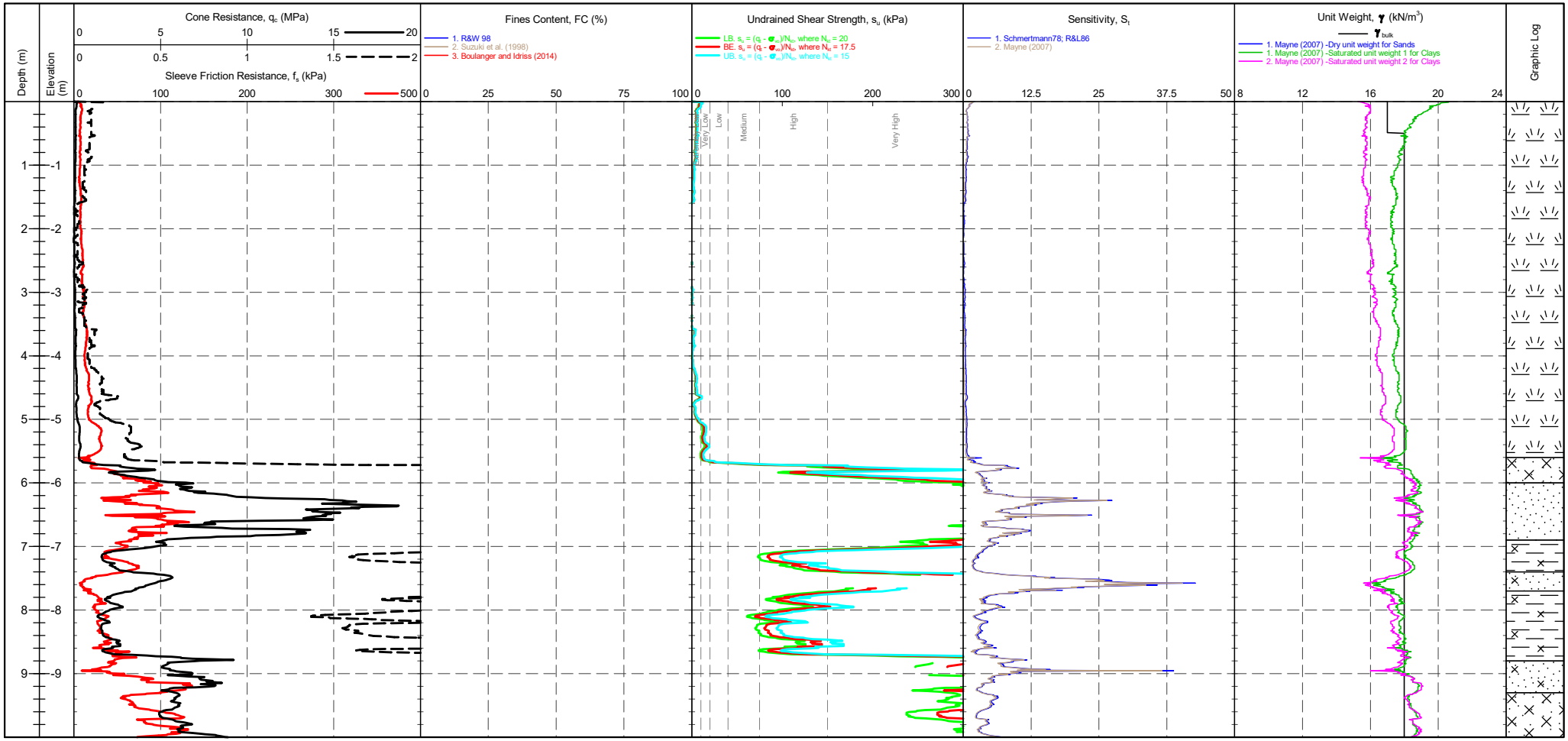
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 03

PointID: **CPT203**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649588.851 m NORTHING : 738470.968 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test stopped due to buckling rods.	SHEET : 1 OF 2 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 228 mV / 225 mV / -0.035 MPa Sleeve / 192 mV / 189 mV / -0.002 kPa Pore Pressure 2 / 288 mV / 317 mV / 0.008 kPa X-Y Inclinometer / 2436 mV / 2498 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40 Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300

Groundwater Level

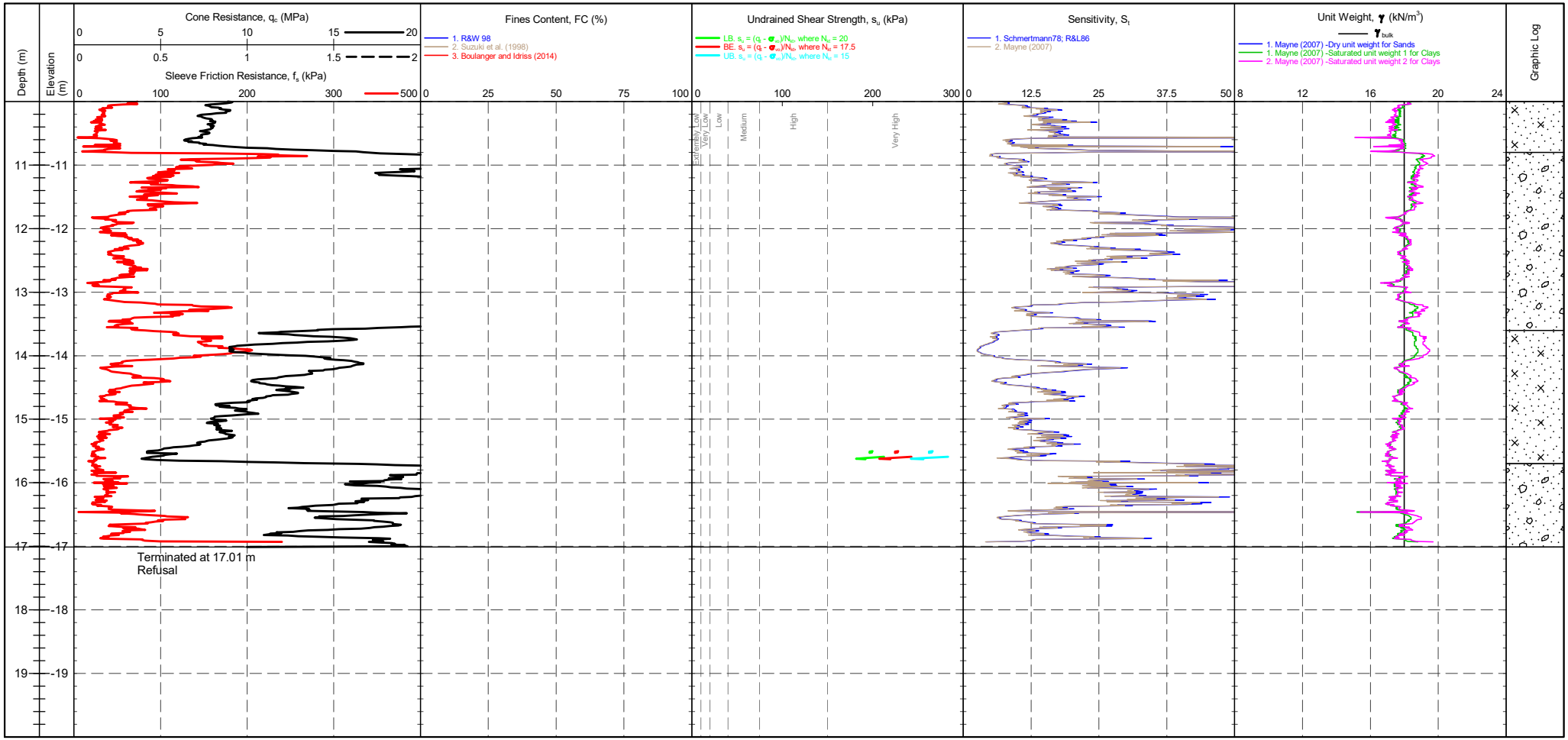
Dissipation Test

CPT LOG 03

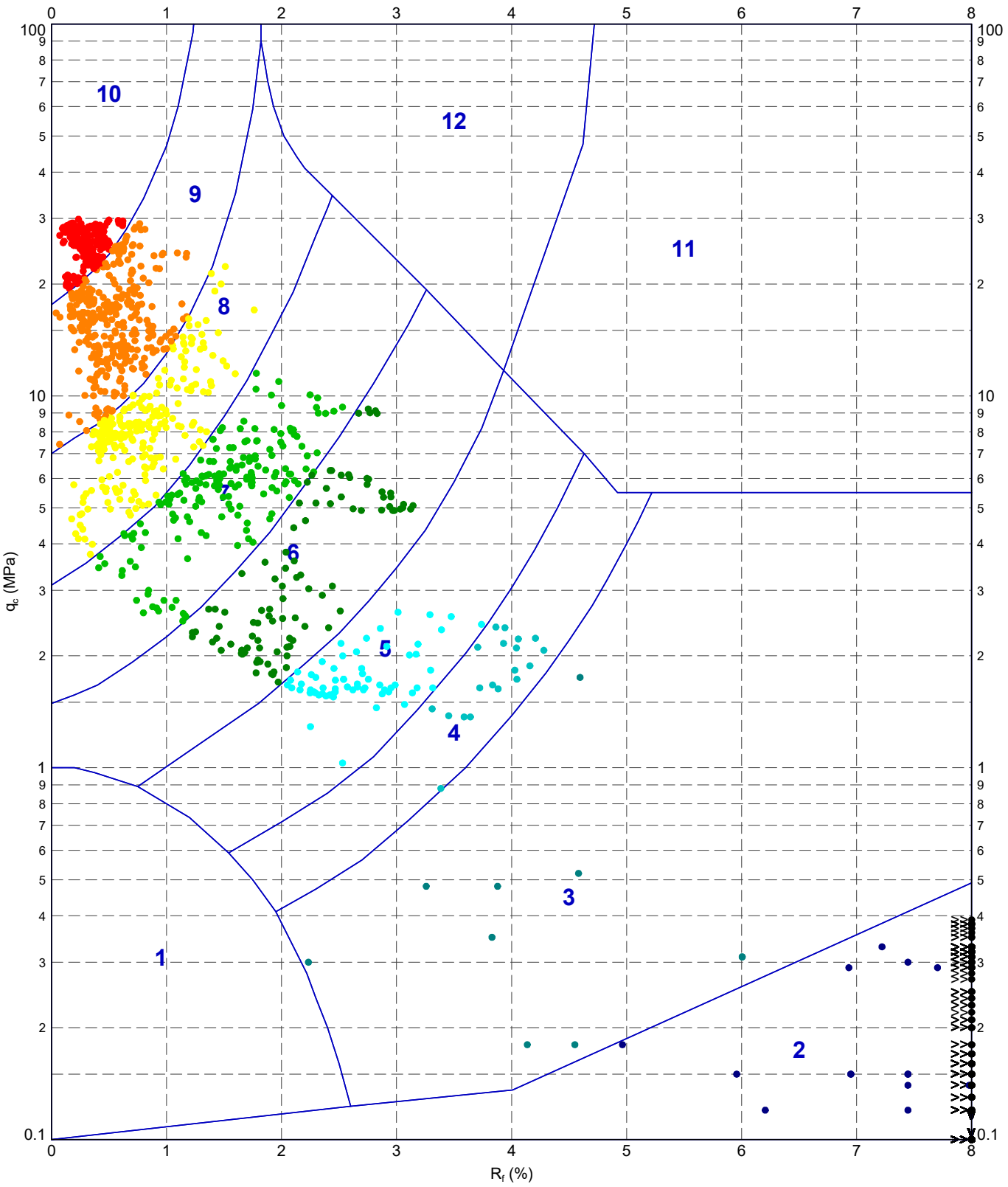
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT203

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649588.851 m NORTHING : 738470.968 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test stopped due to buckling rods.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 228 mV / 225 mV / -0.035 MPa Sleeve / 192 mV / 189 mV / -0.002 kPa Pore Pressure 2 / 288 mV / 317 mV / 0.008 kPa X-Y Inclinometer / 2436 mV / 2498 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT203	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:00 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

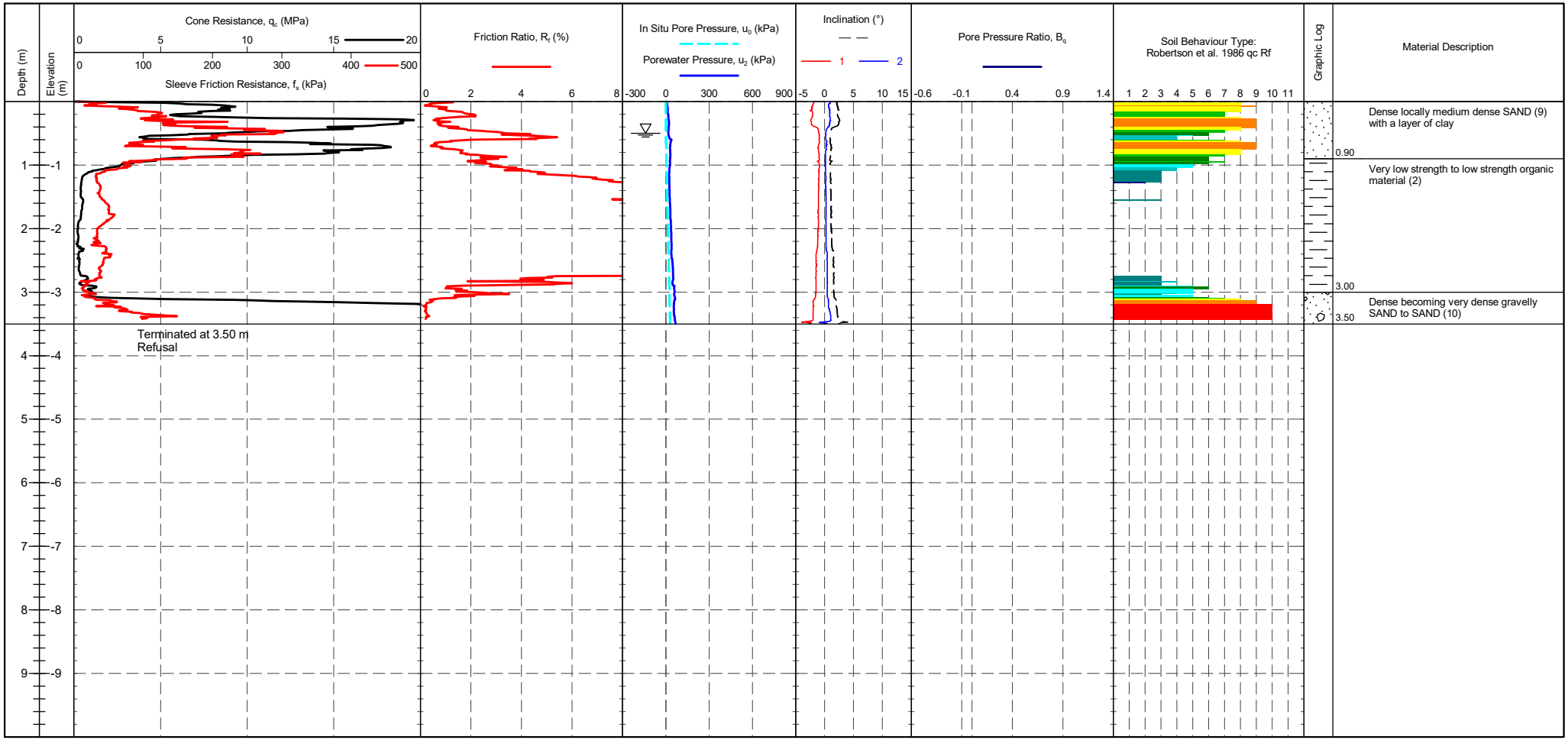
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT204**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649370.347 m NORTHING : 738330.955 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	224 mV	228 mV	0.046 MPa
Sleeve	195 mV	201 mV	0.004 kPa
Pore Pressure 2	234 mV	329 mV	0.025 kPa
X-Y Inclinometer	2208 mV	2199 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

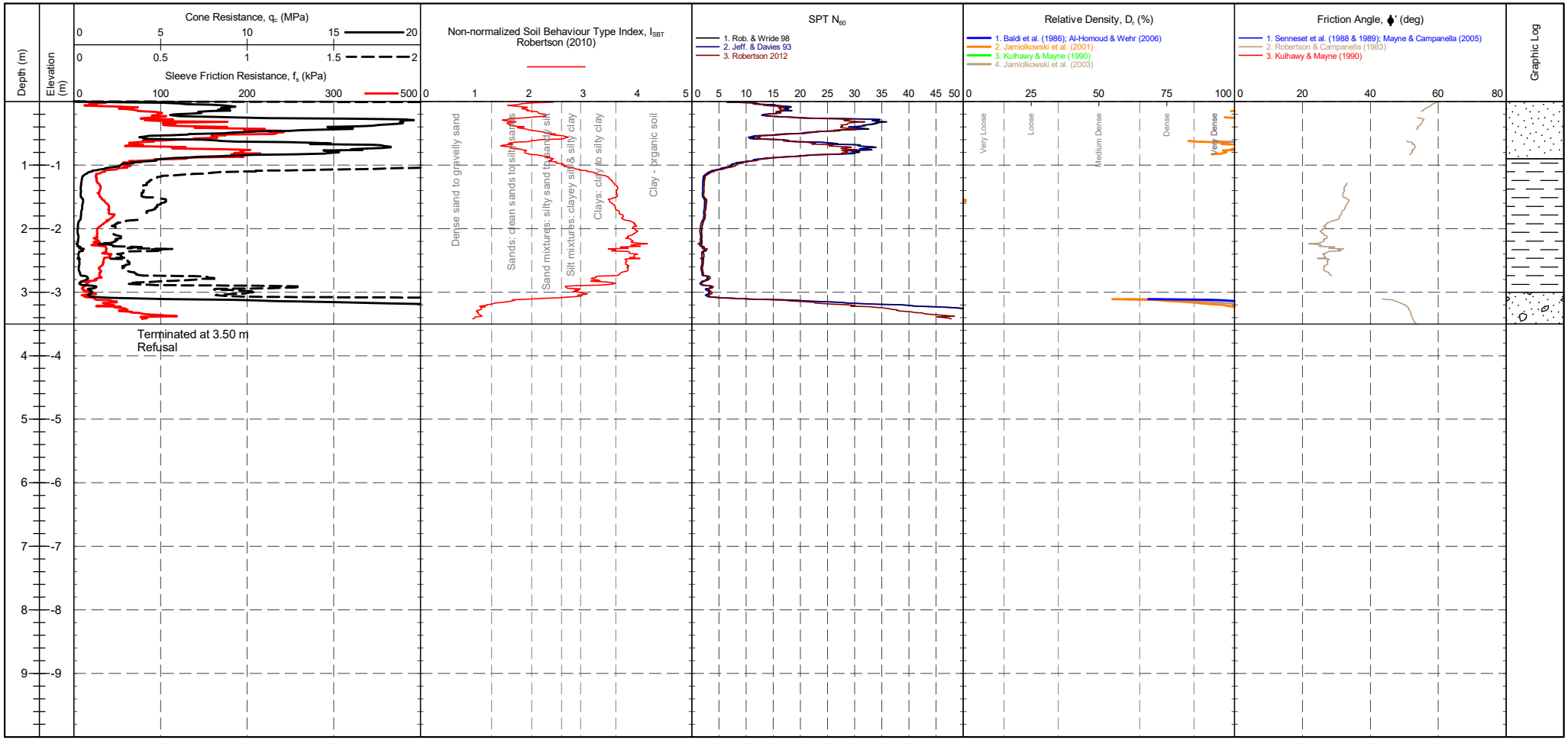
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT204**

CLIENT : Irish Drilling	EASTING : 649370.347 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738330.955 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	224 mV	228 mV	0.046 MPa
Sleeve	195 mV	201 mV	0.004 kPa
Pore Pressure 2	234 mV	329 mV	0.025 kPa
X-Y Inclinometer	2208 mV	2199 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

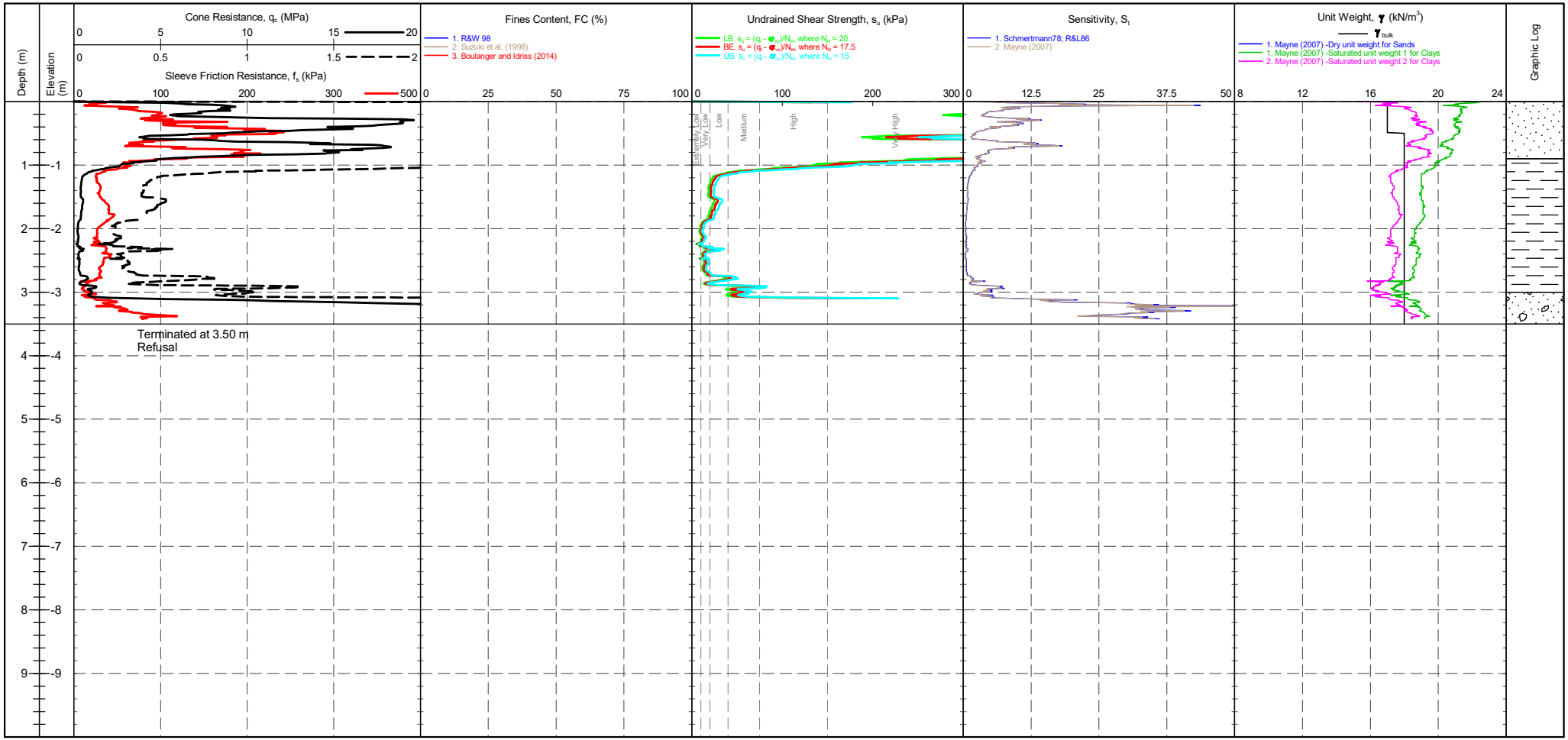
Dissipation Test

CPT LOG 03

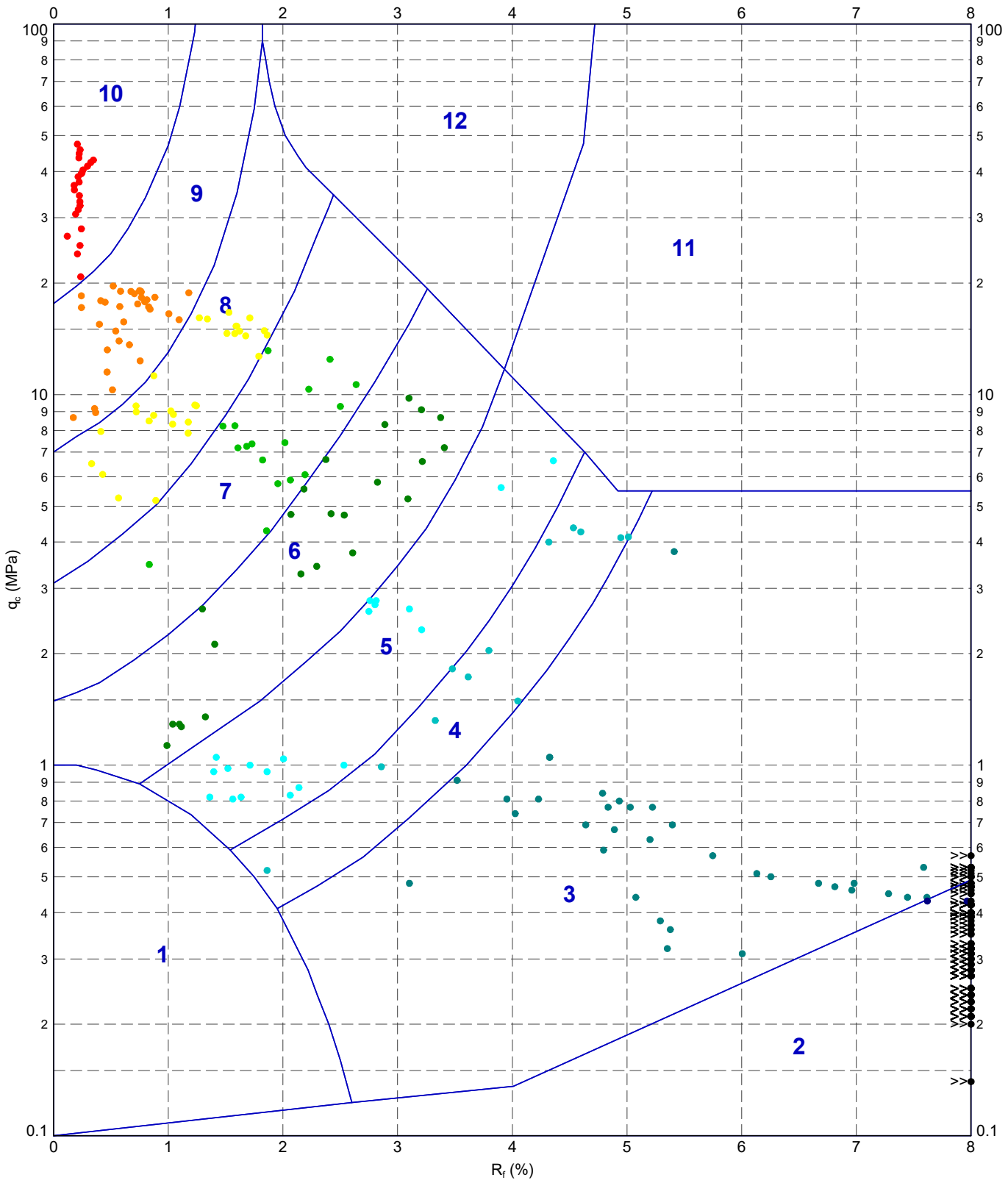
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT204

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649370.347 m NORTHING : 738330.955 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 224 mV / 228 mV / 0.046 MPa Sleeve / 195 mV / 201 mV / 0.004 kPa Pore Pressure 2 / 234 mV / 329 mV / 0.025 kPa X-Y Inclinometer / 2208 mV / 2199 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT204	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:01 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

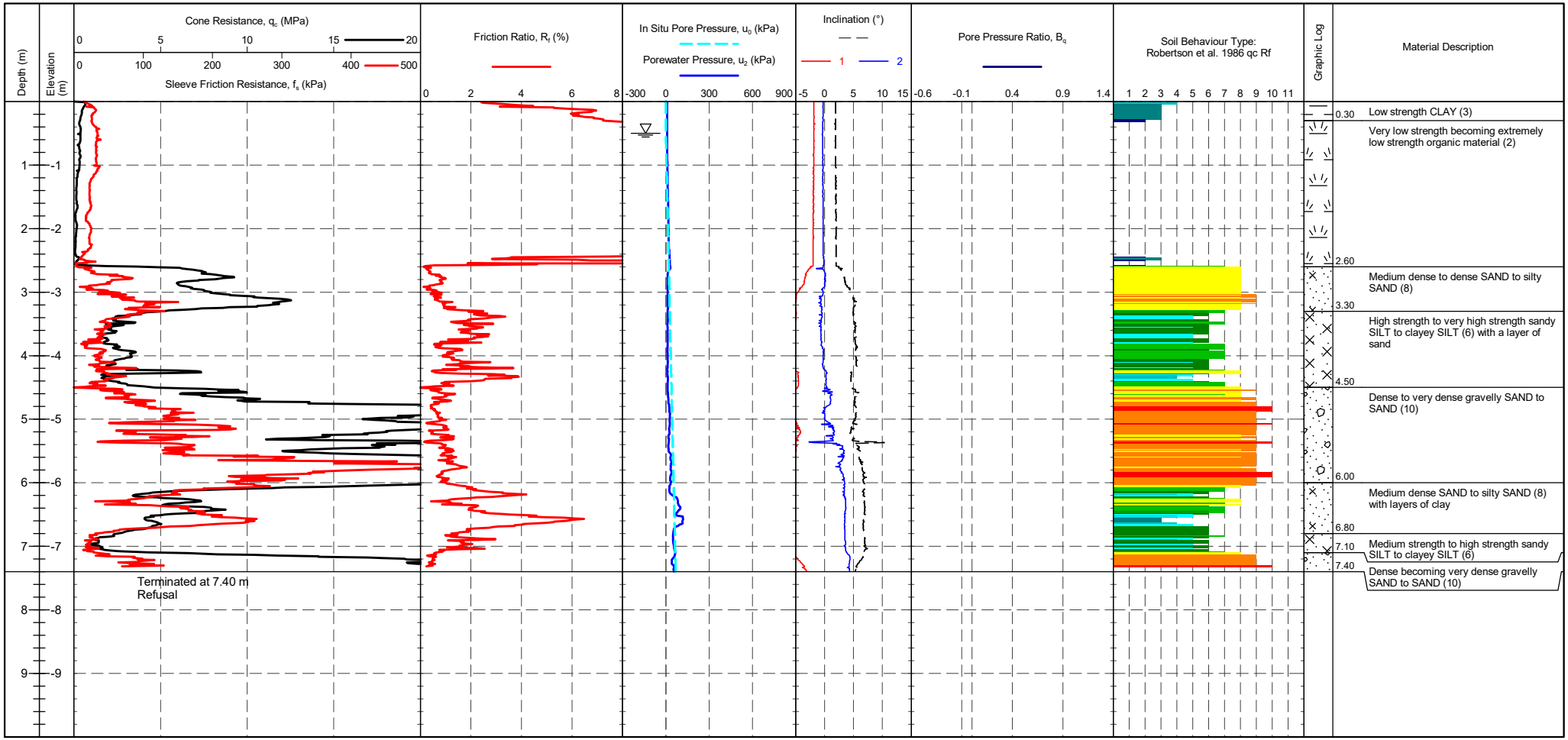
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT205**

CLIENT : Irish Drilling	EASTING : 649424.962 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738387.455 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	227 mV	224 mV	-0.035 MPa
Sleeve	200 mV	196 mV	-0.003 kPa
Pore Pressure 2	305 mV	314 mV	0.002 kPa
X-Y Inclinometer	2221 mV	2187 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

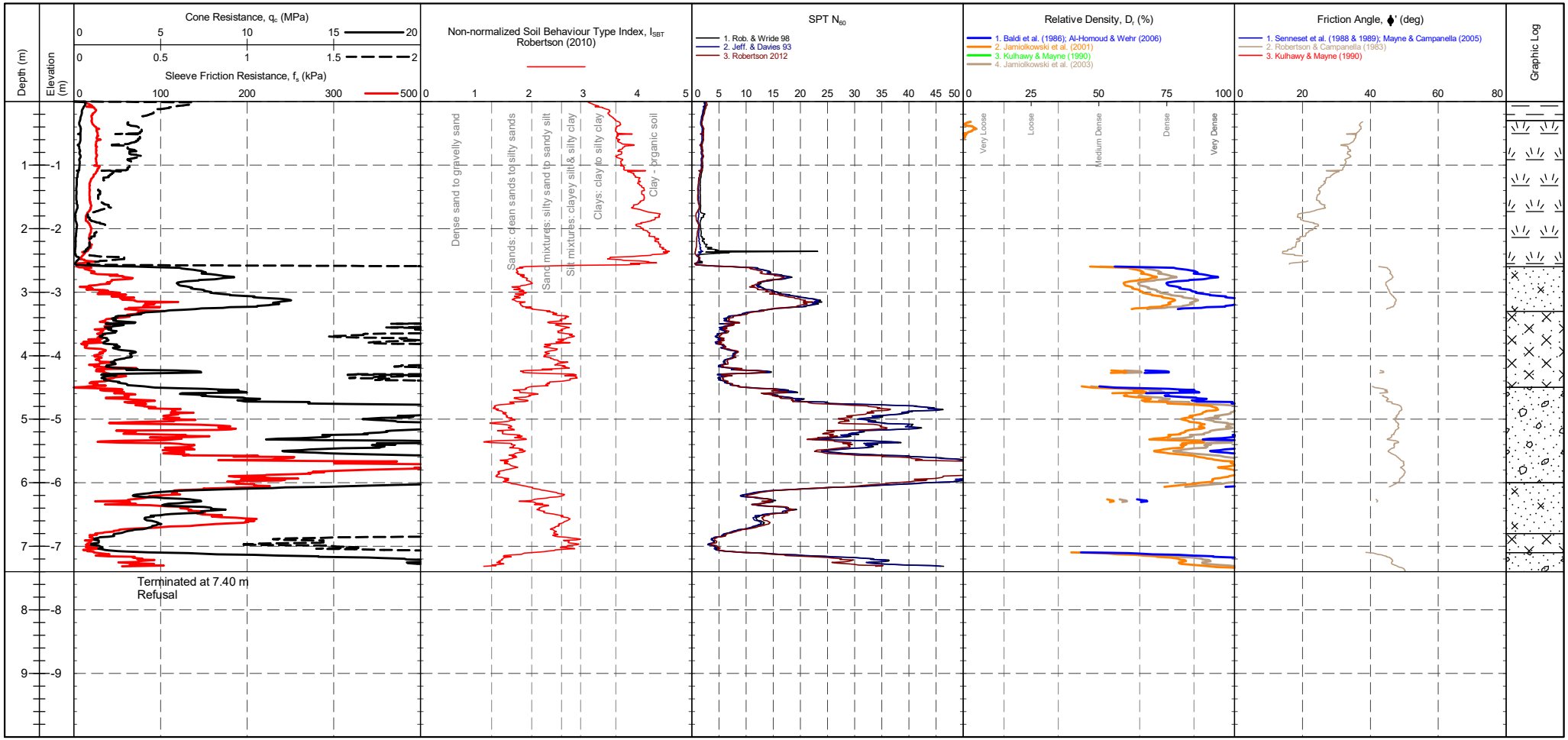
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT205**

CLIENT : Irish Drilling	EASTING : 649424.962 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738387.455 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	227 mV	224 mV	-0.035 MPa
Sleeve	200 mV	196 mV	-0.003 kPa
Pore Pressure 2	305 mV	314 mV	0.002 kPa
X-Y Inclinometer	2221 mV	2187 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

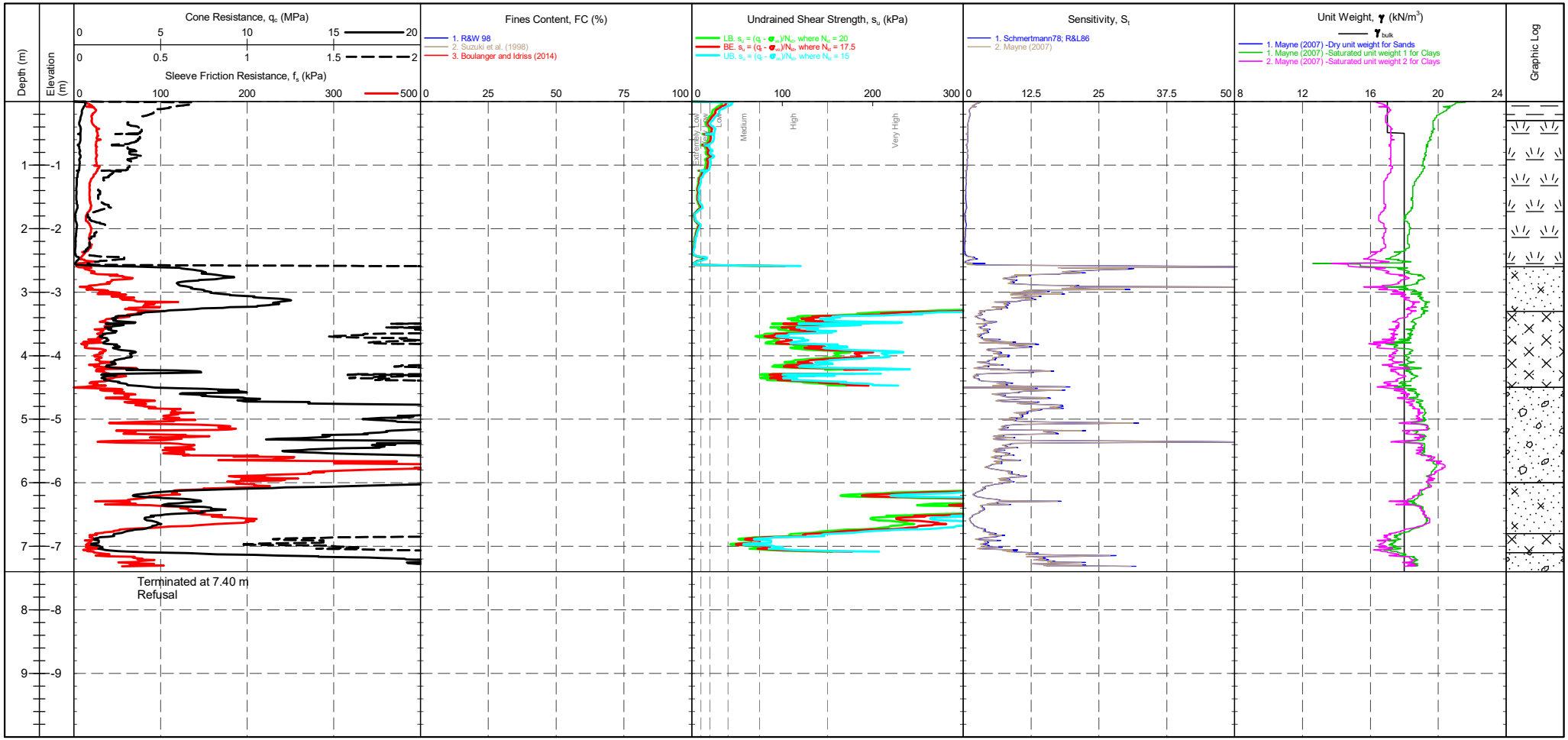
Dissipation Test

CPT LOG 03

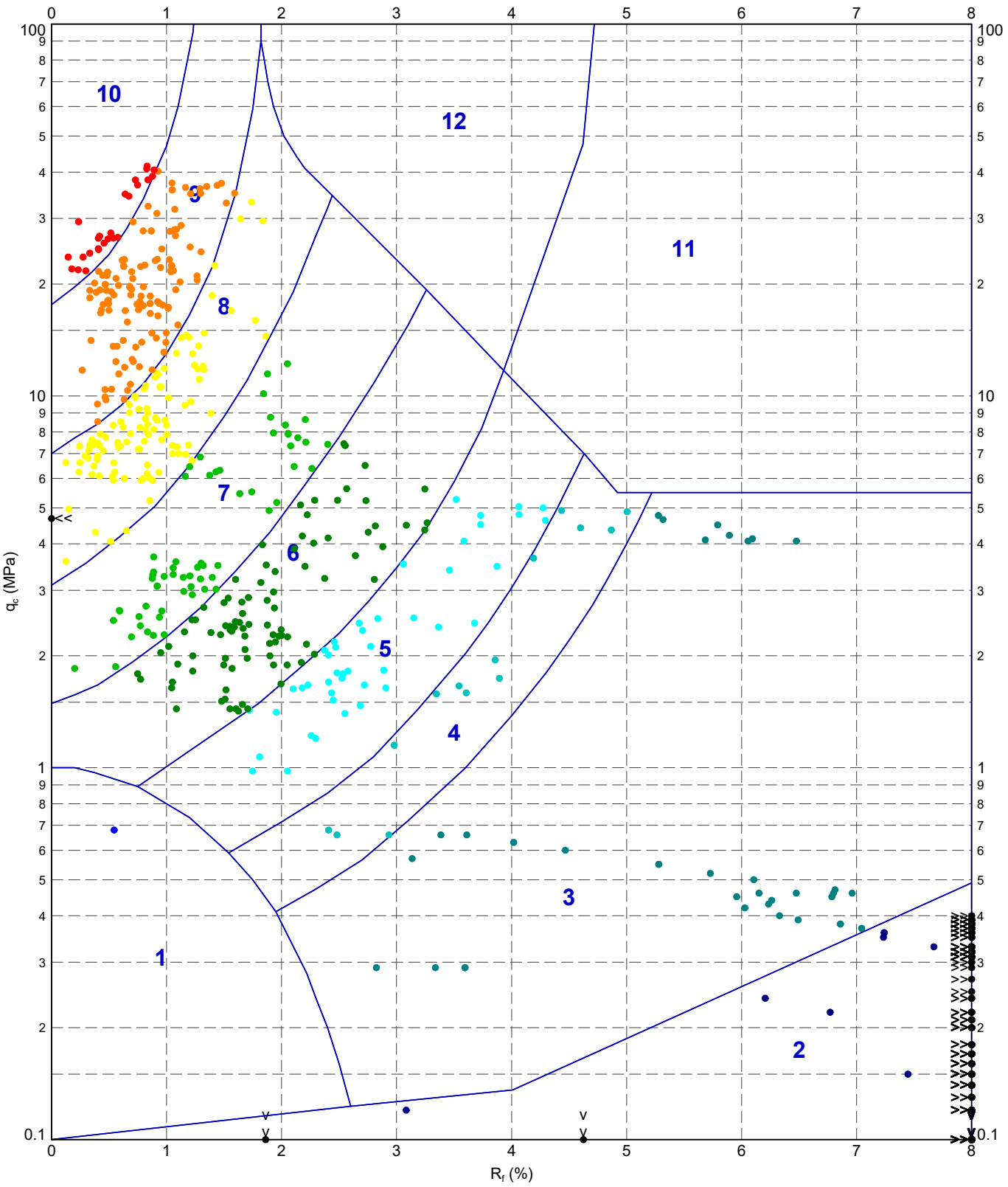
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT205

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649424.962 m NORTHING : 738387.455 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 227 mV / 224 mV / -0.035 MPa Sleeve / 200 mV / 196 mV / -0.003 kPa Pore Pressure 2 / 305 mV / 314 mV / 0.002 kPa X-Y Inclinometer / 2221 mV / 2187 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT205	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

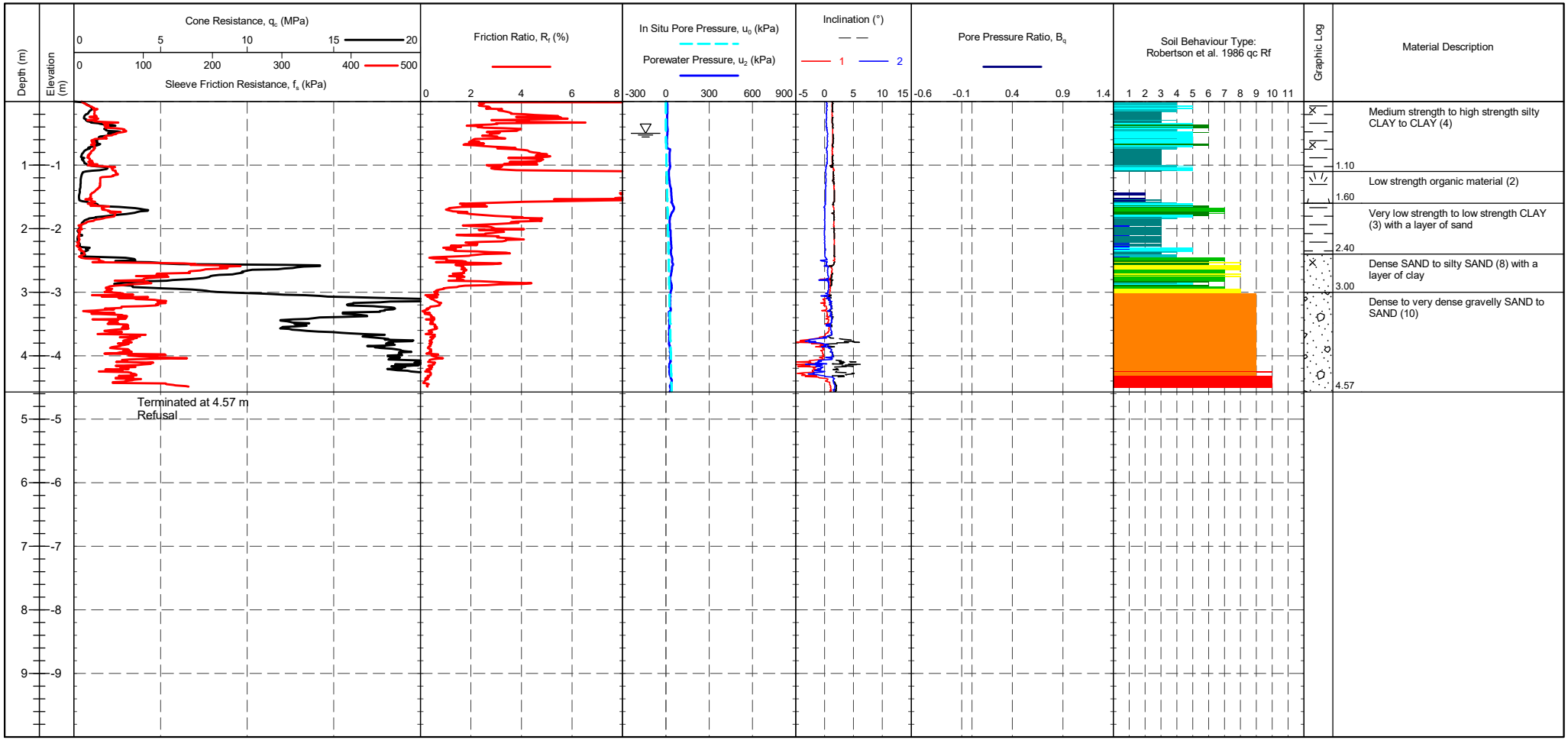
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:02 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID: **CPT206**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649305.315 m NORTHING : 738253.408 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2	CPTU ZERO VALUES	METHOD: Robertson et al. 1986 qc Rf
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

Transducer	Pre	Post	Difference
Tip	227 mV	226 mV	-0.012 MPa
Sleeve	210 mV	210 mV	0 kPa
Pore Pressure 2	281 mV	333 mV	0.014 kPa
X-Y Inclinometer	2533 mV	2523 mV	

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

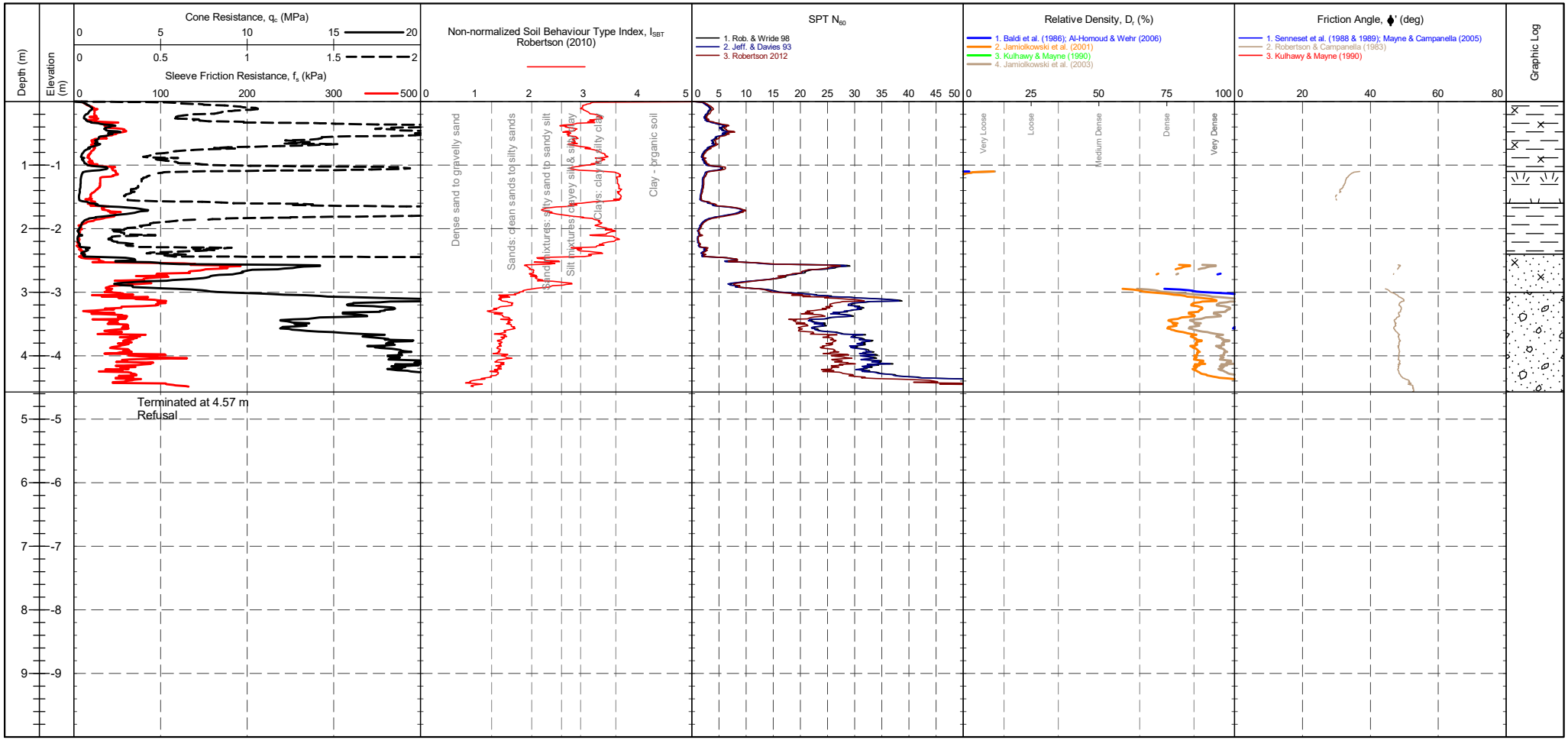
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT206**

CLIENT : Irish Drilling	EASTING : 649305.315 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738253.408 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	227 mV	226 mV	-0.012 MPa
Sleeve	210 mV	210 mV	0 kPa
Pore Pressure 2	281 mV	333 mV	0.014 kPa
X-Y Inclinometer	2533 mV	2523 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

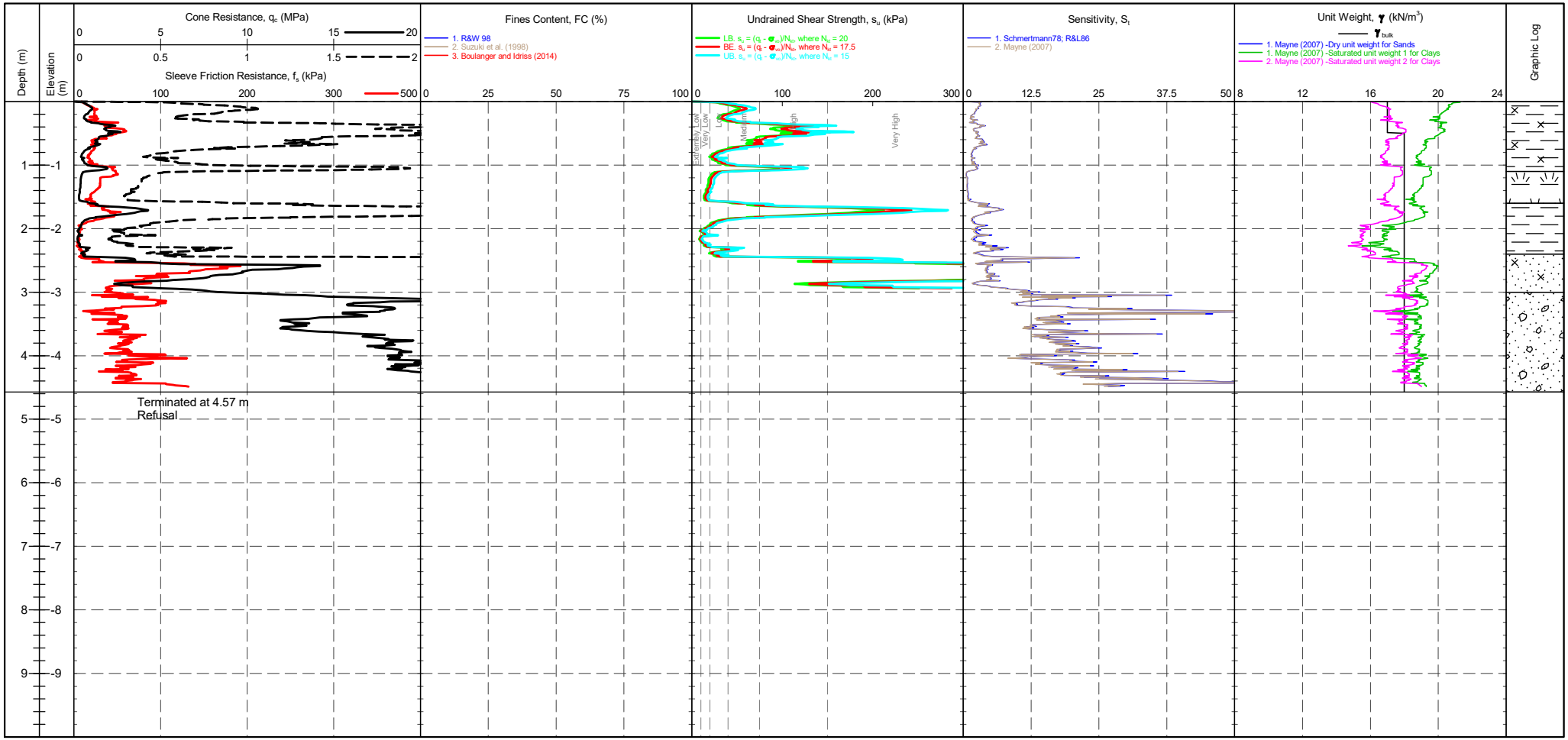
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

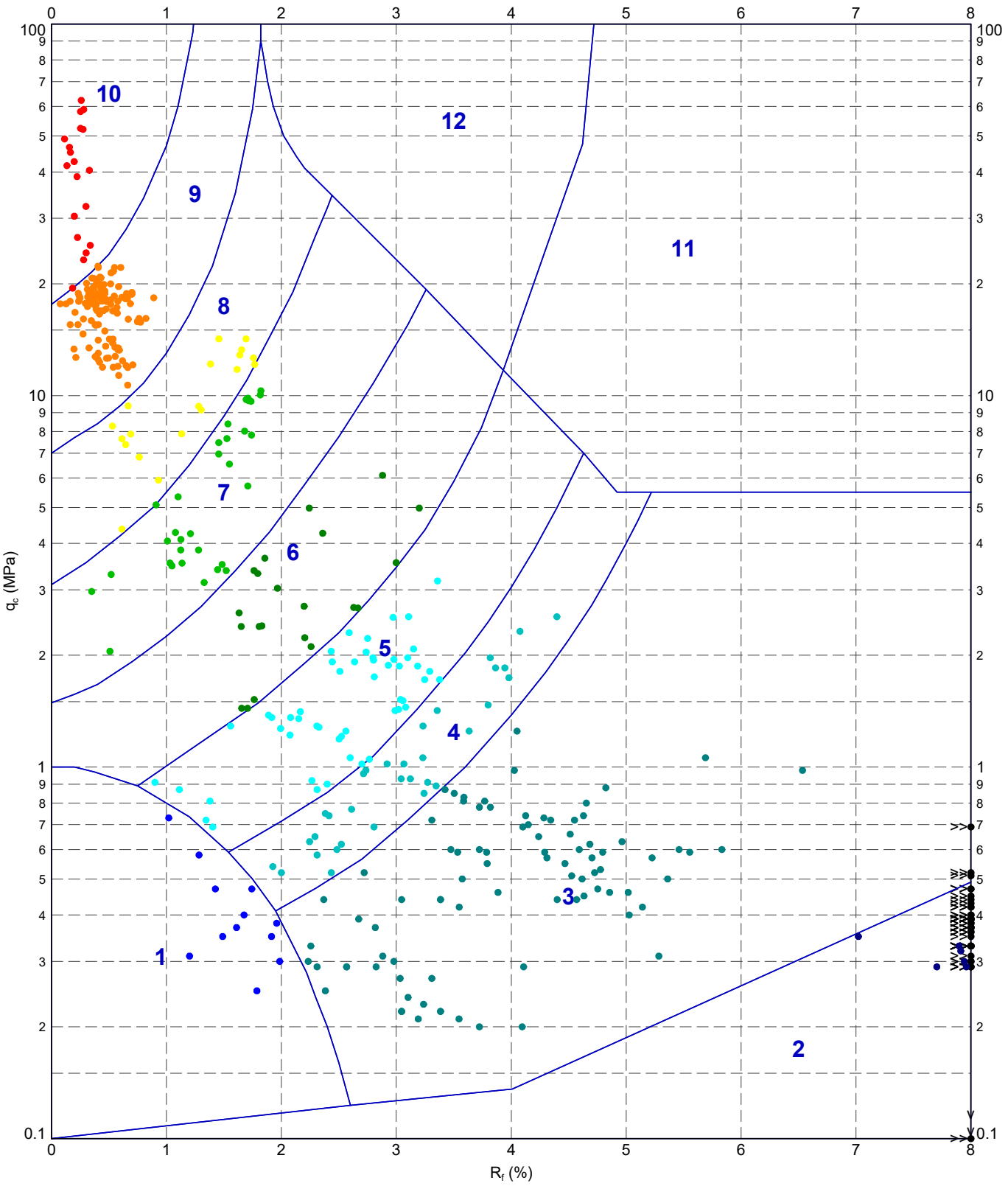
CPT LOG 03

PointID: **CPT206**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649305.315 m NORTHING : 738253.408 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip: 227 mV / 226 mV / -0.012 MPa Sleeve: 210 mV / 210 mV / 0 kPa Pore Pressure 2: 281 mV / 333 mV / 0.014 kPa X-Y Inclinometer: 2533 mV / 2523 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength: <10 Very low strength: 10-20 Low strength: 20-40	Term based on measurement / su (kPa) Medium strength: 40-75 High strength: 75-150 Very high strength: 150-300 Extremely high strength: >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT206	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:03 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

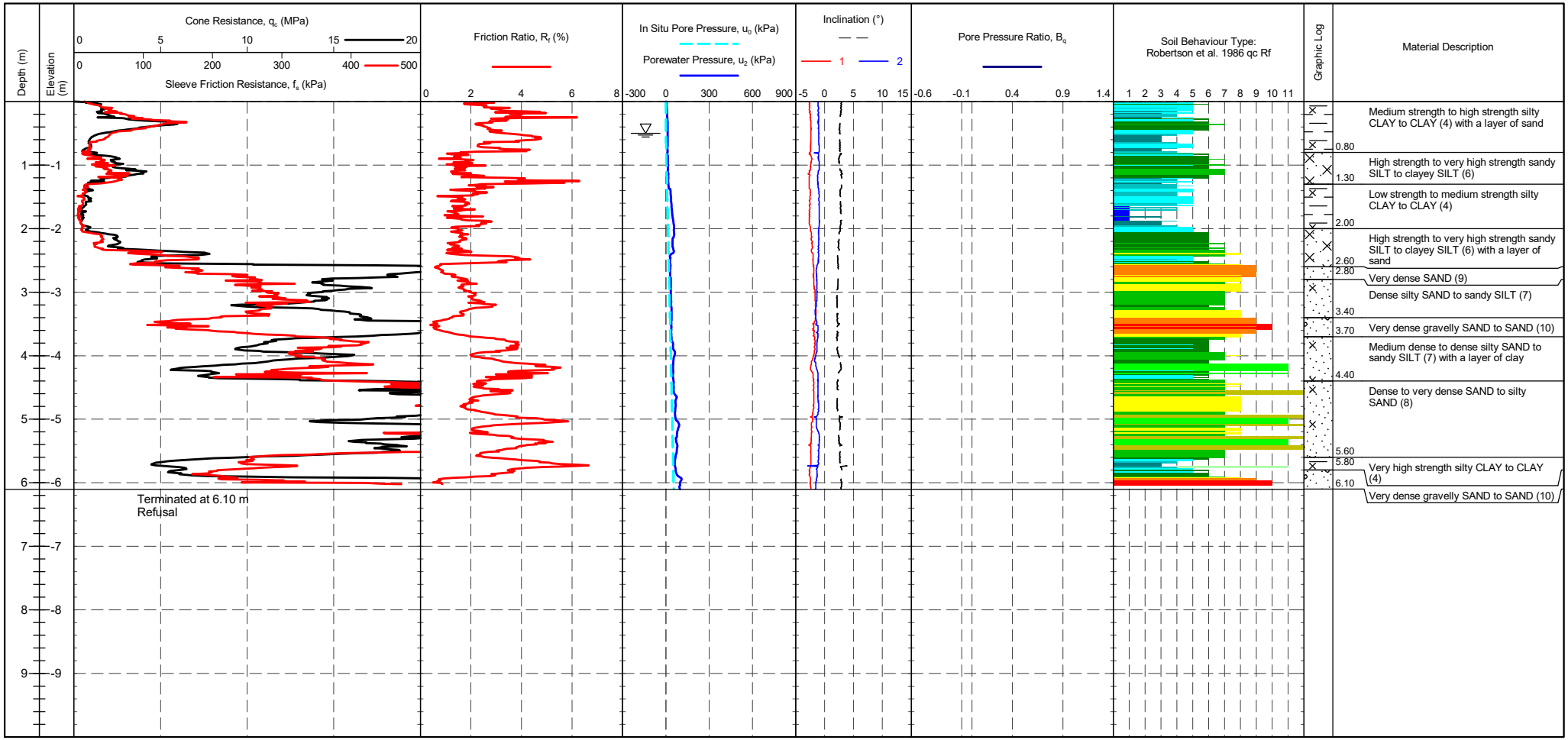
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT207**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649641.764 m NORTHING : 738293.376 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	226 mV	226 mV	0 MPa
Sleeve	196 mV	196 mV	0 kPa
Pore Pressure 2	276 mV	349 mV	0.019 kPa
X-Y Inclinometer	2130 mV	2143 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

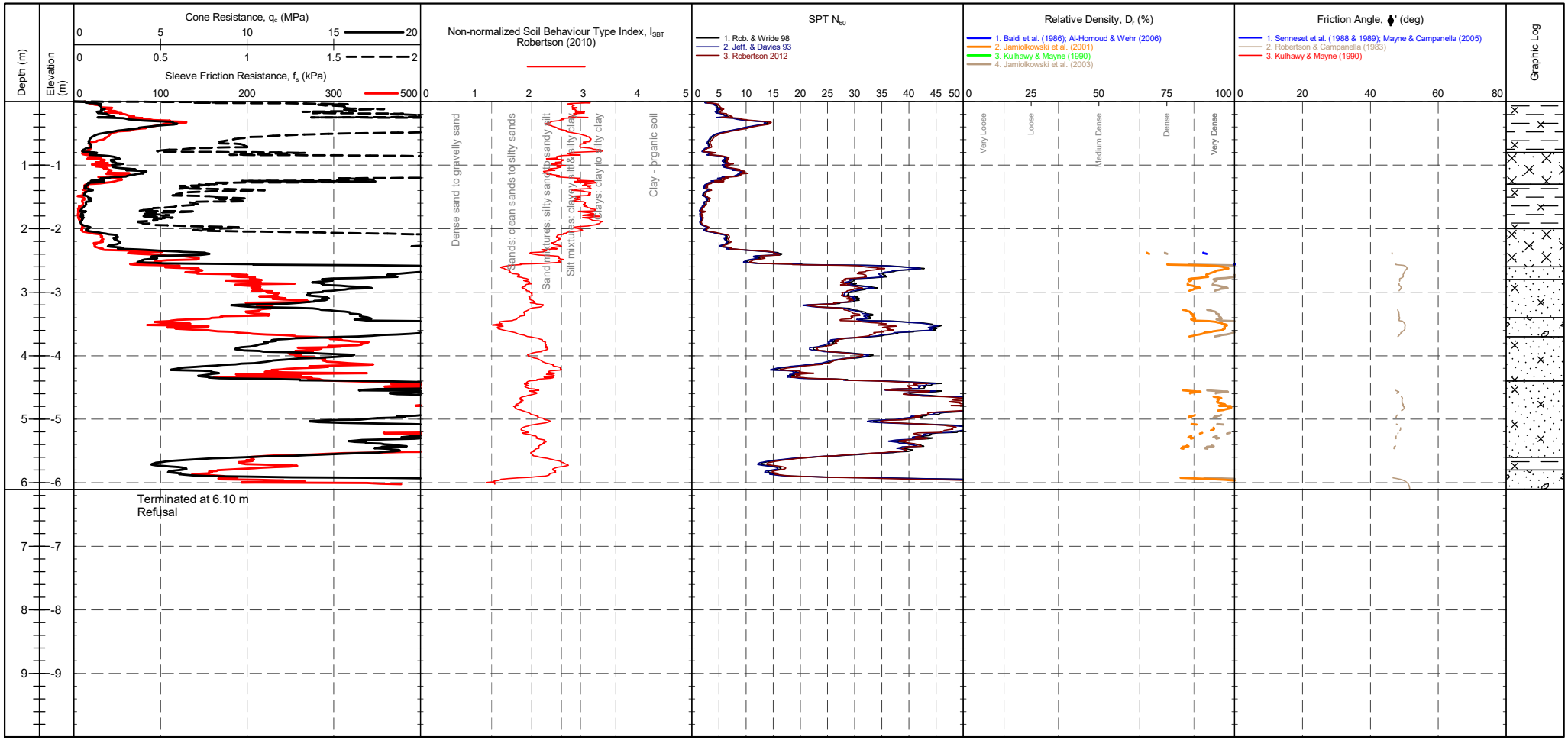
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT207**

CLIENT : Irish Drilling	EASTING : 649641.764 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738293.376 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	226 mV	226 mV	0 MPa
Sleeve	196 mV	196 mV	0 kPa
Pore Pressure 2	276 mV	349 mV	0.019 kPa
X-Y Inclinometer	2130 mV	2143 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

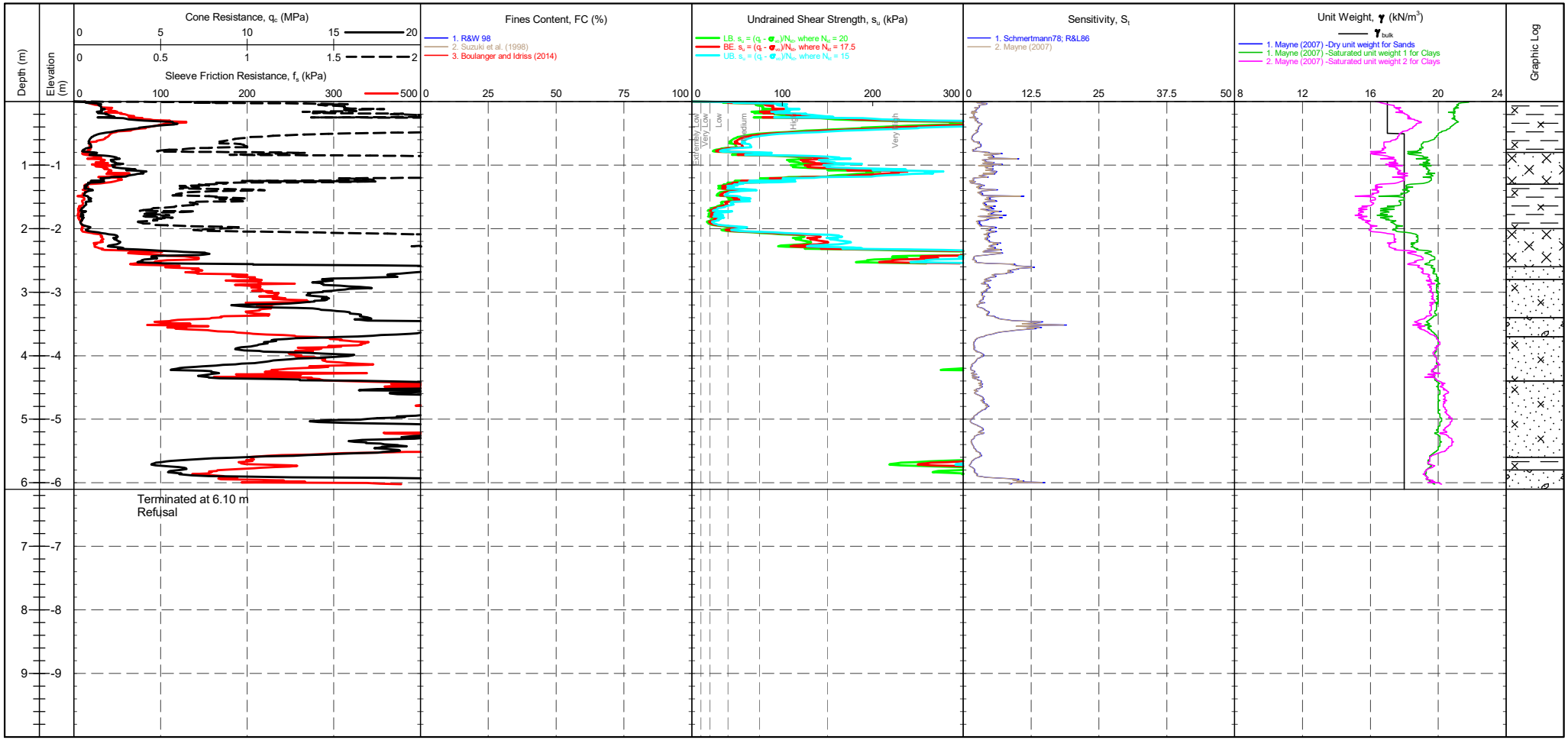
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 03

PointID: **CPT207**

CLIENT : Irish Drilling	EASTING : 649641.764 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738293.376 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



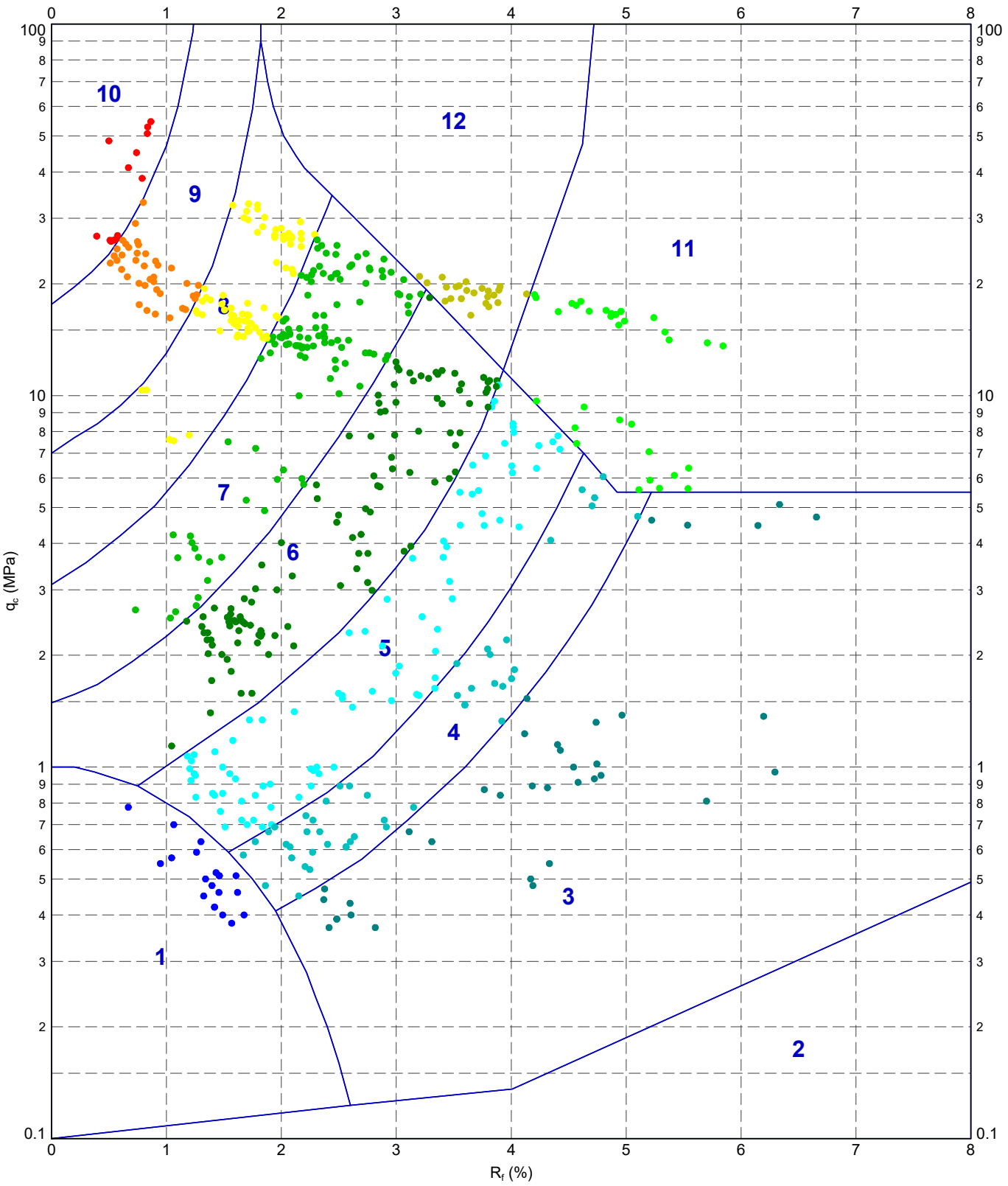
CONE ID : S15-CFIP.2175	TEST TYPE : TE2	CPTU ZERO VALUES			
CONE MODEL : Subtraction	APPLICATION CLASS : 2	Transducer	Pre	Post	Difference
CONE AREA : 15cm^2	RIG : CPT 017 - Griffen	Tip	226 mV	226 mV	0 MPa
CONE AREA RATIO : 0.79	OPERATOR : RS	Sleeve	196 mV	196 mV	0 kPa
FILTER POSITION : u2	FRICTION REDUCER : None	Pore Pressure 2	276 mV	349 mV	0.019 kPa
FILTER TYPE : HDPE	WEATHER : Sunny & Mild	X-Y Inclinometer	2130 mV	2143 mV	

COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT207	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:03 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

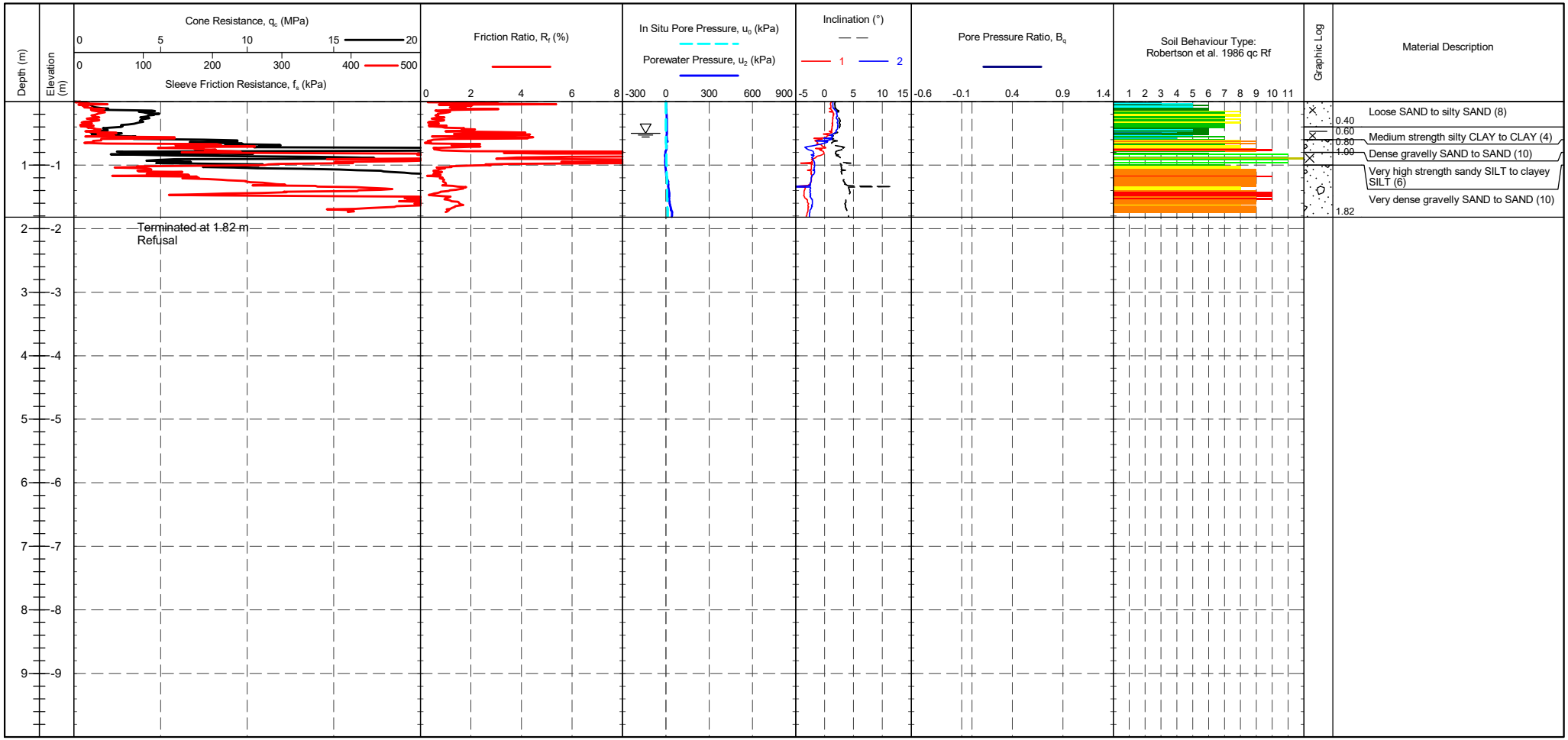
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT209**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649665.736 m NORTHING : 738226.952 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	227 mV	227 mV	0 MPa
Sleeve	197 mV	194 mV	-0.002 kPa
Pore Pressure 2	343 mV	299 mV	-0.012 kPa
X-Y Inclinometer	2504 mV	2512 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

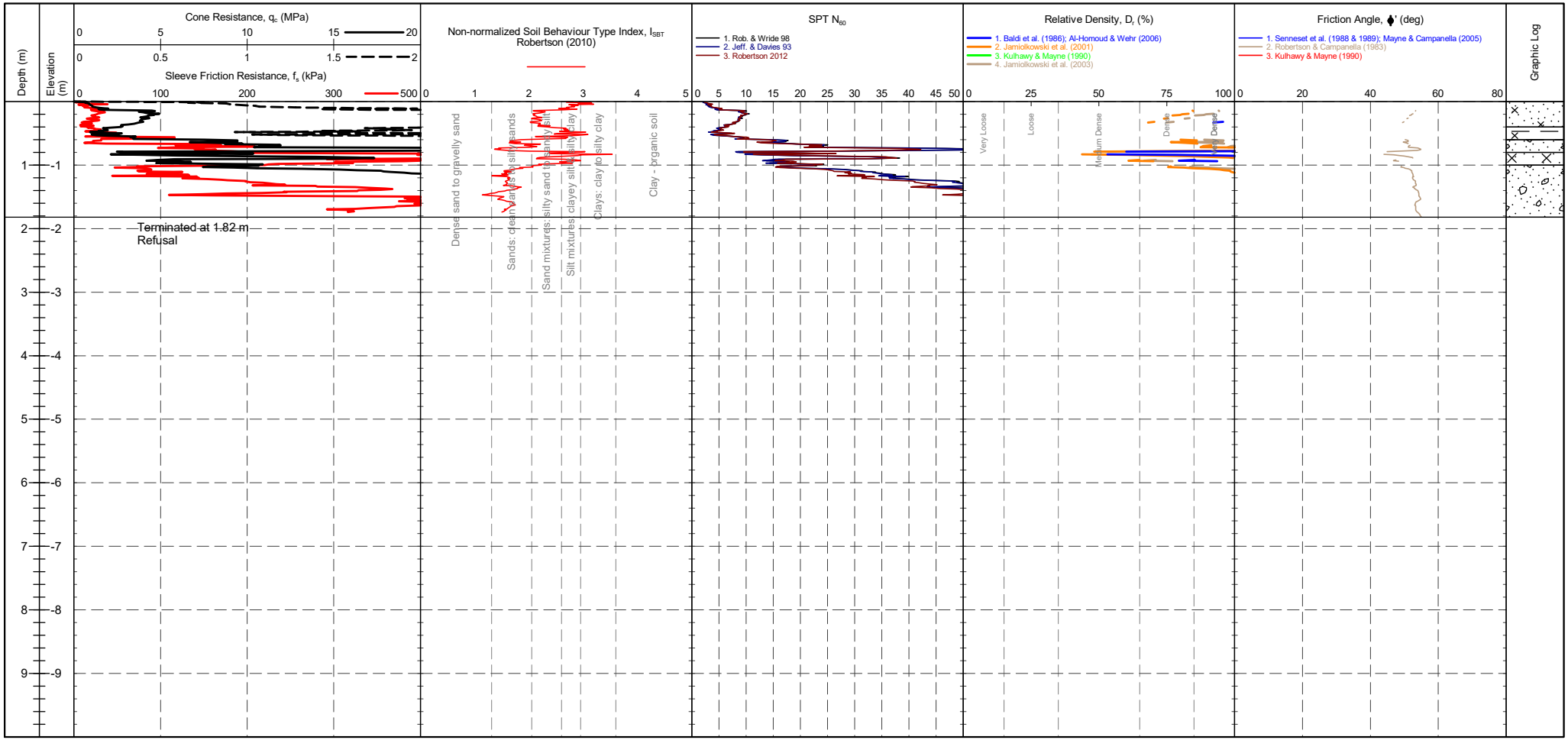
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT209**

CLIENT : Irish Drilling	EASTING : 649665.736 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738226.952 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	227 mV	227 mV	0 MPa
Sleeve	197 mV	194 mV	-0.002 kPa
Pore Pressure 2	343 mV	299 mV	-0.012 kPa
X-Y Inclinometer	2504 mV	2512 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

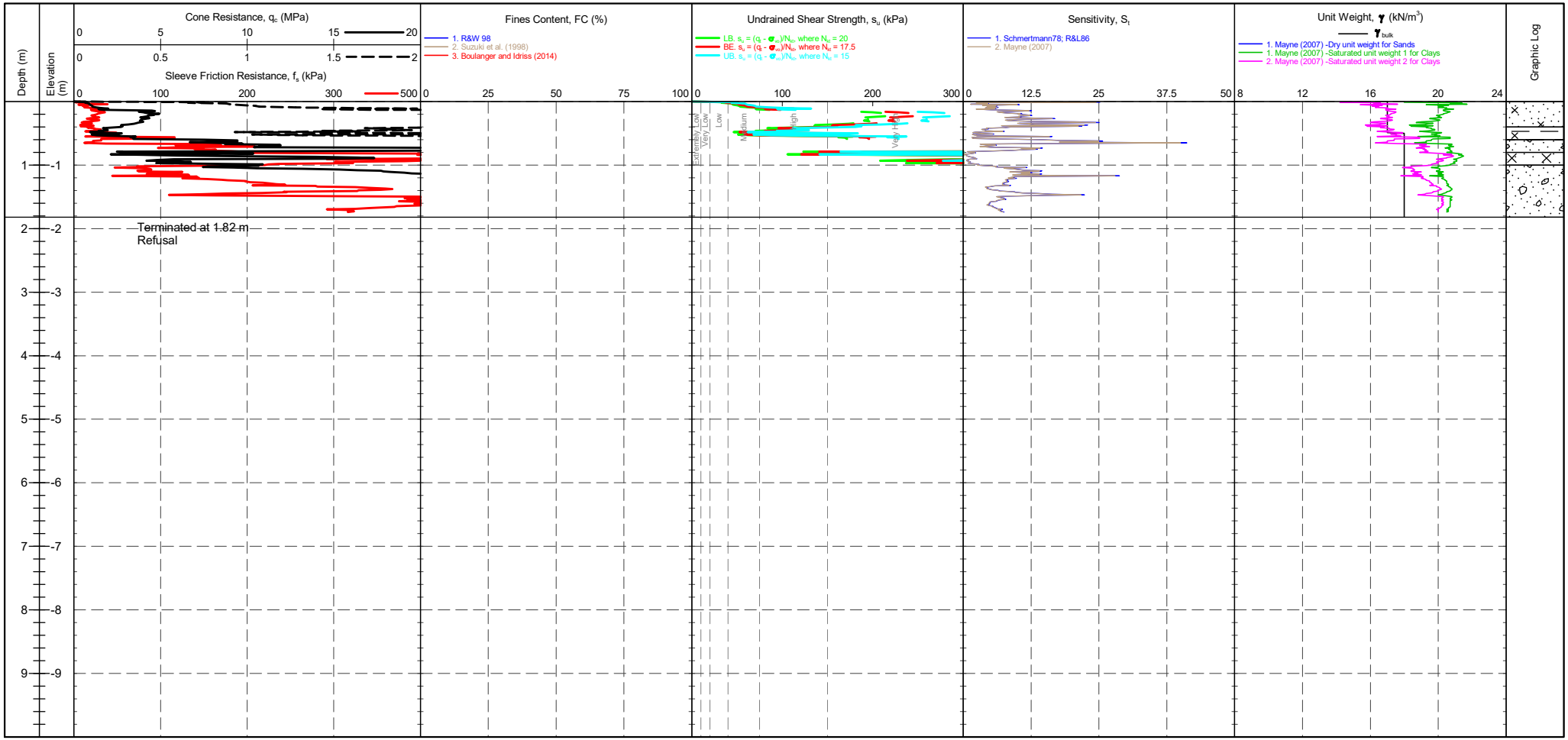
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 03

PointID: **CPT209**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649665.736 m NORTHING : 738226.952 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



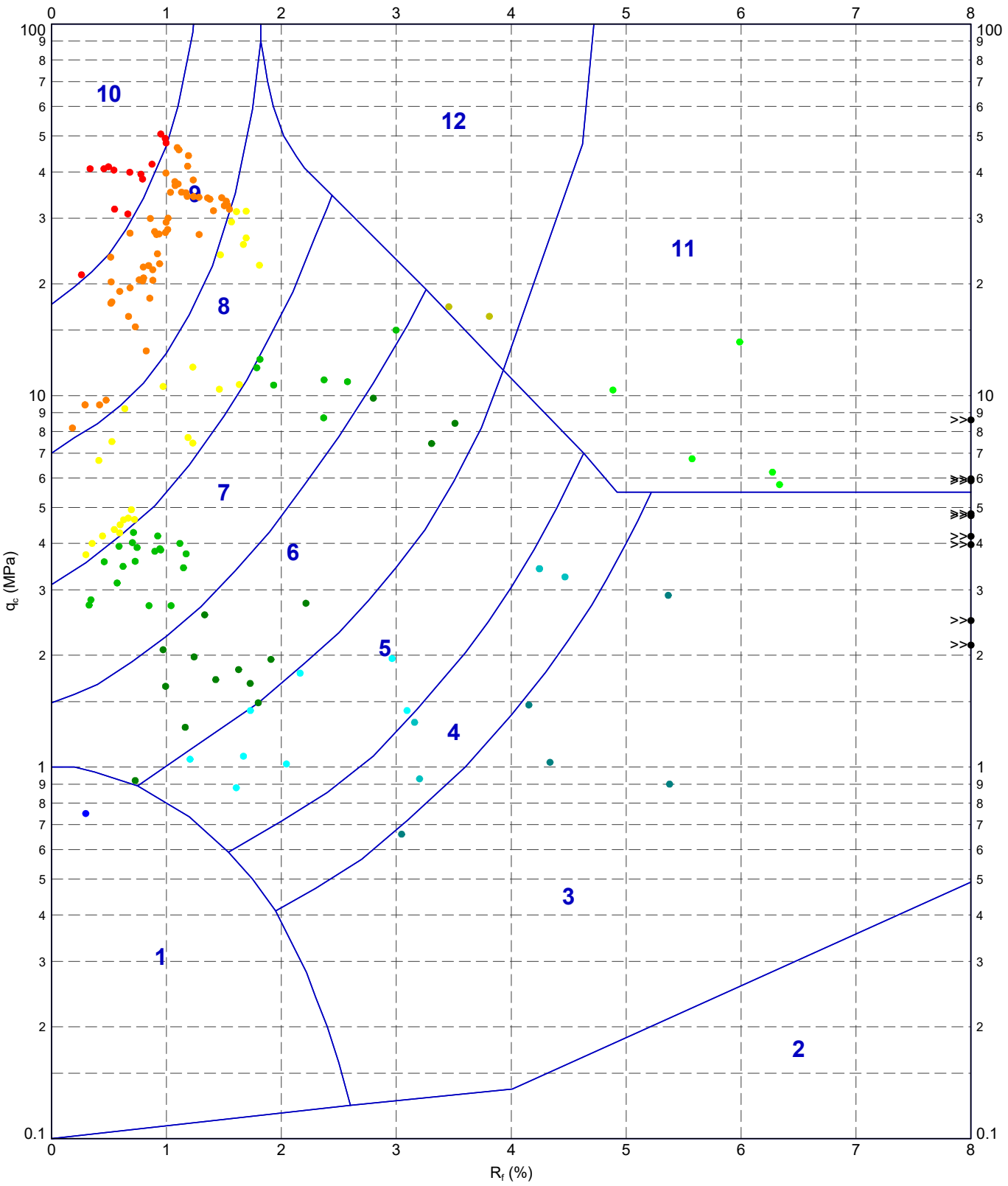
CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Transducer	Pre	Post	Difference
Tip	227 mV	227 mV	0 MPa
Sleeve	197 mV	194 mV	-0.002 kPa
Pore Pressure 2	343 mV	299 mV	-0.012 kPa
X-Y Inclinometer	2504 mV	2512 mV	

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT209	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

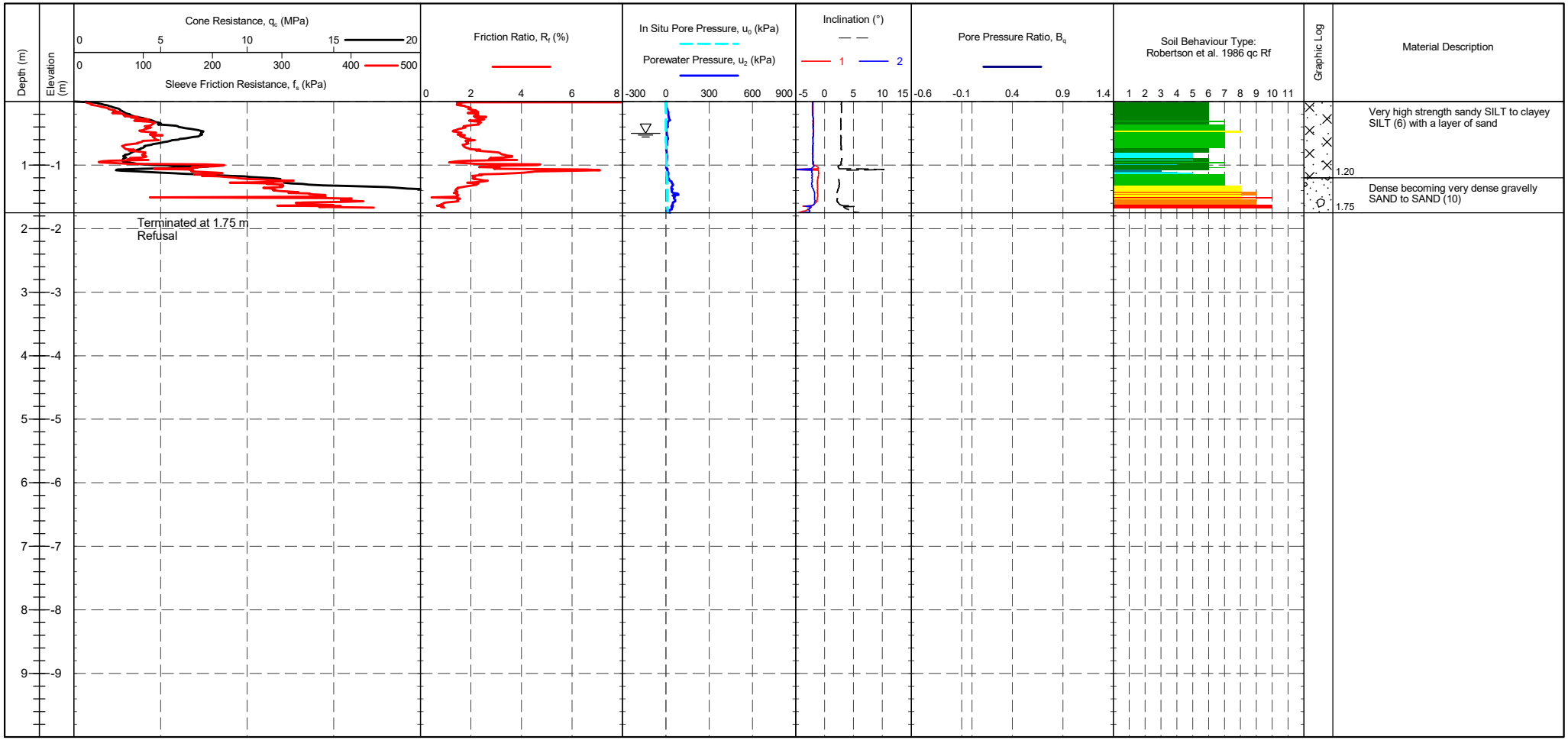
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:04 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID: **CPT211**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649419.630 m NORTHING : 738168.537 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on inclination.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	223 mV	-0.023 MPa
Sleeve	187 mV	199 mV	0.009 kPa
Pore Pressure 2	258 mV	253 mV	-0.001 kPa
X-Y Inclinometer	2183 mV	2191 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

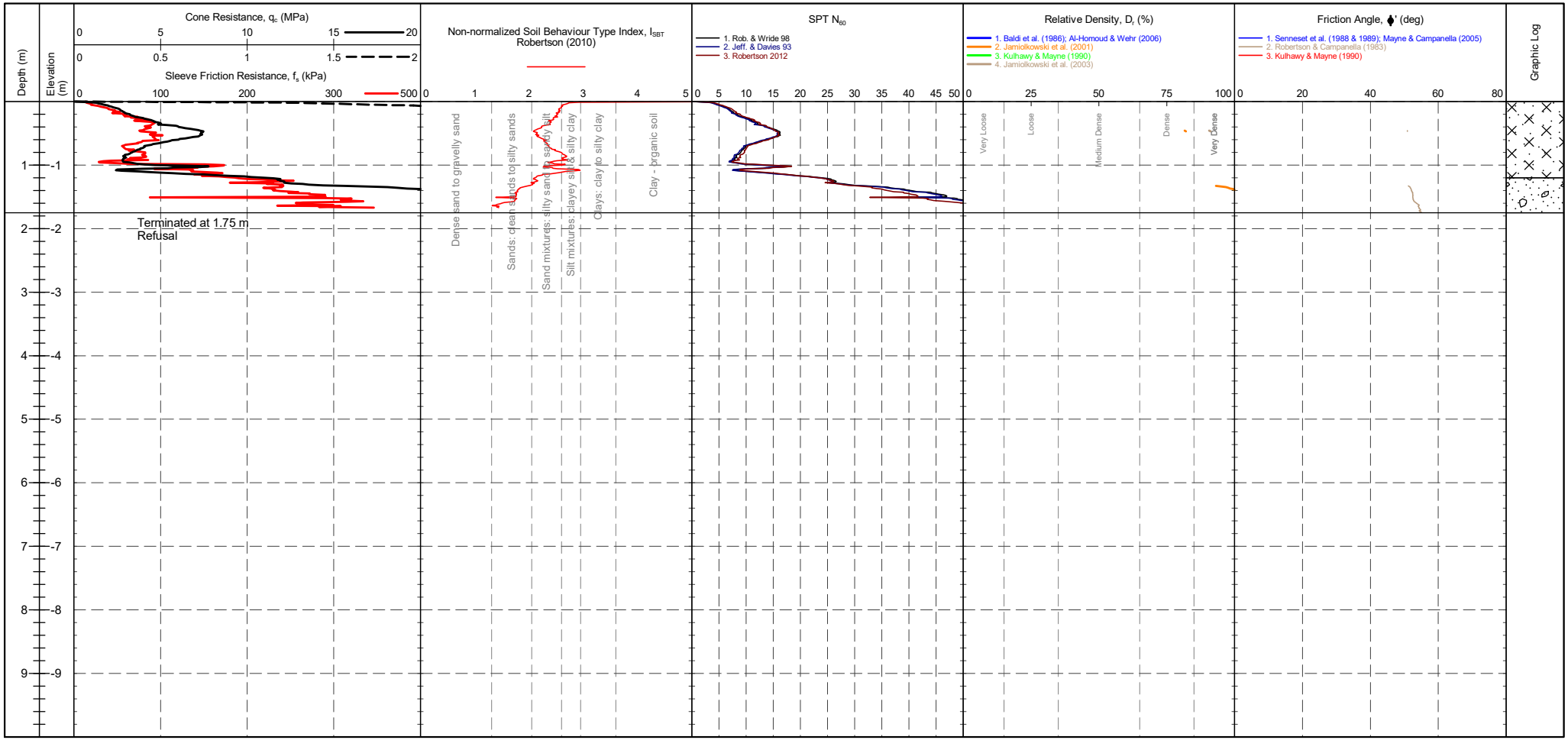
Dissipation Test

CPT LOG 02

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT211

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649419.630 m NORTHING : 738168.537 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on inclination.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	223 mV	-0.023 MPa
Sleeve	187 mV	199 mV	0.009 kPa
Pore Pressure 2	258 mV	253 mV	-0.001 kPa
X-Y Inclinometer	2183 mV	2191 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

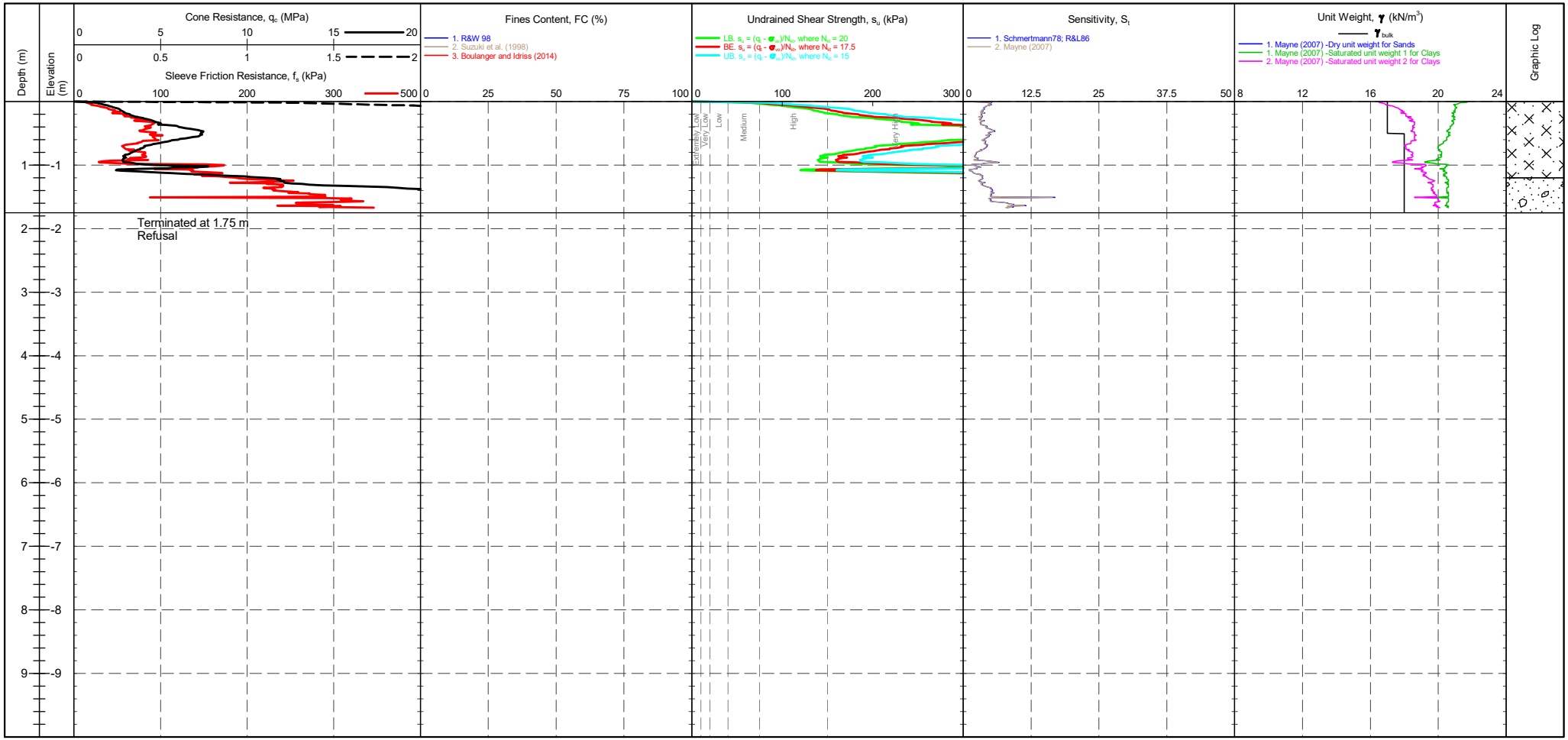
Dissipation Test

CPT LOG 03

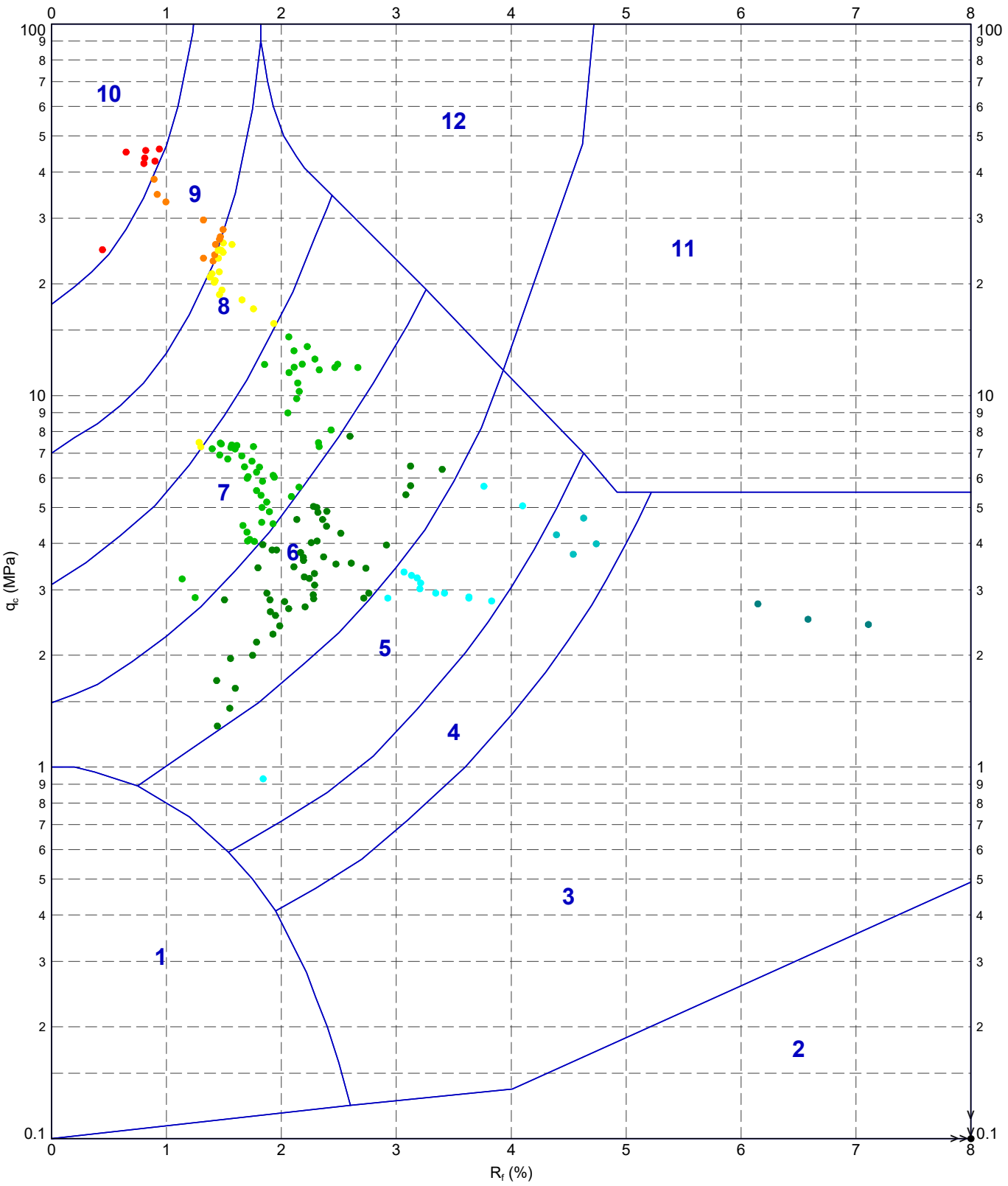
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT211

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649419.630 m NORTHING : 738168.537 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on inclination.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 225 mV / 223 mV / -0.023 MPa Sleeve / 187 mV / 199 mV / 0.009 kPa Pore Pressure 2 / 258 mV / 253 mV / -0.001 kPa X-Y Inclinometer / 2183 mV / 2191 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT211	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:05 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

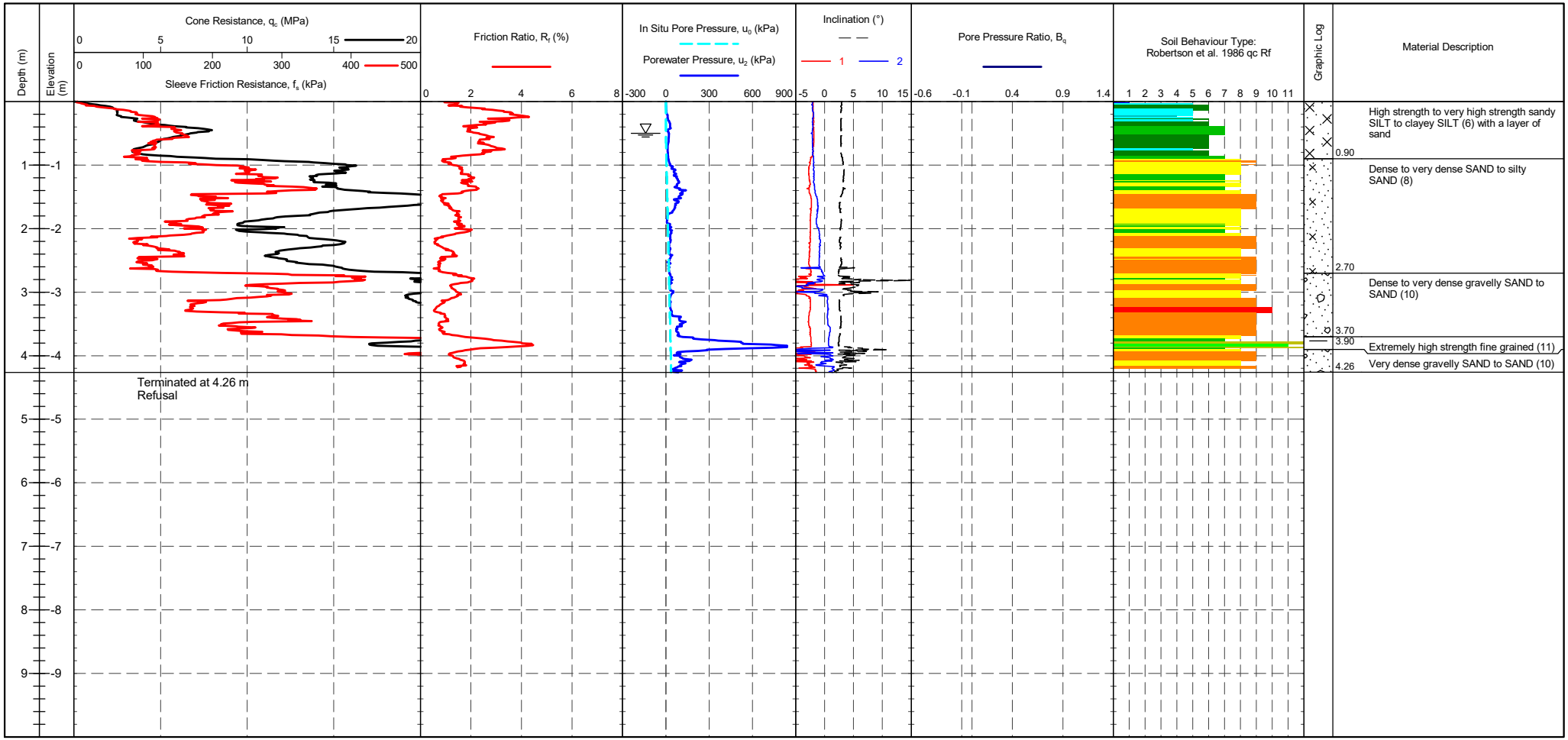
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT211A**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649419.630 m NORTHING : 738168.537 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	224 mV	0.023 MPa
Sleeve	199 mV	201 mV	0.001 kPa
Pore Pressure 2	256 mV	251 mV	-0.001 kPa
X-Y Inclinometer	2197 mV	2211 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

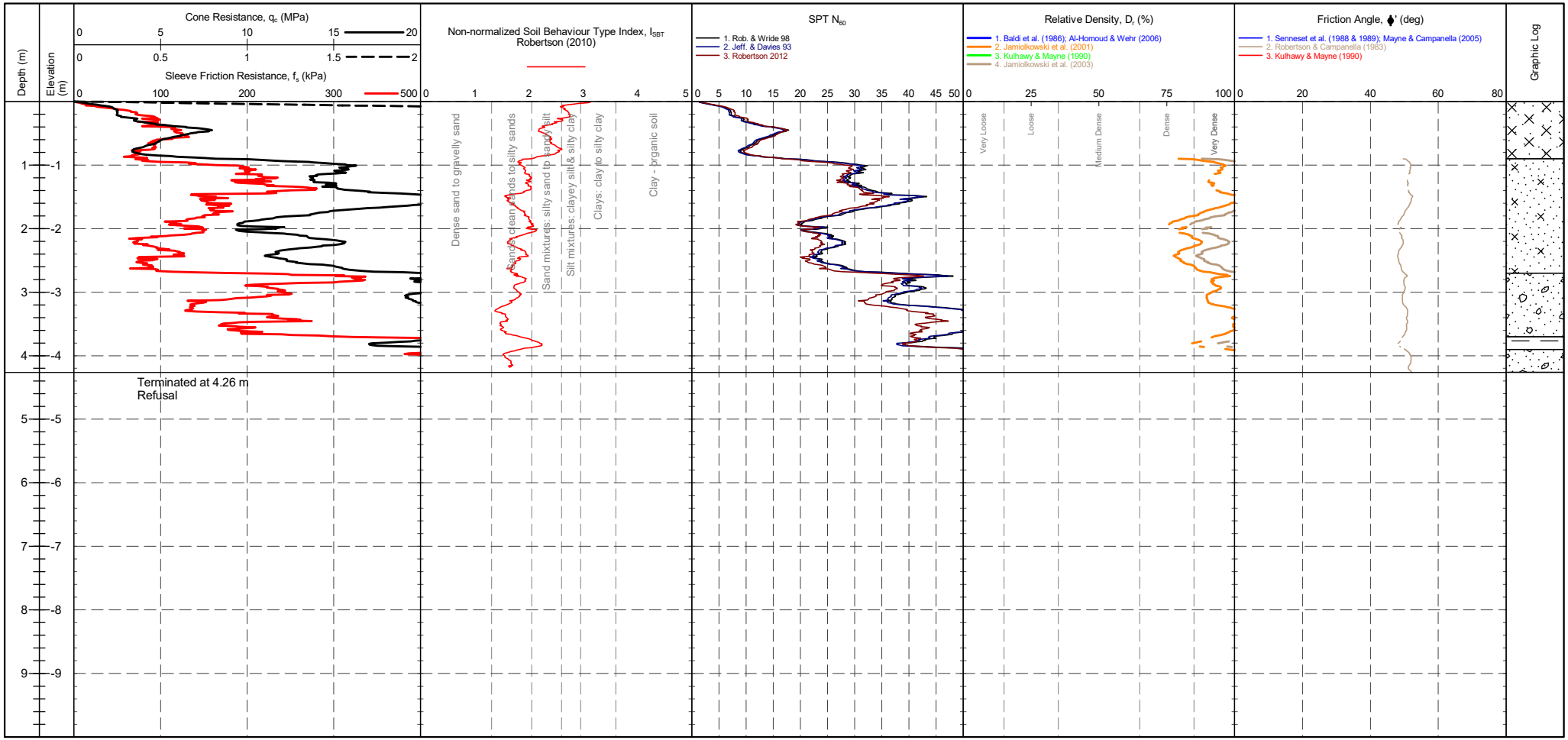
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT211A**

CLIENT : Irish Drilling	EASTING : 649419.630 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738168.537 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 21/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	222 mV	224 mV	0.023 MPa
Sleeve	199 mV	201 mV	0.001 kPa
Pore Pressure 2	256 mV	251 mV	-0.001 kPa
X-Y Inclinometer	2197 mV	2211 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

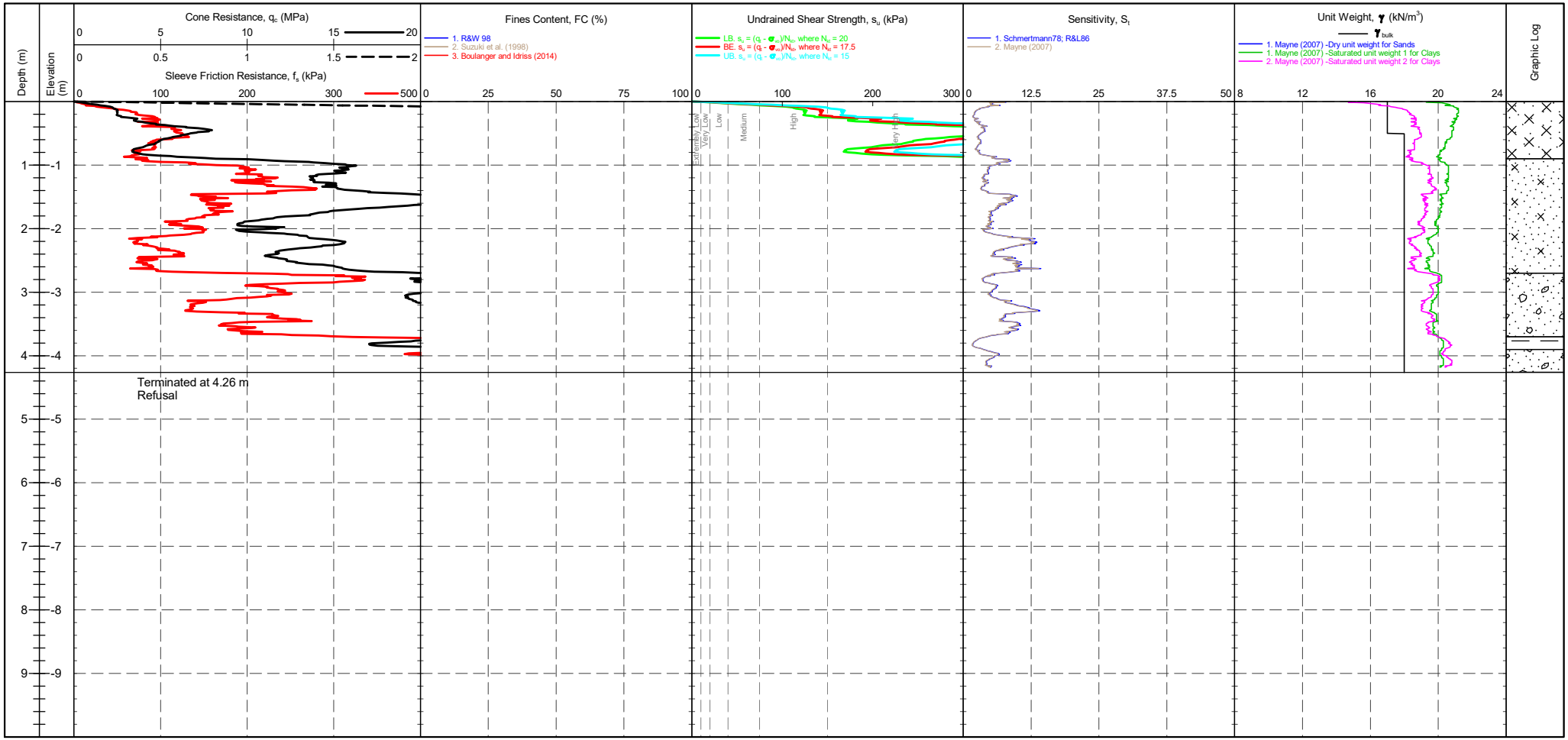
Dissipation Test

CPT LOG 03

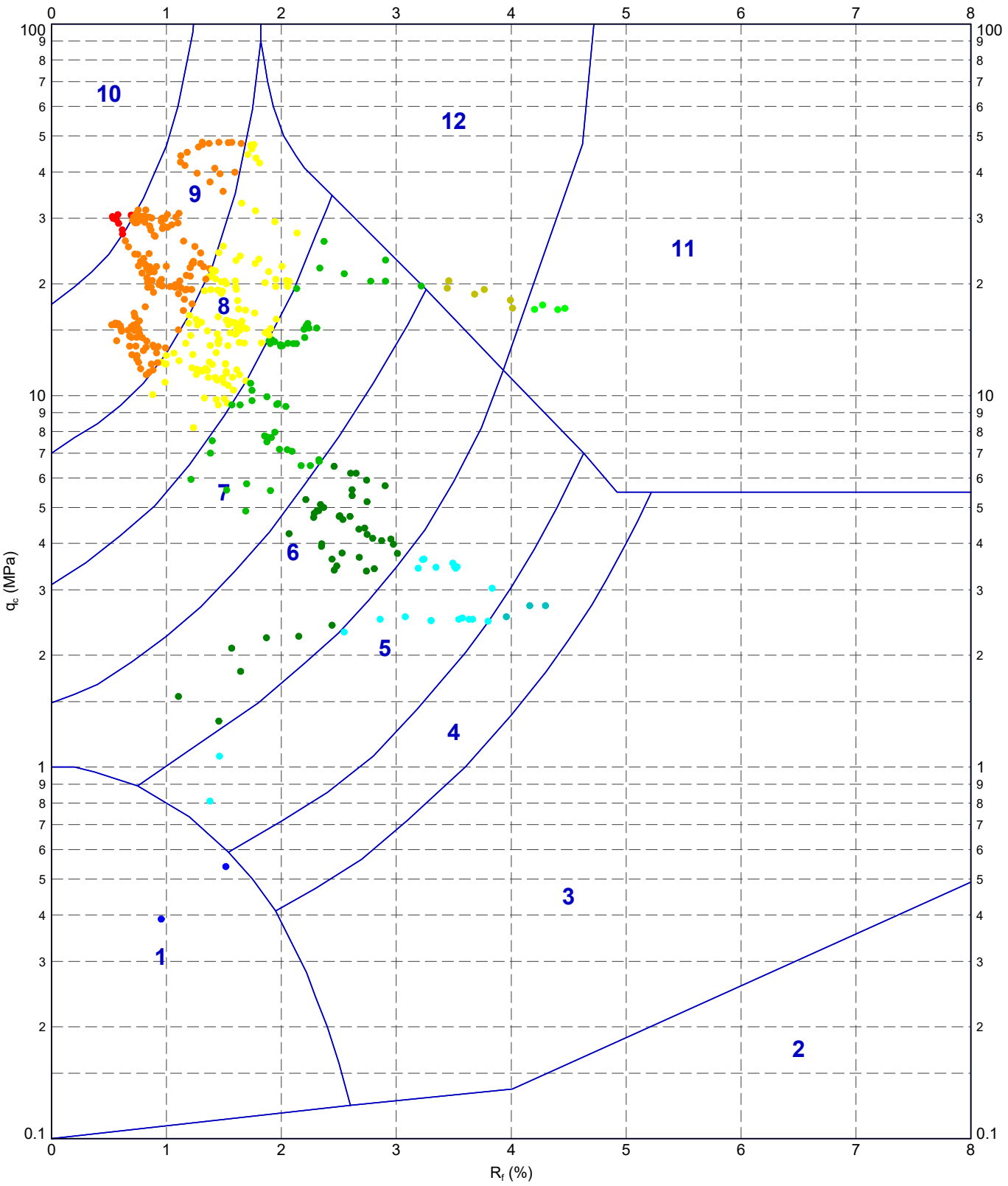
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT211A

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649419.630 m NORTHING : 738168.537 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 21/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 222 mV / 224 mV / 0.023 MPa Sleeve / 199 mV / 201 mV / 0.001 kPa Pore Pressure 2 / 256 mV / 251 mV / -0.001 kPa X-Y Inclinometer / 2197 mV / 2211 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT211A	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:06 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

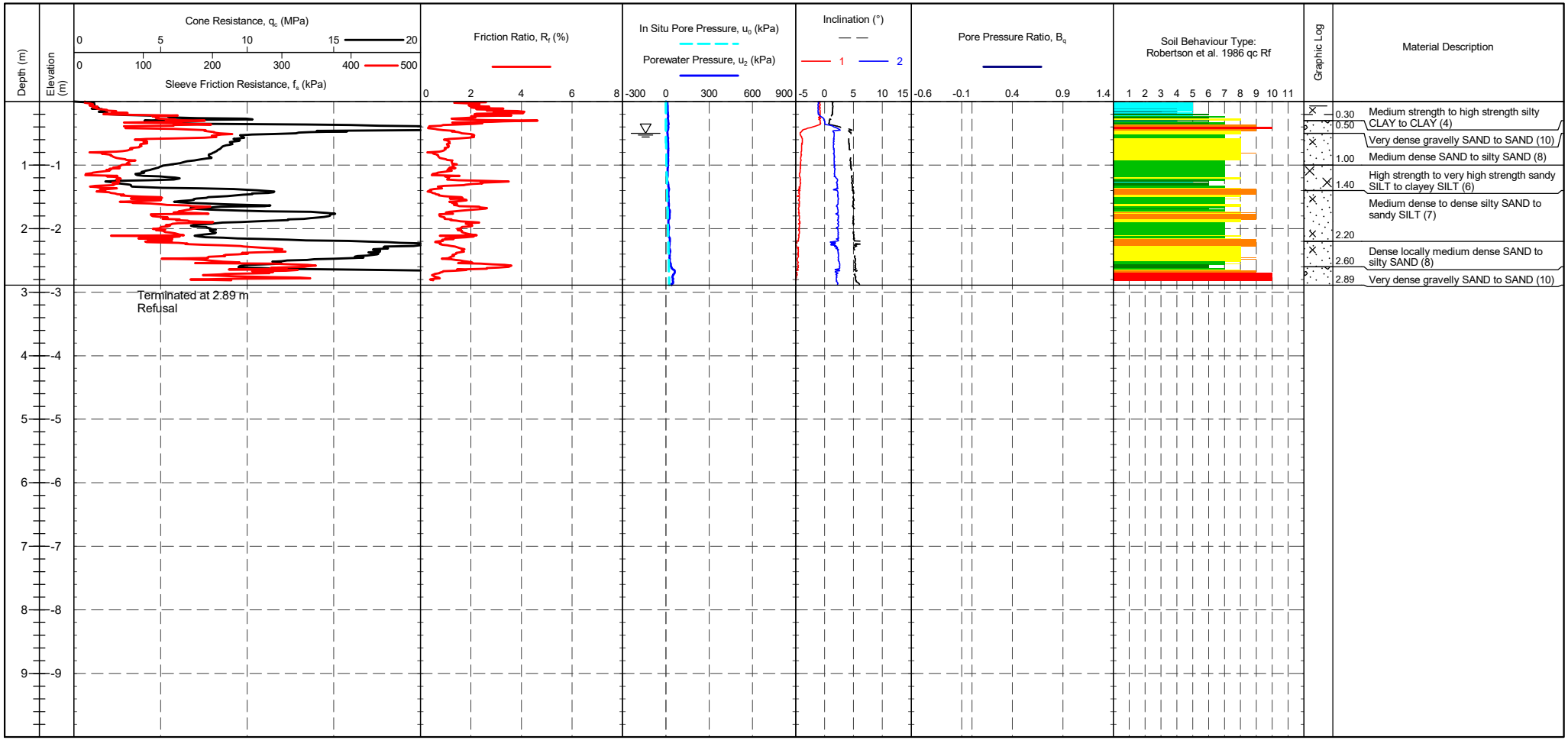
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT212**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649349.208 m NORTHING : 738191.273 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	229 mV	0.012 MPa
Sleeve	210 mV	210 mV	0 kPa
Pore Pressure 2	289 mV	277 mV	-0.003 kPa
X-Y Inclinometer	2310 mV	2345 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

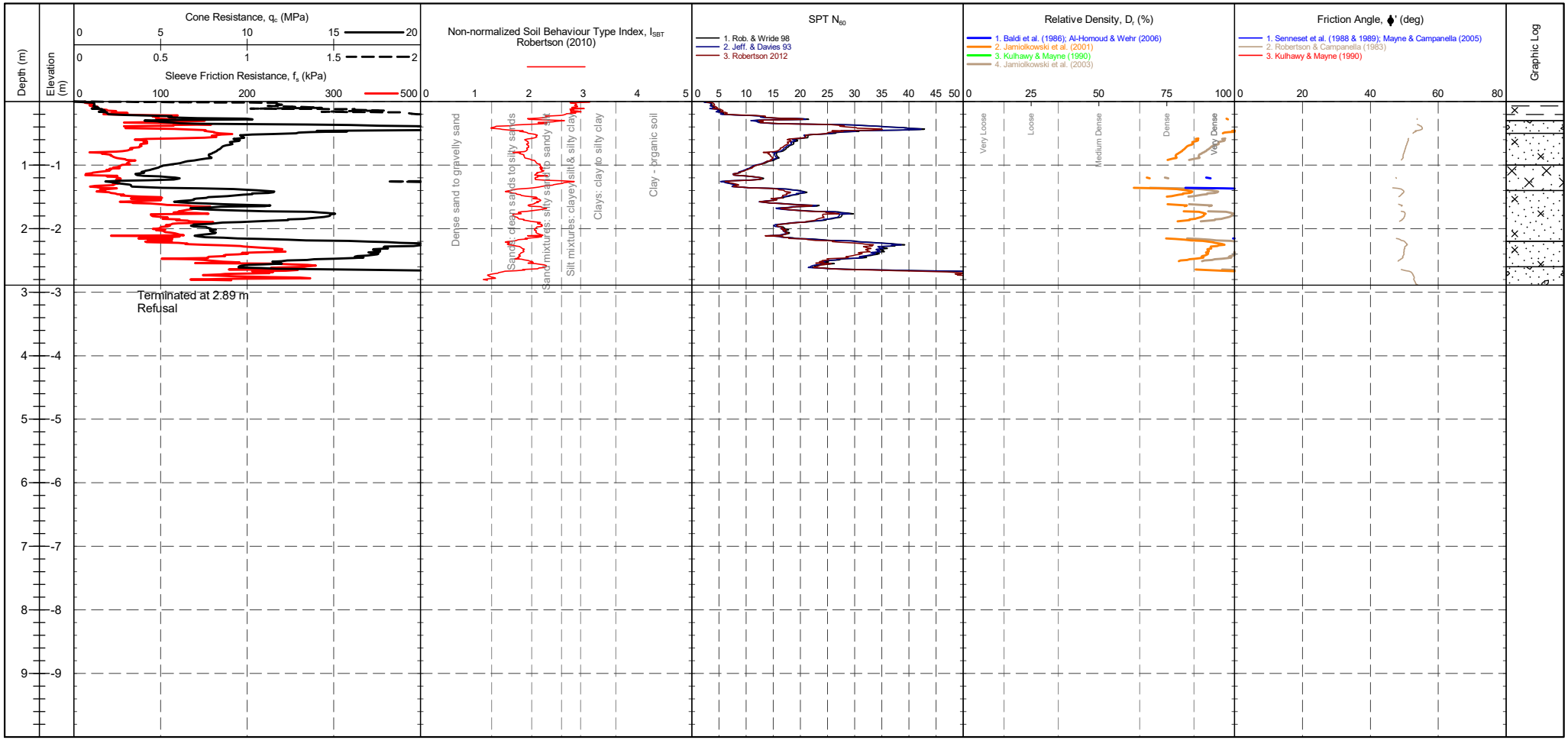
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT212**

CLIENT : Irish Drilling	EASTING : 649349.208 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738191.273 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	229 mV	0.012 MPa
Sleeve	210 mV	210 mV	0 kPa
Pore Pressure 2	289 mV	277 mV	-0.003 kPa
X-Y Inclinometer	2310 mV	2345 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

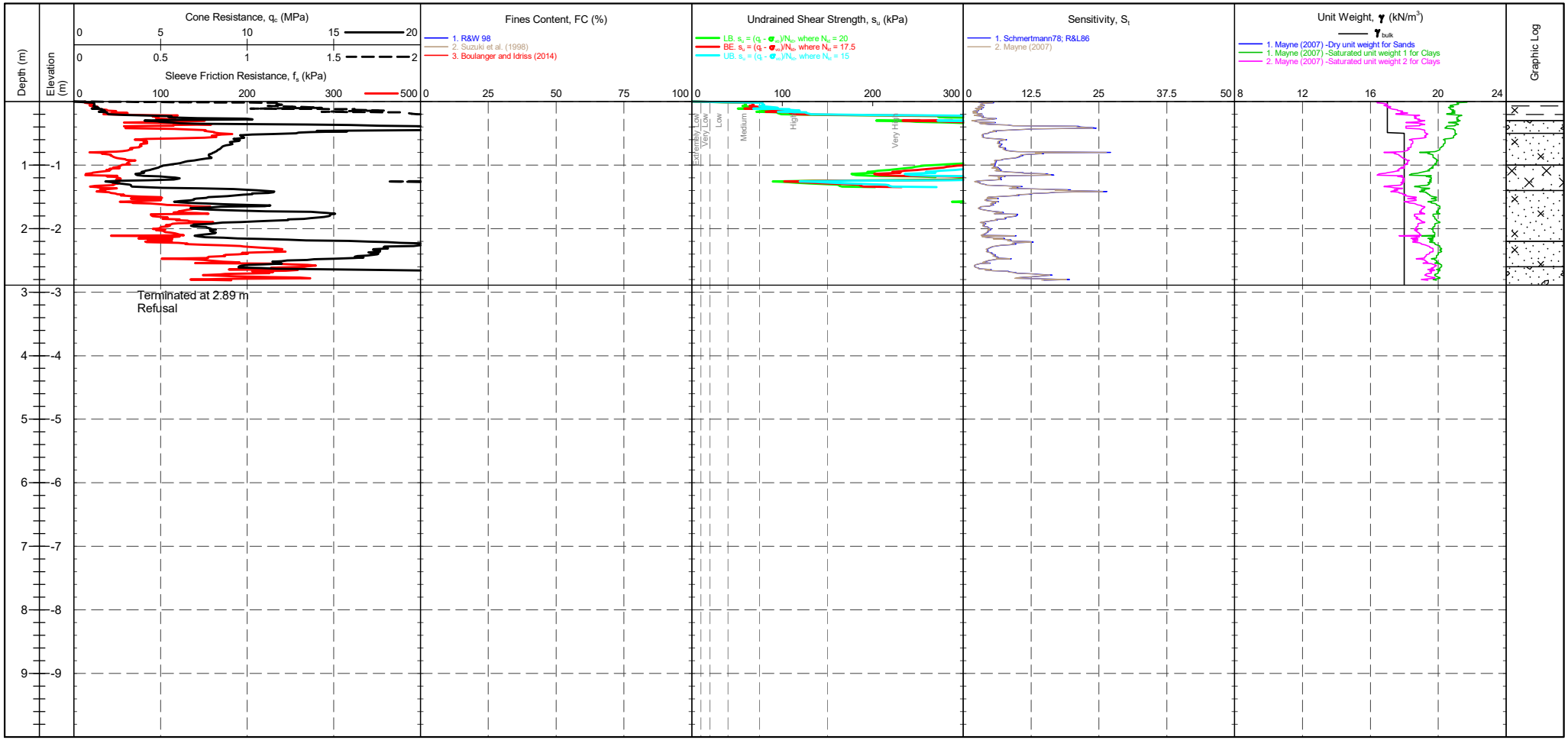
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

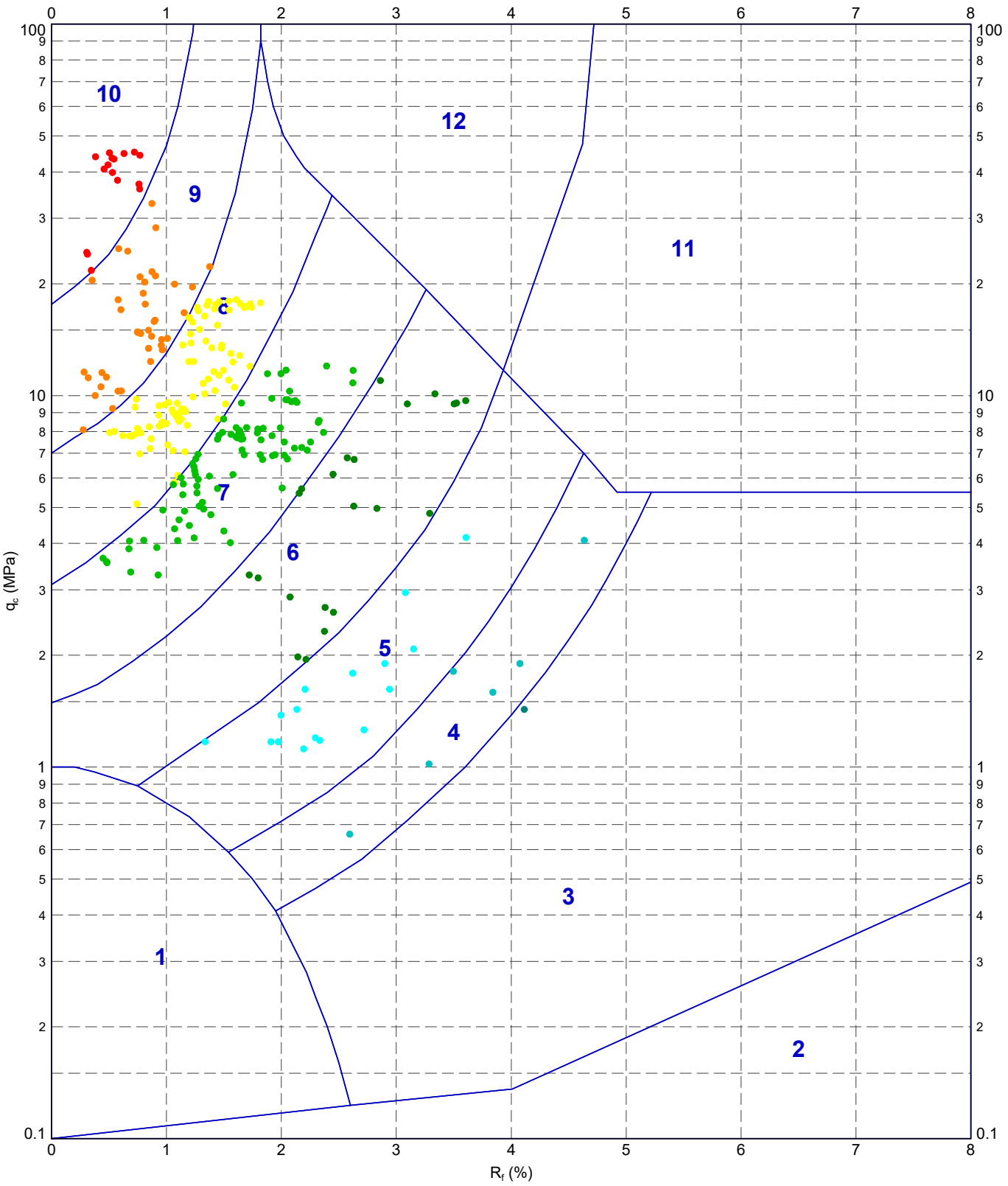
CPT LOG 03

PointID: **CPT212**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649349.208 m NORTHING : 738191.273 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 228 mV / 229 mV / 0.012 MPa Sleeve / 210 mV / 210 mV / 0 kPa Pore Pressure 2 / 289 mV / 277 mV / -0.003 kPa X-Y Inclinometer / 2310 mV / 2345 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT212	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

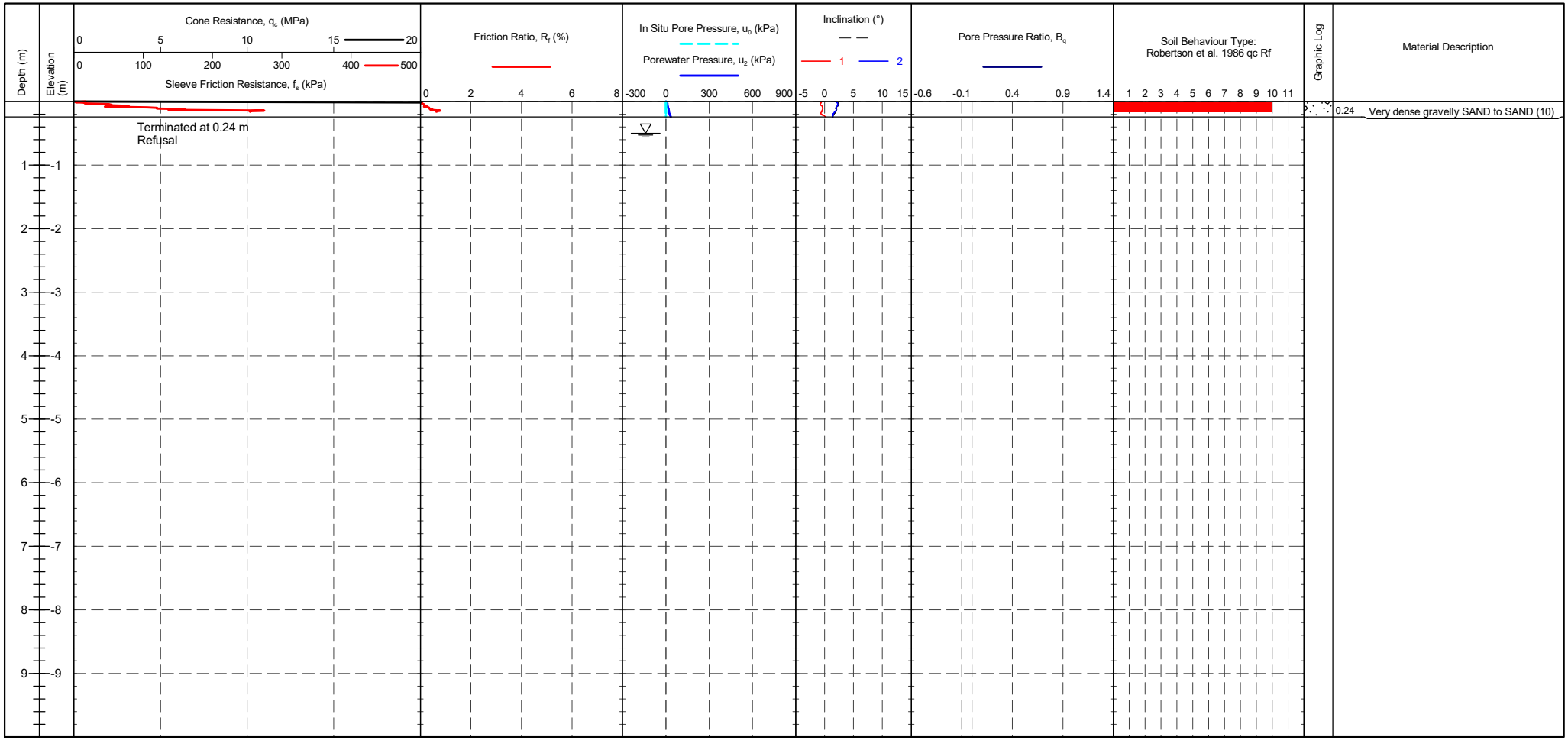
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:06 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID **CPT213**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649295.361 m NORTHING : 738124.931 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm^2	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	231 mV	0.035 MPa
Sleeve	208 mV	210 mV	0.001 kPa
Pore Pressure 2	273 mV	274 mV	0 kPa
X-Y Inclinometer	2366 mV	2341 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

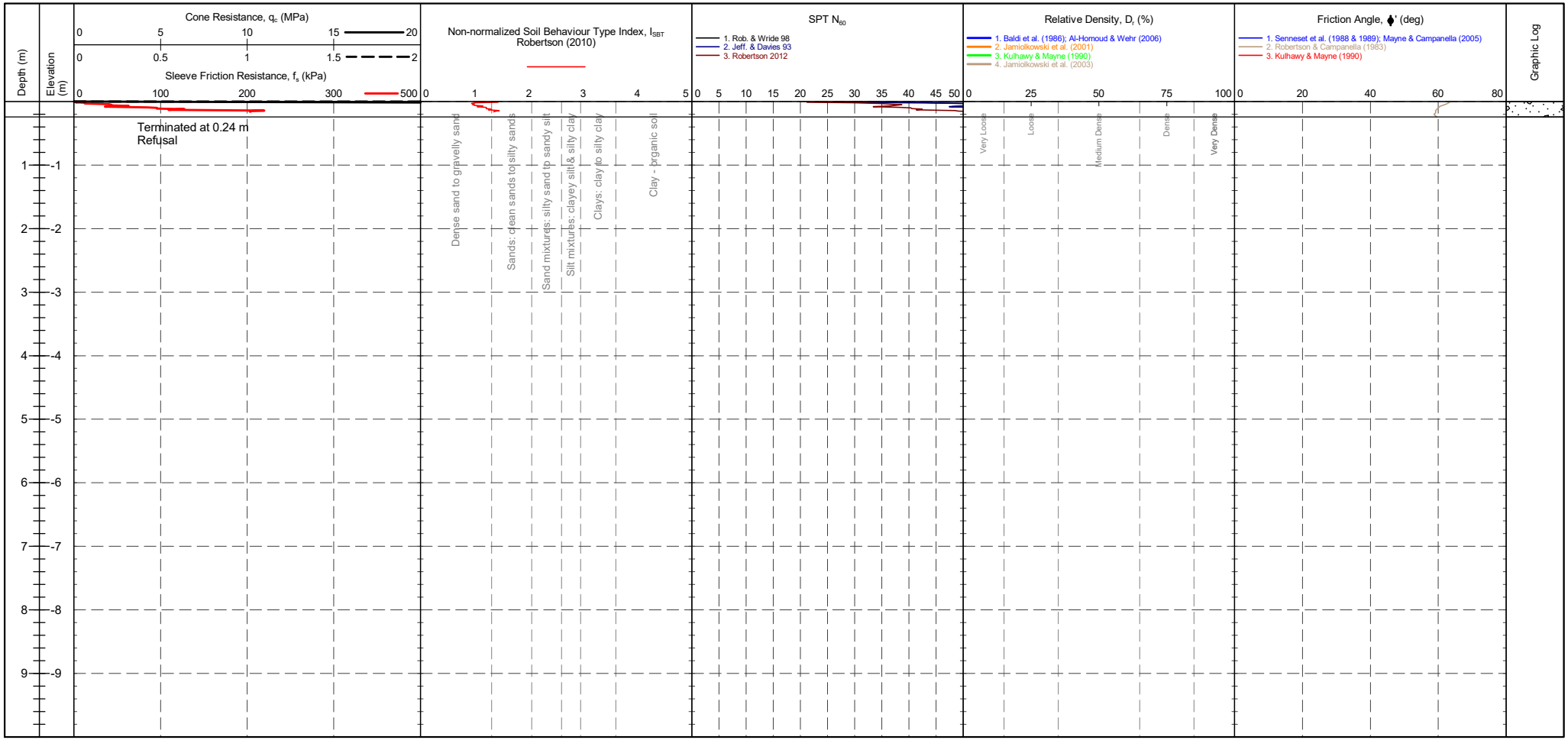
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT213**

CLIENT : Irish Drilling	EASTING : 649295.361 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738124.931 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	228 mV	231 mV	0.035 MPa
Sleeve	208 mV	210 mV	0.001 kPa
Pore Pressure 2	273 mV	274 mV	0 kPa
X-Y Inclinometer	2366 mV	2341 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

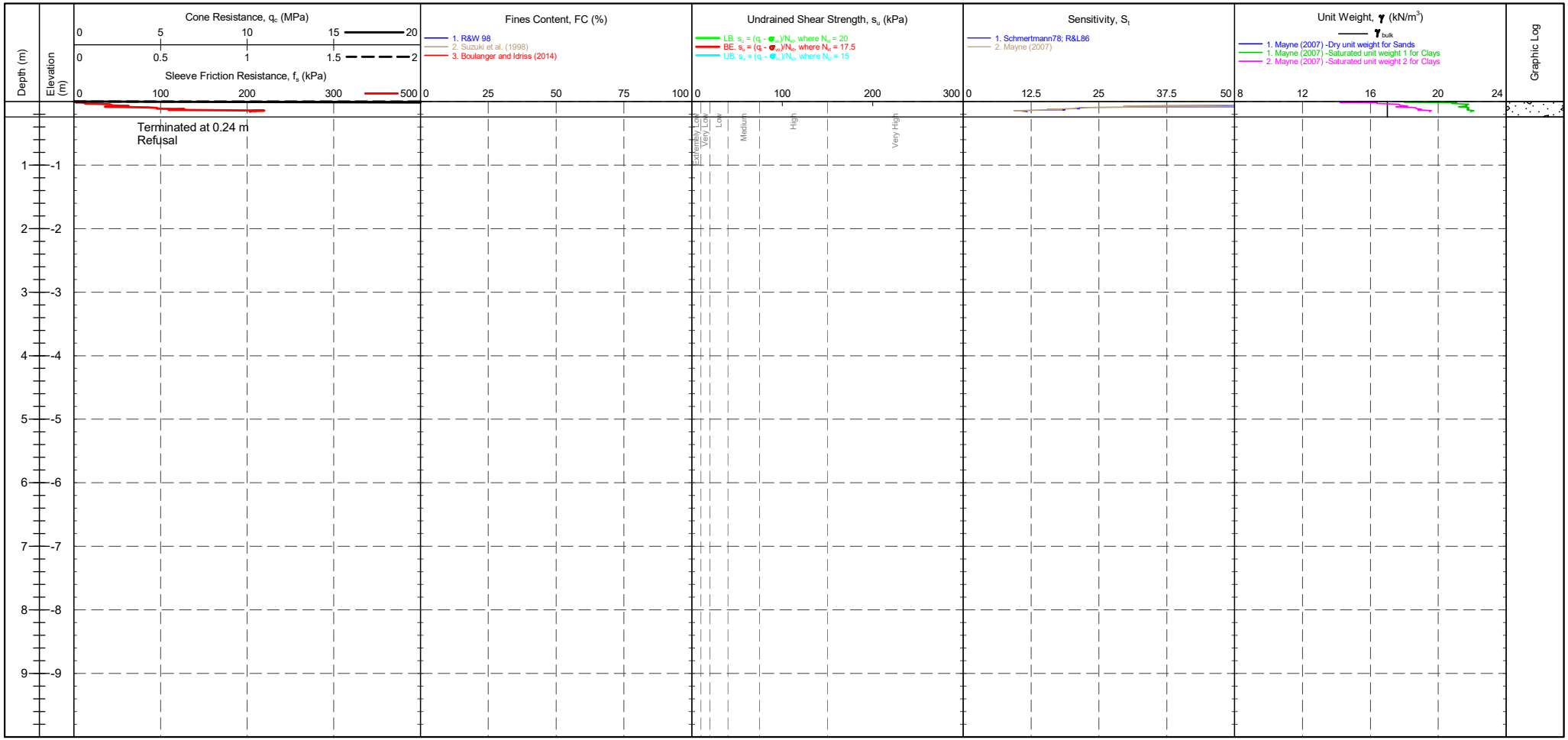
Dissipation Test

CPT LOG 03

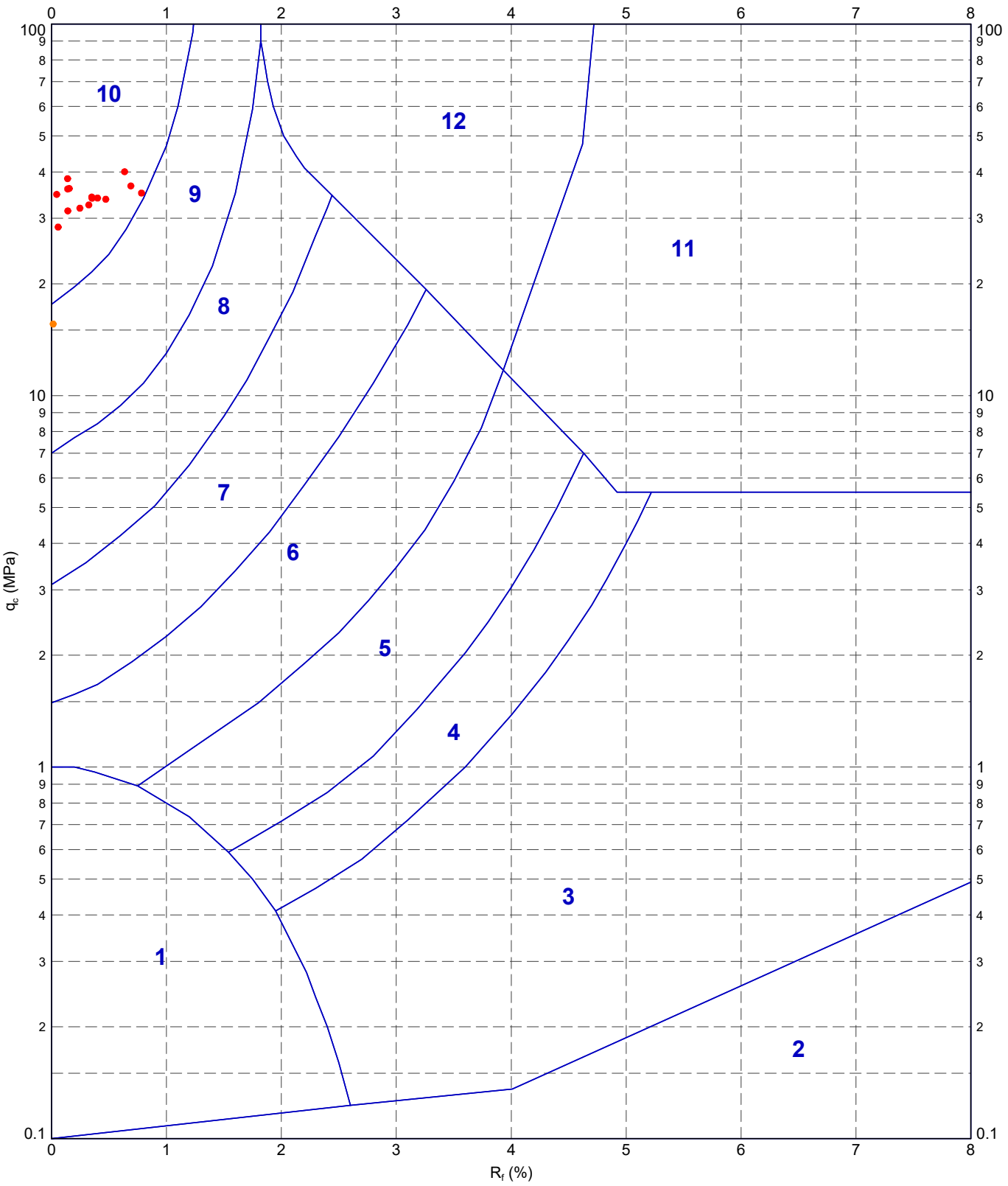
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID: **CPT213**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649295.361 m NORTHING : 738124.931 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip: 228 mV / 231 mV / 0.035 MPa Sleeve: 208 mV / 210 mV / 0.001 kPa Pore Pressure 2: 273 mV / 274 mV / 0 kPa X-Y Inclinometer: 2366 mV / 2341 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength: <10 Very low strength: 10-20 Low strength: 20-40	Term based on measurement / su (kPa) Medium strength: 40-75 High strength: 75-150 Very high strength: 150-300 Extremely high strength: >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT213	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:07 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

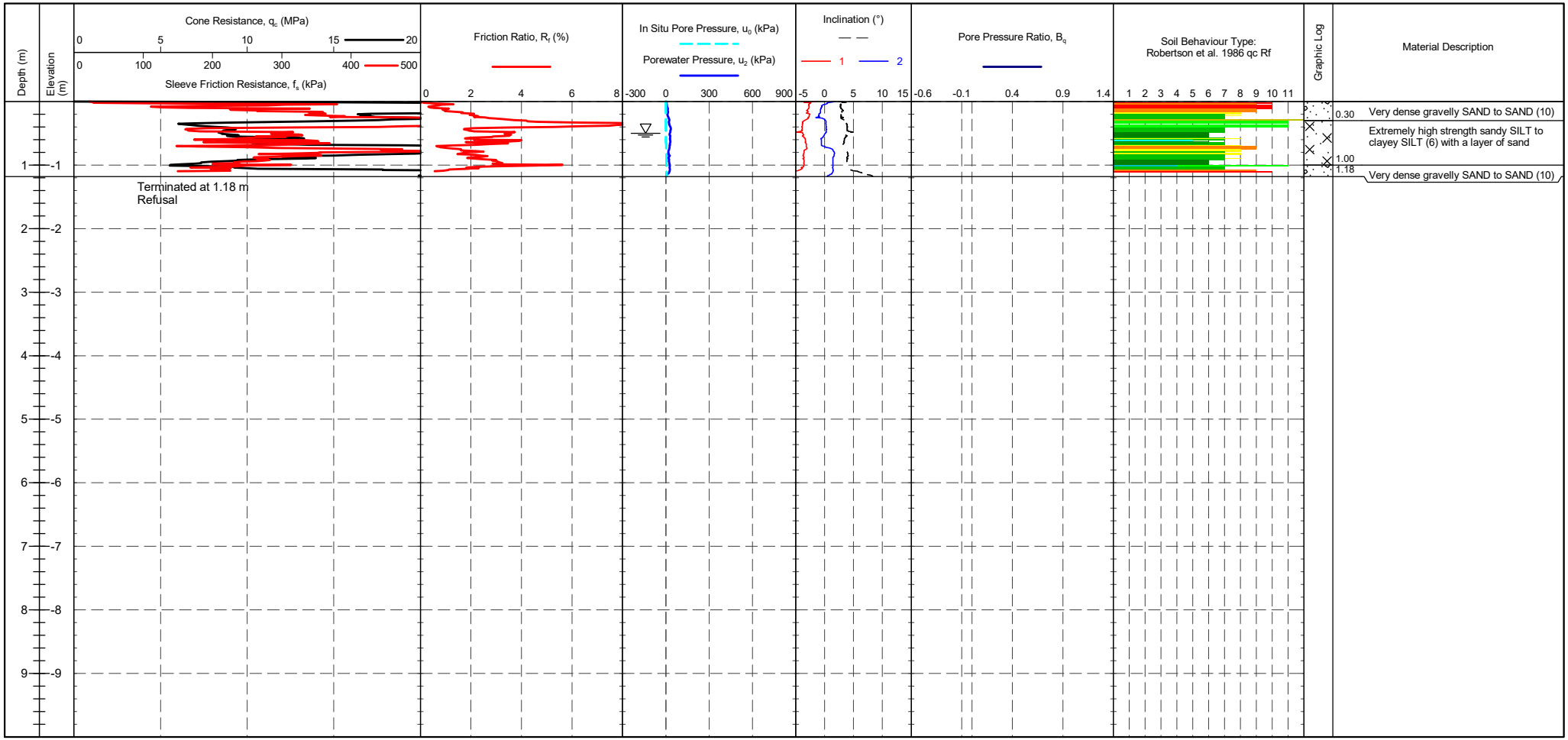
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 01

PointID: **CPT213A**

CLIENT : Irish Drilling	EASTING : 649295.361 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738124.931 m	Test refused on inclination.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2
CALIBRATION DATE	: 05/12/2022	APPLICATION CLASS	: 2
CONE MODEL	: Subtraction	RIG	: CPT 017 - Griffen
CONE AREA	: 15cm^2	OPERATOR	: RS
CONE AREA RATIO	: 0.79	FRICTION REDUCER	: None
FILTER POSITION	: u2	WEATHER	: Sunny & Mild
FILTER TYPE	: HDPE	GROUNDWATER DEPTH	: Assumed for calculation purposes

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	244 mV	229 mV	-0.173 MPa
Sleeve	222 mV	204 mV	-0.013 kPa
Pore Pressure 2	274 mV	255 mV	-0.005 kPa
X-Y Inclinometer	2346 mV	2238 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

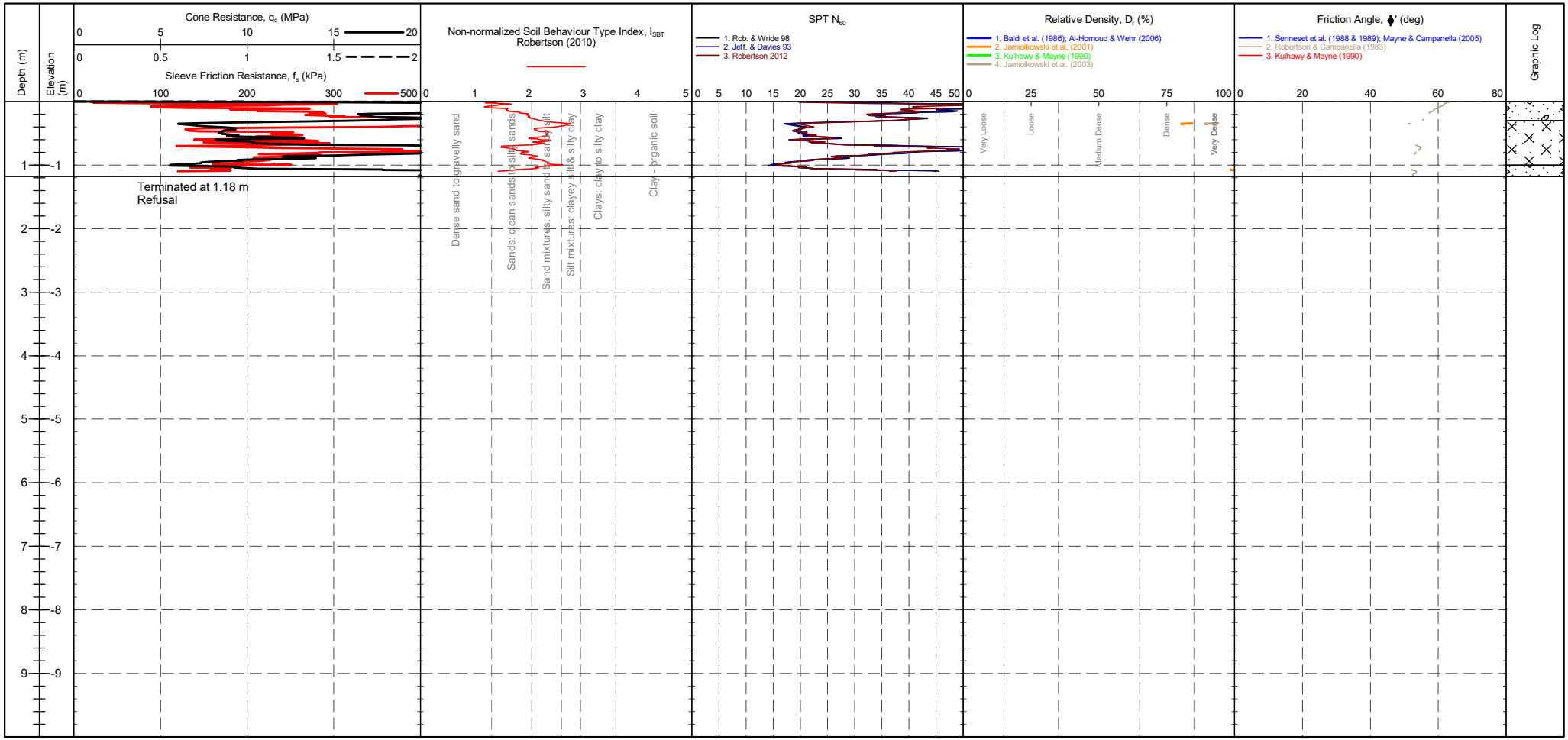
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT213A**

CLIENT : Irish Drilling	EASTING : 649295.361 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738124.931 m	Test refused on inclination.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	244 mV	229 mV	-0.173 MPa
Sleeve	222 mV	204 mV	-0.013 kPa
Pore Pressure 2	274 mV	255 mV	-0.005 kPa
X-Y Inclinometer	2346 mV	2238 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
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Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

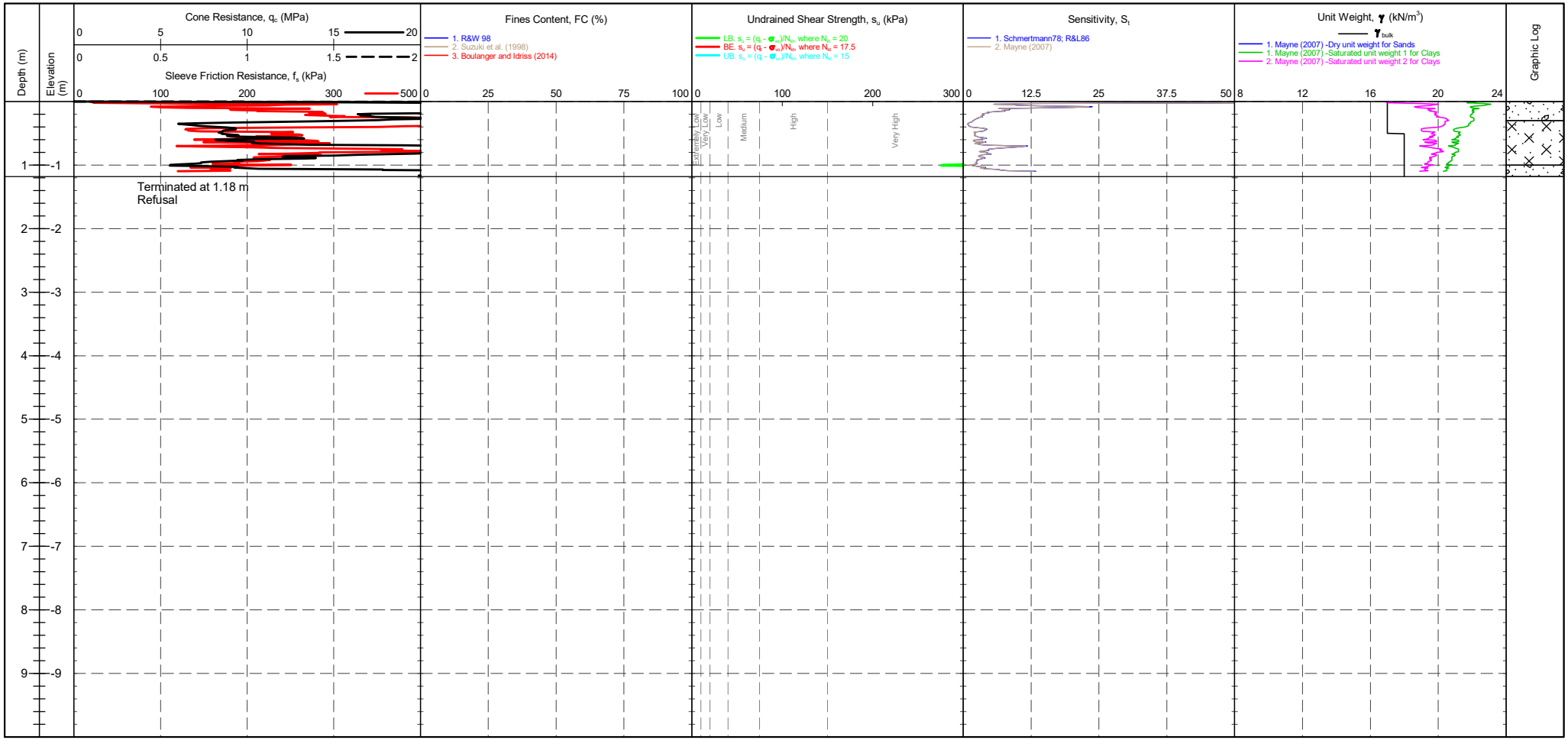
Dissipation Test

CPT LOG 03

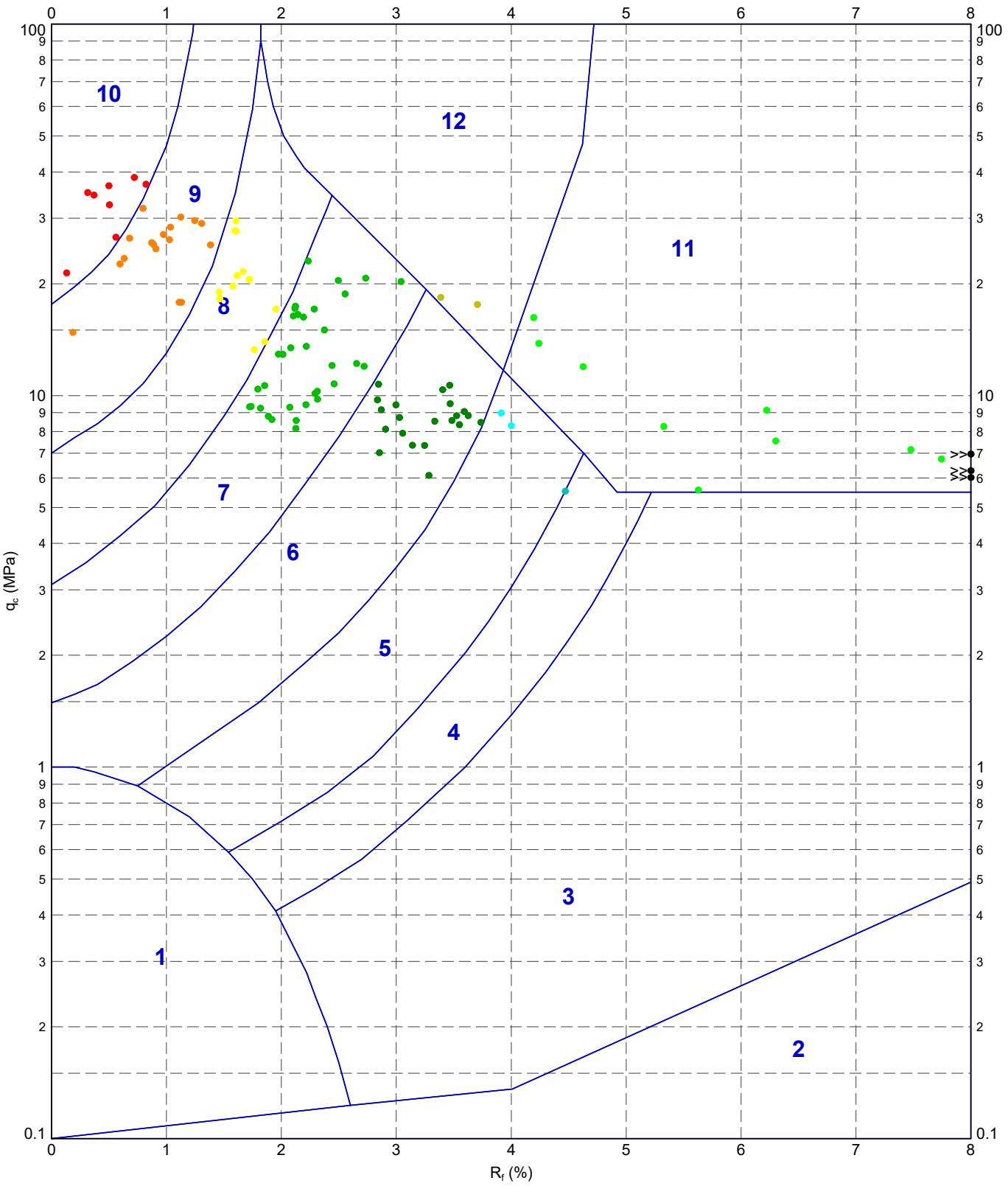
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT213A

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649295.361 m NORTHING : 738124.931 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on inclination.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 244 mV / 229 mV / -0.173 MPa Sleeve / 222 mV / 204 mV / -0.013 kPa Pore Pressure 2 / 274 mV / 255 mV / -0.005 kPa X-Y Inclinometer / 2346 mV / 2238 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT213A	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

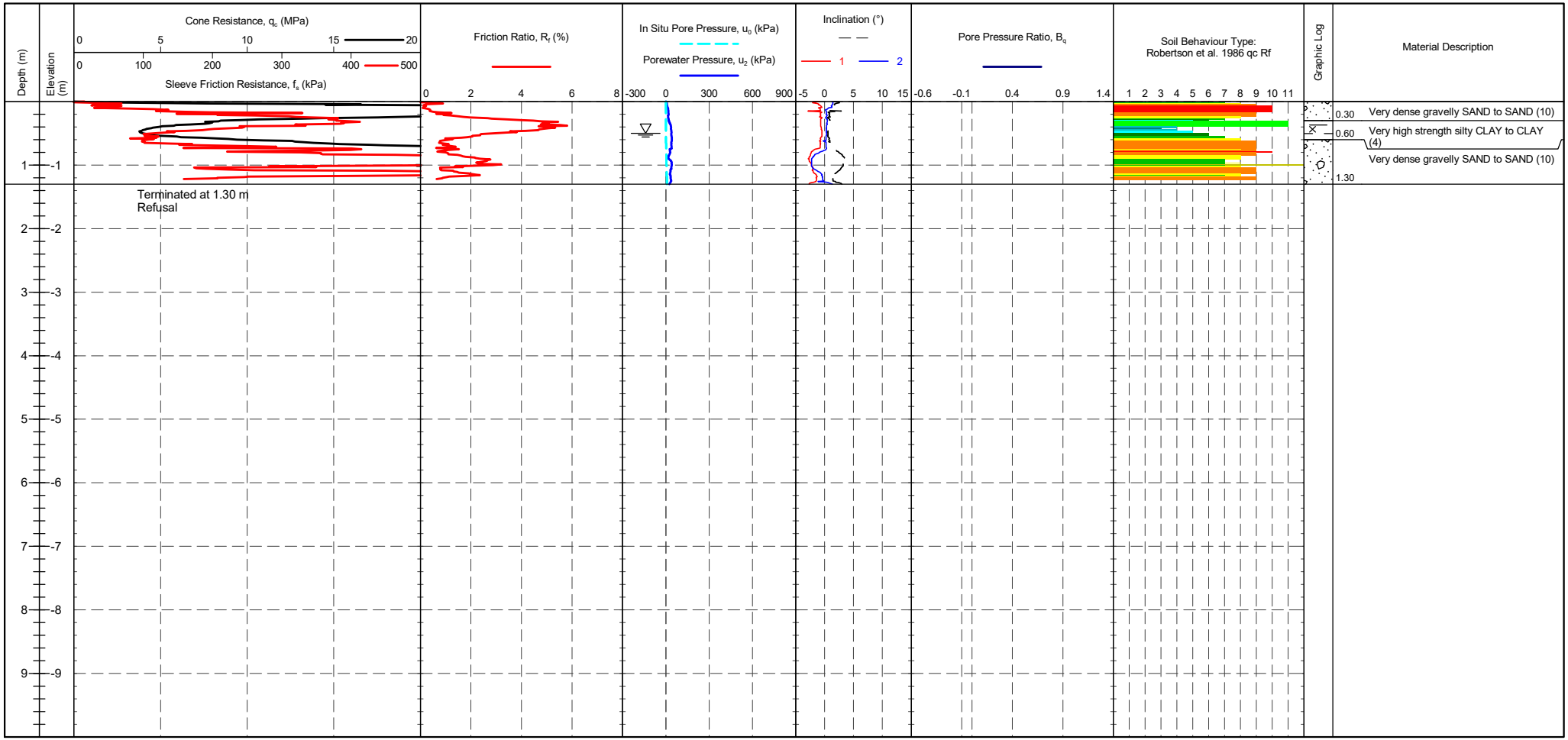
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:08 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID: **CPT213B**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649295.361 m NORTHING : 738124.931 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	224 mV	225 mV	0.012 MPa
Sleeve	200 mV	196 mV	-0.003 kPa
Pore Pressure 2	248 mV	226 mV	-0.006 kPa
X-Y Inclinometer	2305 mV	2316 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

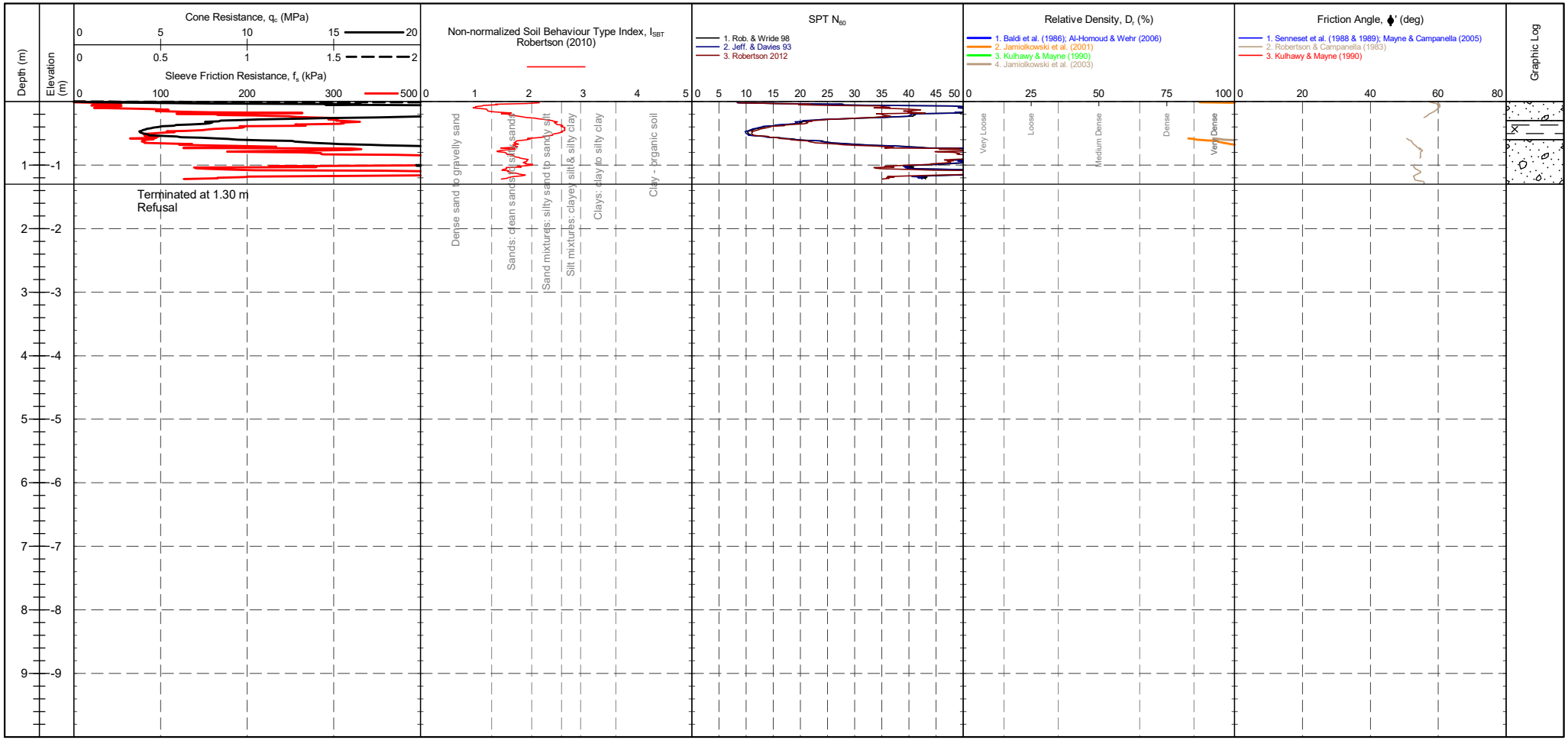
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT213B**

CLIENT : Irish Drilling	EASTING : 649295.361 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738124.931 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	224 mV	225 mV	0.012 MPa
Sleeve	200 mV	196 mV	-0.003 kPa
Pore Pressure 2	248 mV	226 mV	-0.006 kPa
X-Y Inclinometer	2305 mV	2316 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

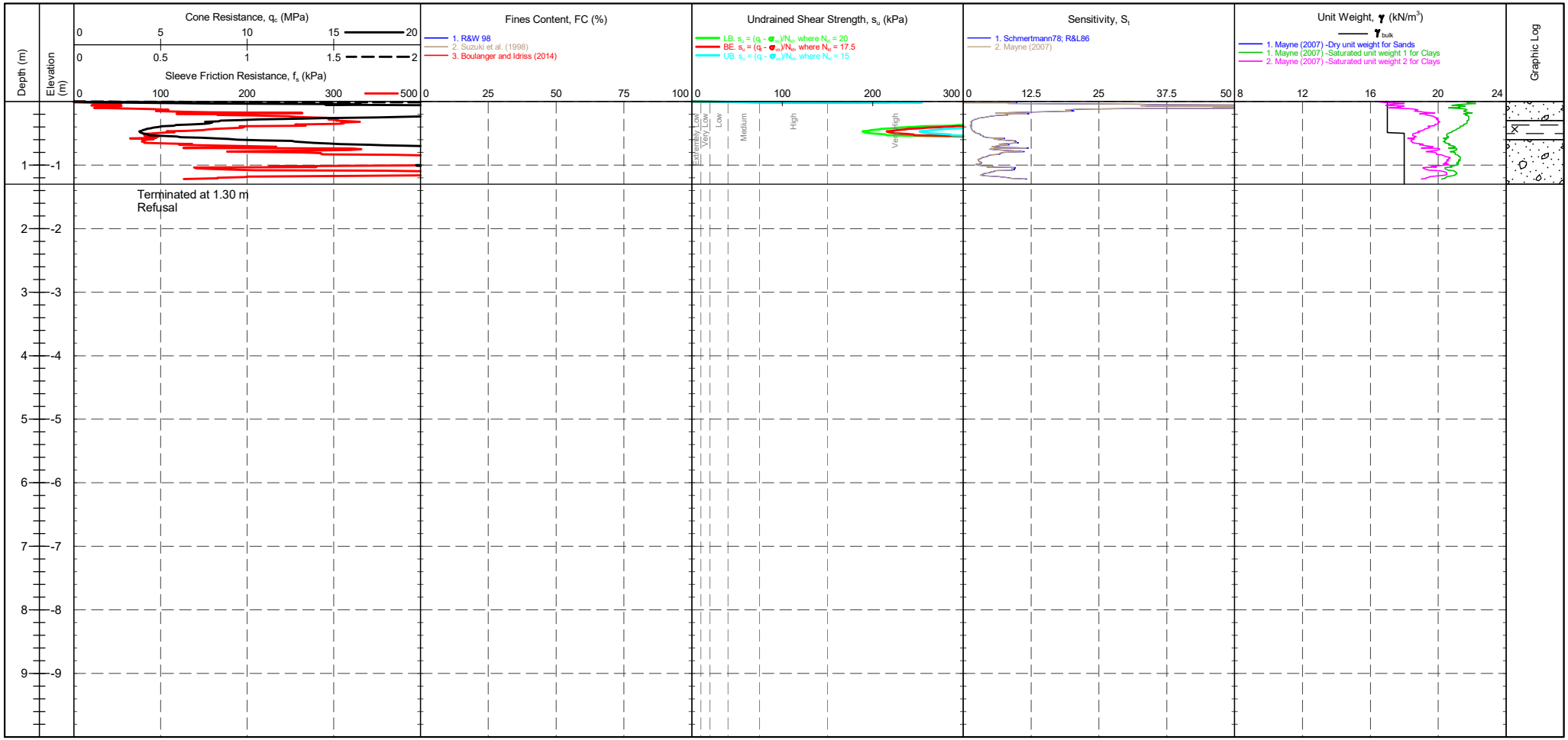
Dissipation Test

CPT LOG 03

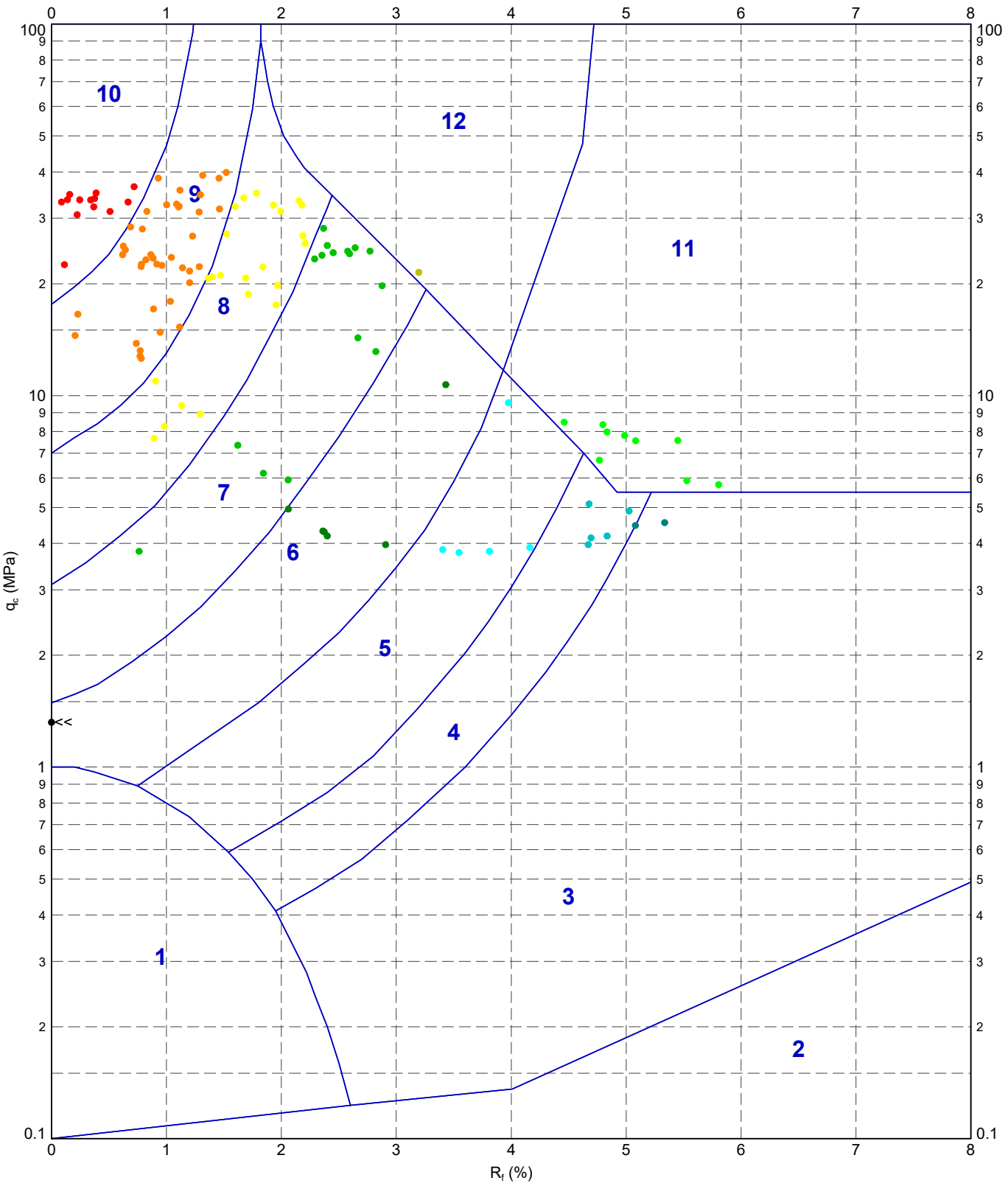
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT213B

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649295.361 m NORTHING : 738124.931 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 224 mV / 225 mV / 0.012 MPa Sleeve / 200 mV / 196 mV / -0.003 kPa Pore Pressure 2 / 248 mV / 226 mV / -0.006 kPa X-Y Inclinometer / 2305 mV / 2316 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT213B	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

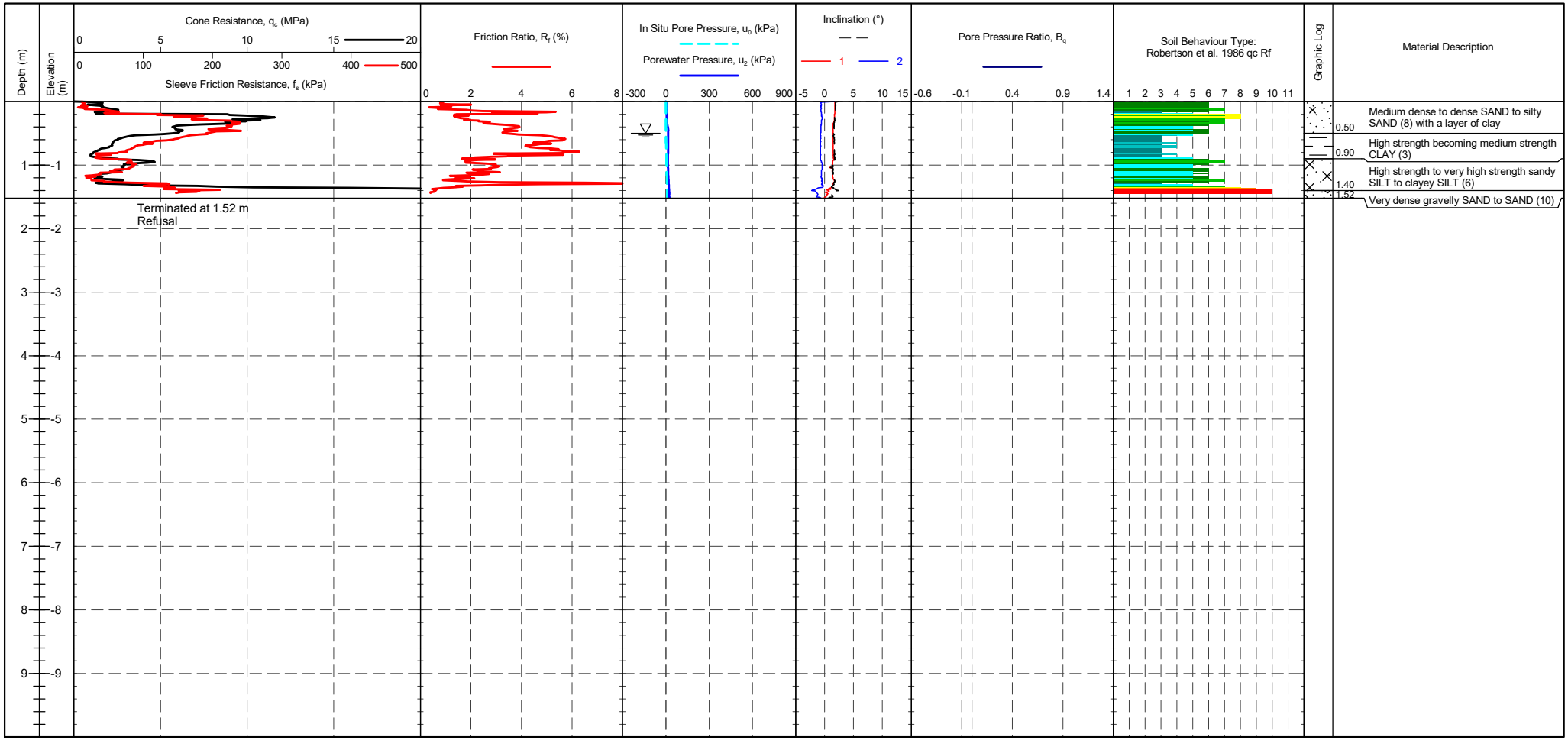
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:08 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID: **CPT216**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649477.729 m NORTHING : 738069.492 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CALIBRATION DATE : 05/12/2022 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 225 mV / 225 mV / 0 MPa Sleeve / 190 mV / 190 mV / 0 kPa Pore Pressure 2 / 321 mV / 343 mV / 0.006 kPa X-Y Inclinometer / 2569 mV / 2554 mV	METHOD: Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

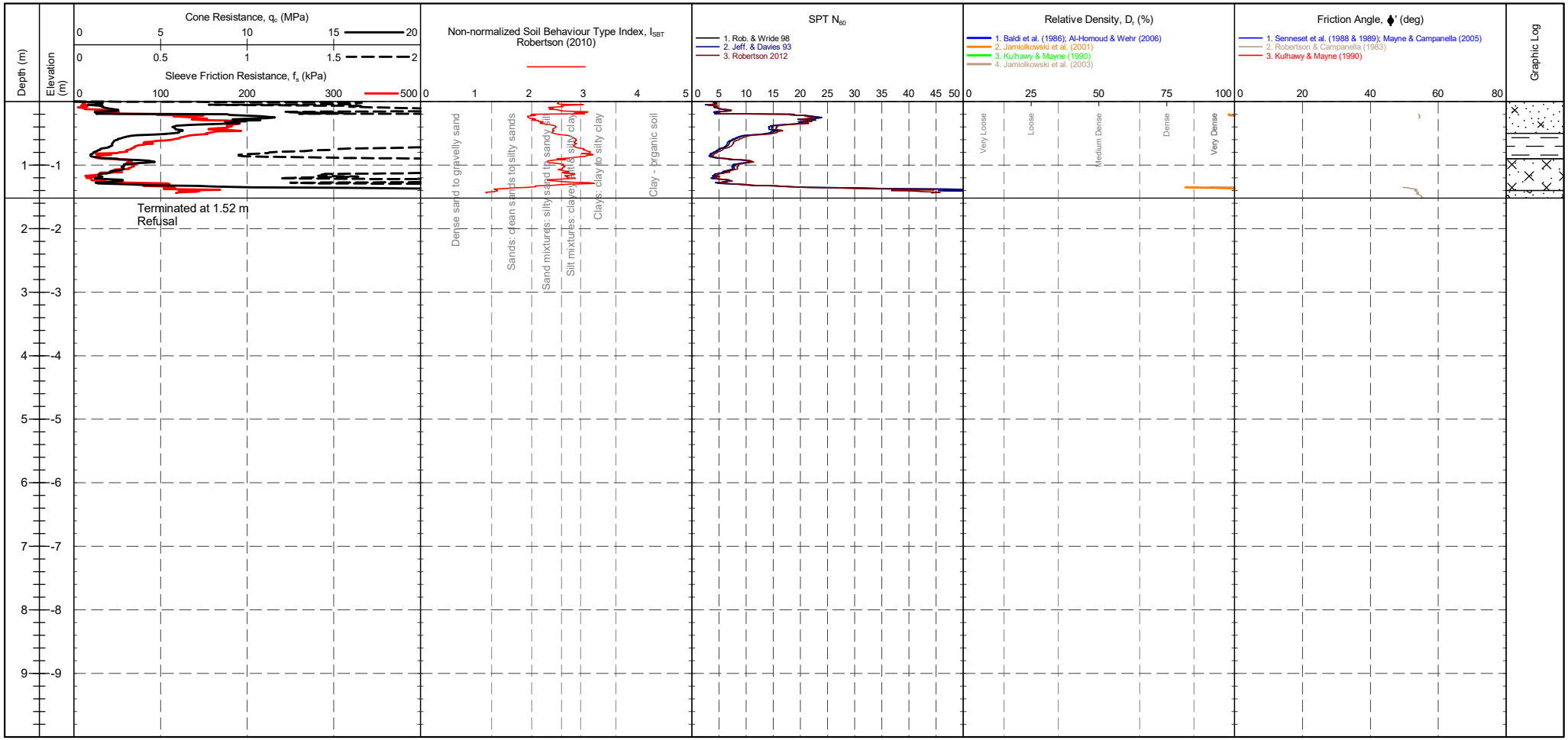
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT216**

CLIENT : Irish Drilling	EASTING : 649477.729 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738069.492 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	225 mV	0 MPa
Sleeve	190 mV	190 mV	0 kPa
Pore Pressure 2	321 mV	343 mV	0.006 kPa
X-Y Inclinometer	2569 mV	2554 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

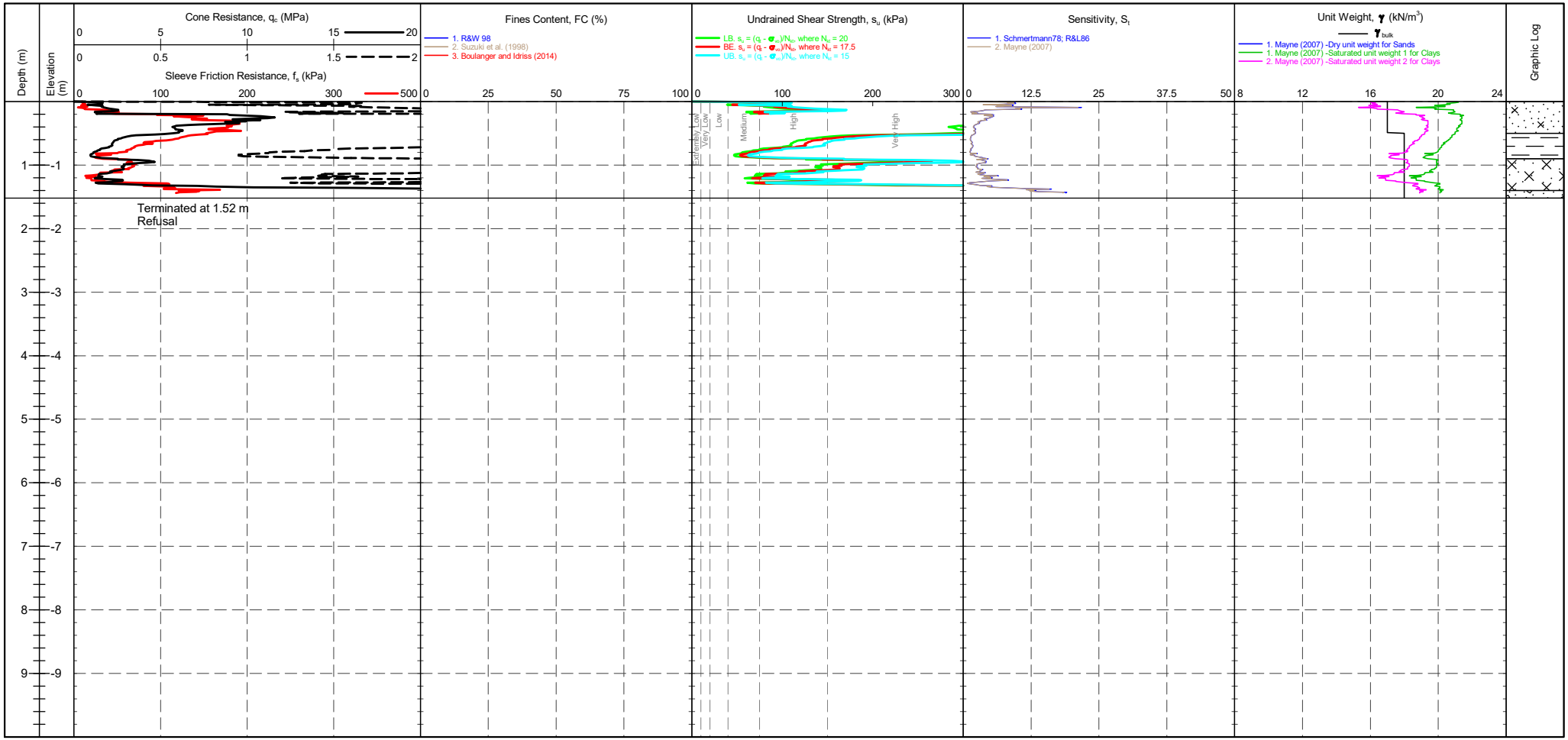
Dissipation Test

CPT LOG 03

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT216

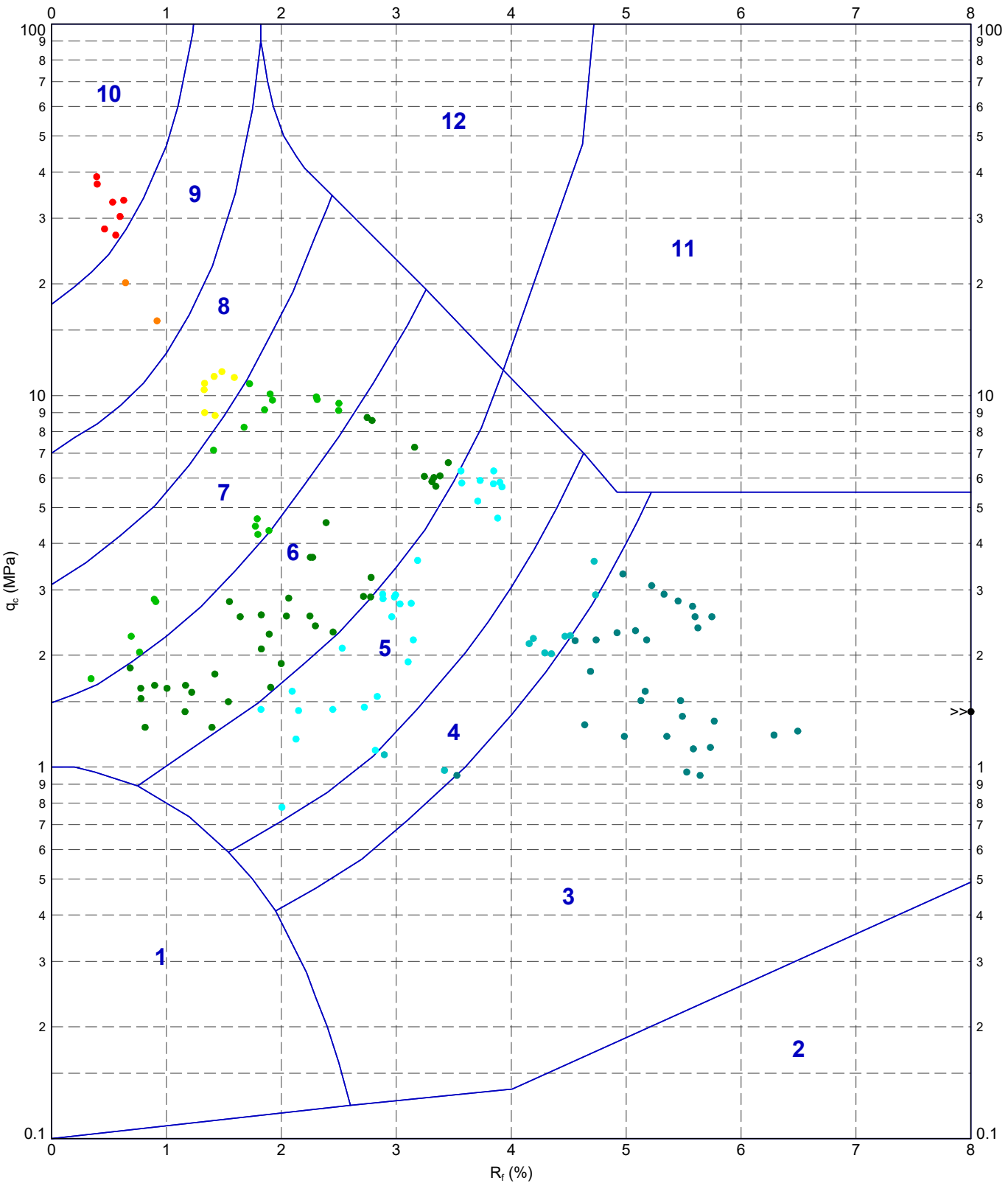
CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649477.729 m NORTHING : 738069.492 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 225 mV / 225 mV / 0 MPa Sleeve / 190 mV / 190 mV / 0 kPa Pore Pressure 2 / 321 mV / 343 mV / 0.006 kPa X-Y Inclinometer / 2569 mV / 2554 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40 Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT216	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

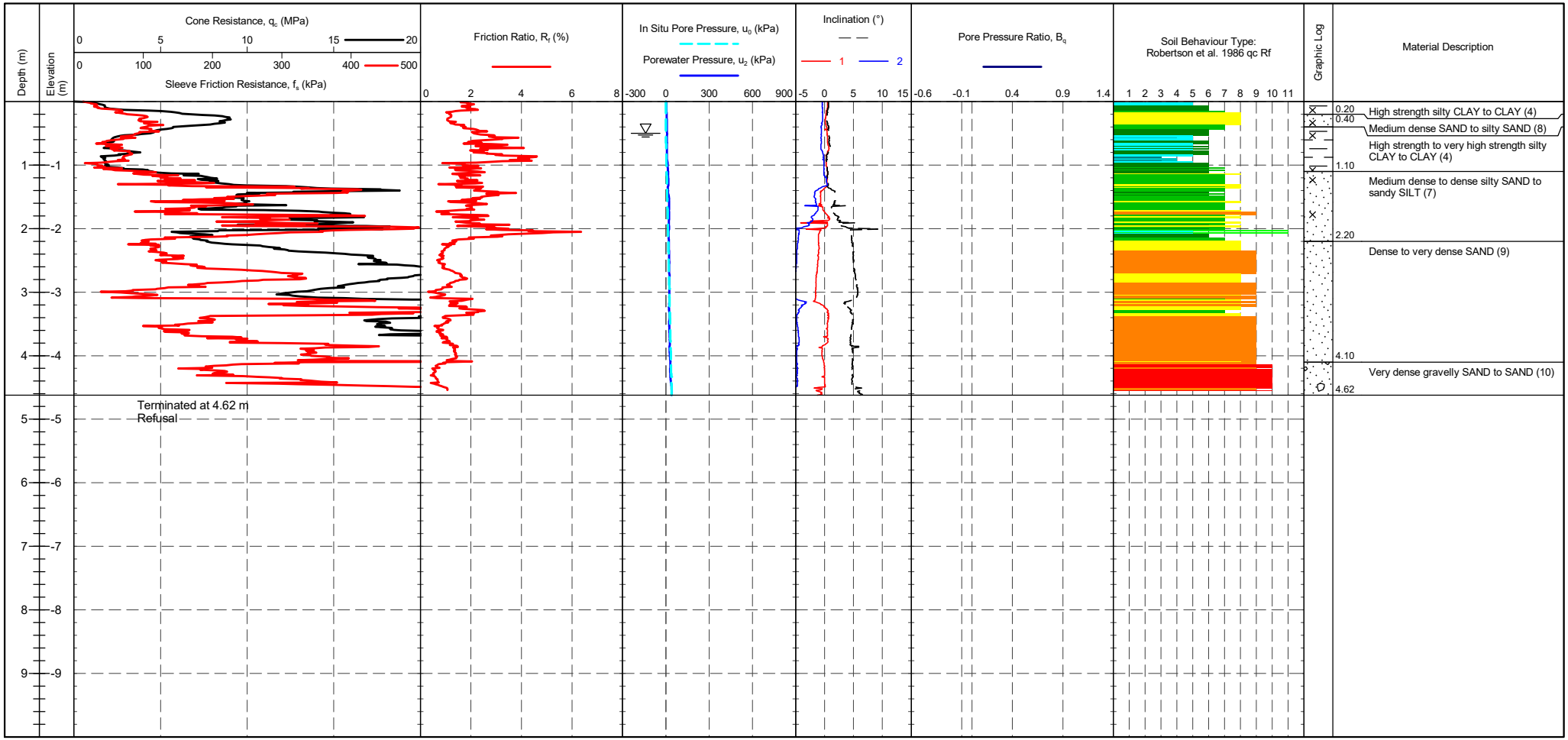
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:09 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT217

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649514.269 m NORTHING : 738131.053 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	224 mV	222 mV	-0.023 MPa
Sleeve	190 mV	185 mV	-0.004 kPa
Pore Pressure 2	321 mV	347 mV	0.007 kPa
X-Y Inclinometer	2452 mV	2446 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

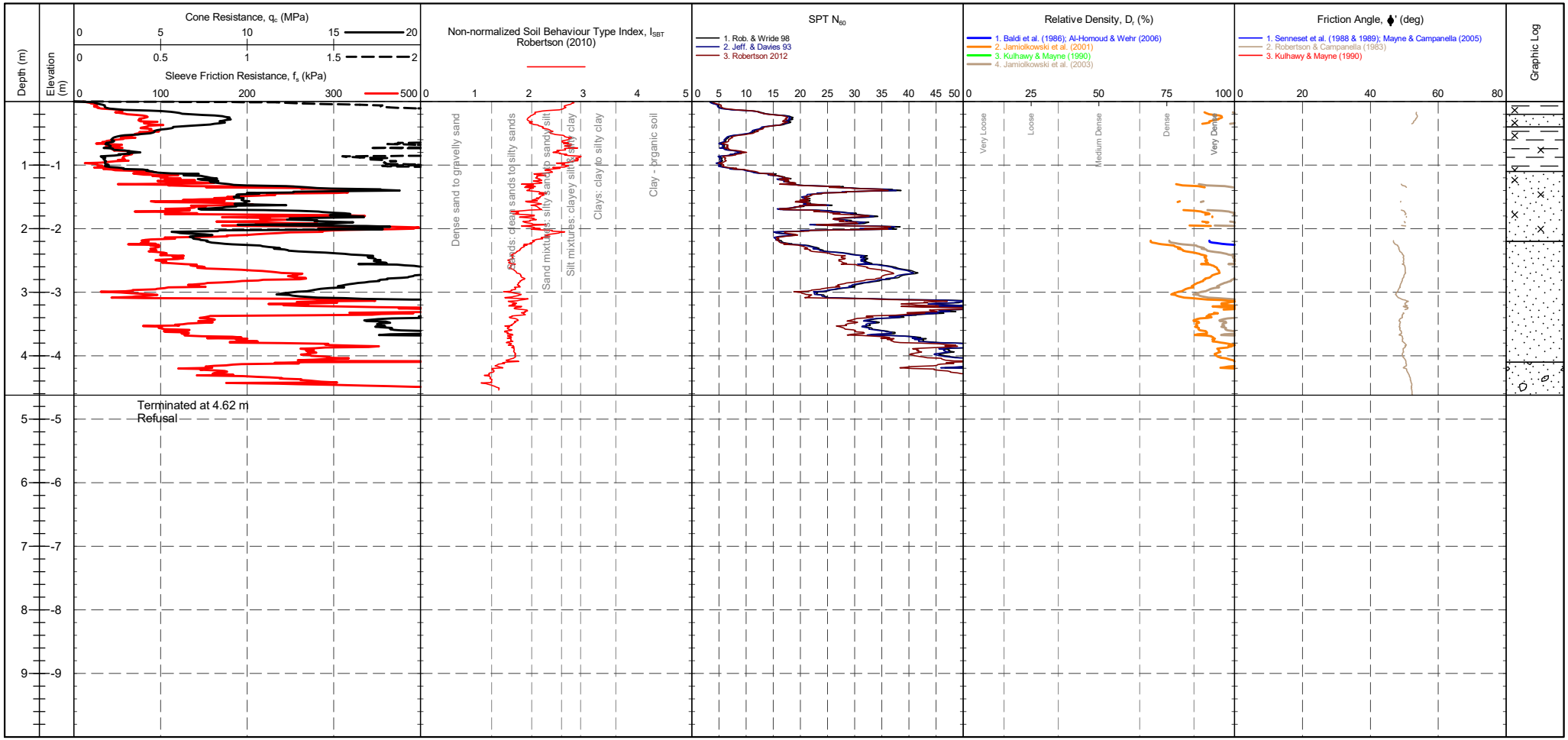
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT217**

CLIENT : Irish Drilling	EASTING : 649514.269 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738131.053 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm^2	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	224 mV	222 mV	-0.023 MPa
Sleeve	190 mV	185 mV	-0.004 kPa
Pore Pressure 2	321 mV	347 mV	0.007 kPa
X-Y Inclinometer	2452 mV	2446 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

Dissipation Test

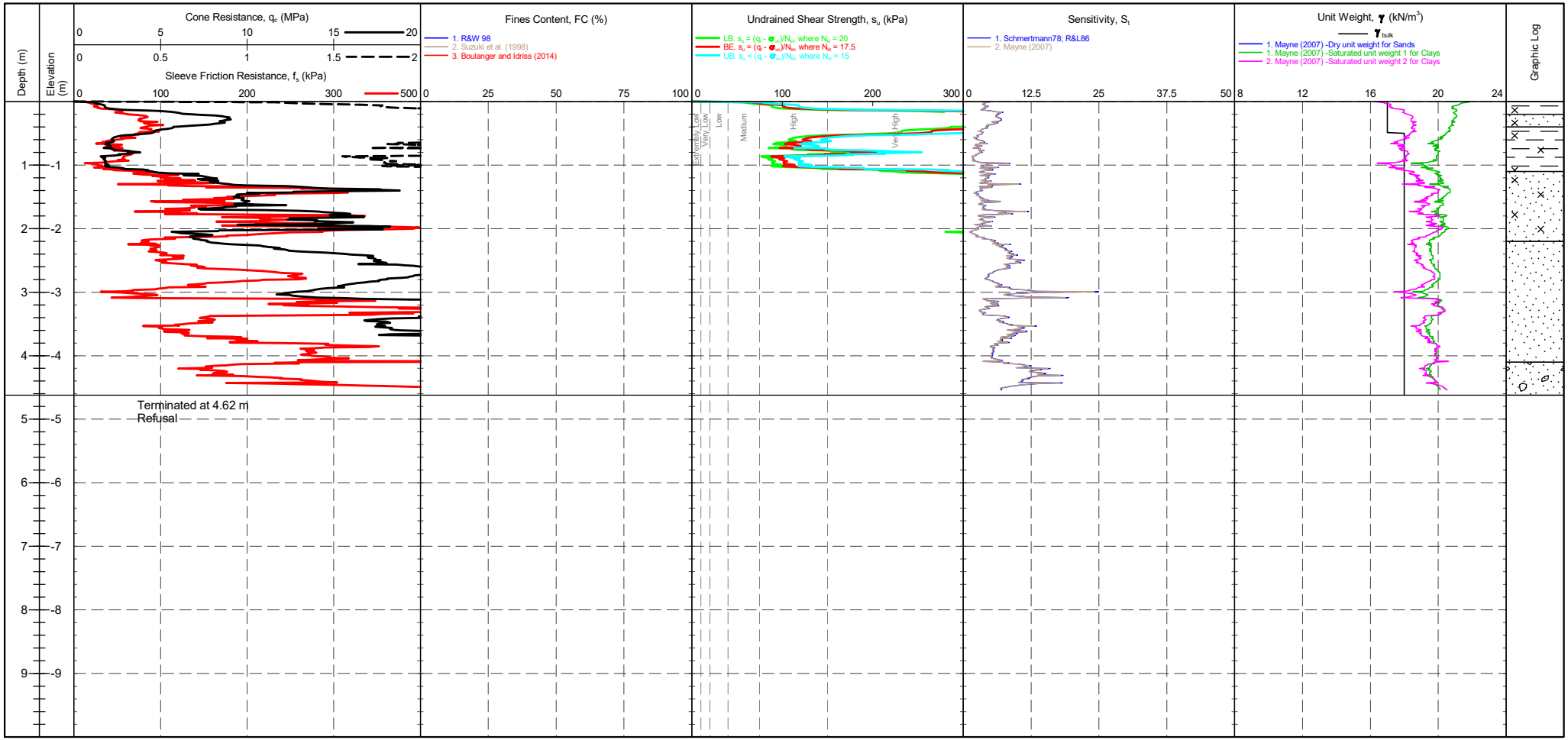
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 03

PointID: **CPT217**

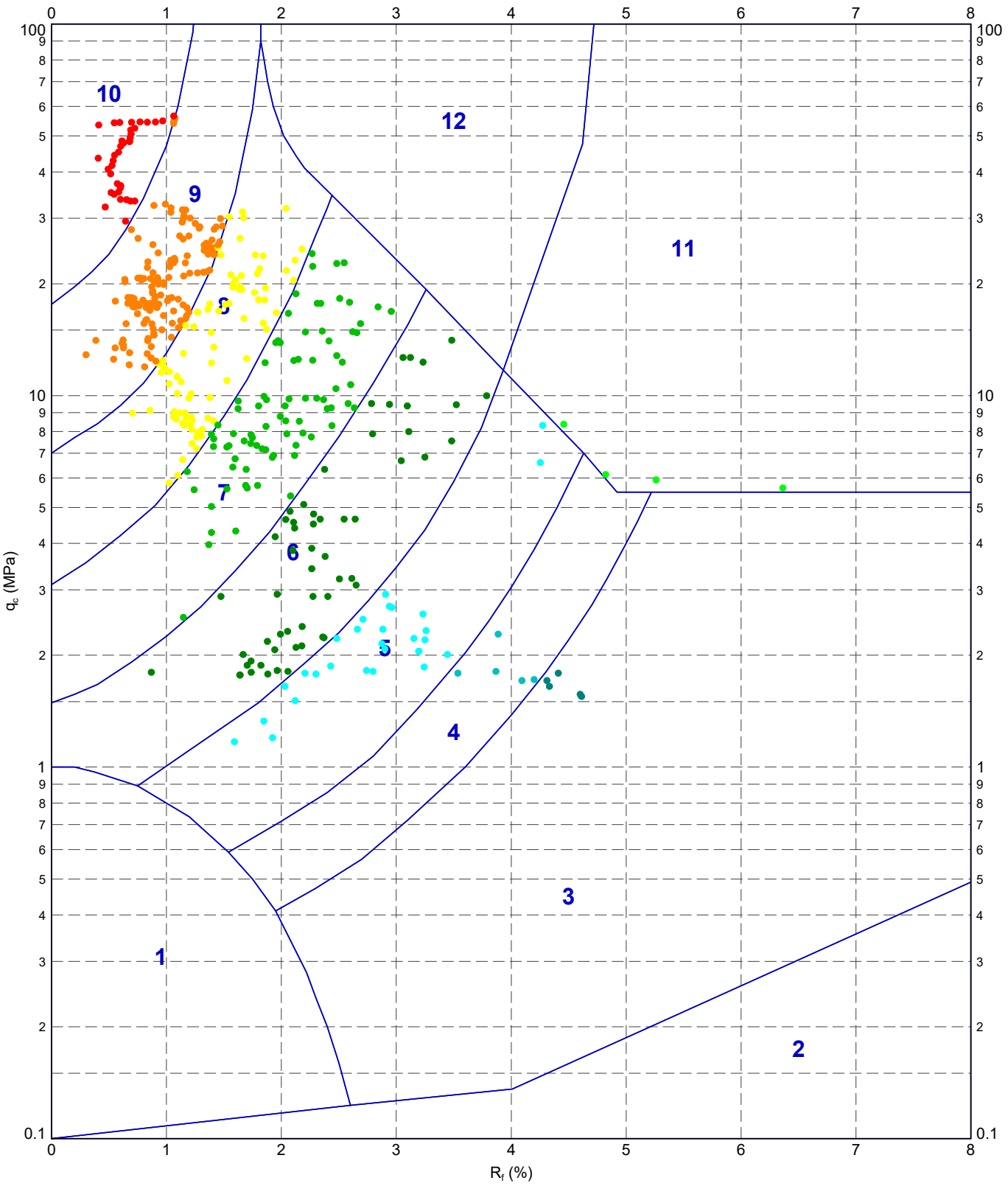
CLIENT : Irish Drilling	EASTING : 649514.269 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738131.053 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2	CPTU ZERO VALUES			COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11
CONE MODEL : Subtraction	APPLICATION CLASS : 2	Transducer / Pre / Post / Difference			Term based on measurement / su (kPa) / Term based on measurement / su (kPa)
CONE AREA : 15cm^2	RIG : CPT 017 - Griffen	Tip: 224 mV / 222 mV / -0.023 MPa			Extremely low strength <10 / Medium strength 40-75
CONE AREA RATIO : 0.79	OPERATOR : RS	Sleeve: 190 mV / 185 mV / -0.004 kPa			Very low strength 10-20 / High strength 75-150
FILTER POSITION : u2	FRICTION REDUCER : None	Pore Pressure 2: 321 mV / 347 mV / 0.007 kPa			Low strength 20-40 / Very high strength 150-300
FILTER TYPE : HDPE	WEATHER : Sunny & Mild	X-Y Inclinometer: 2452 mV / 2446 mV			Extremely high strength >300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT217	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

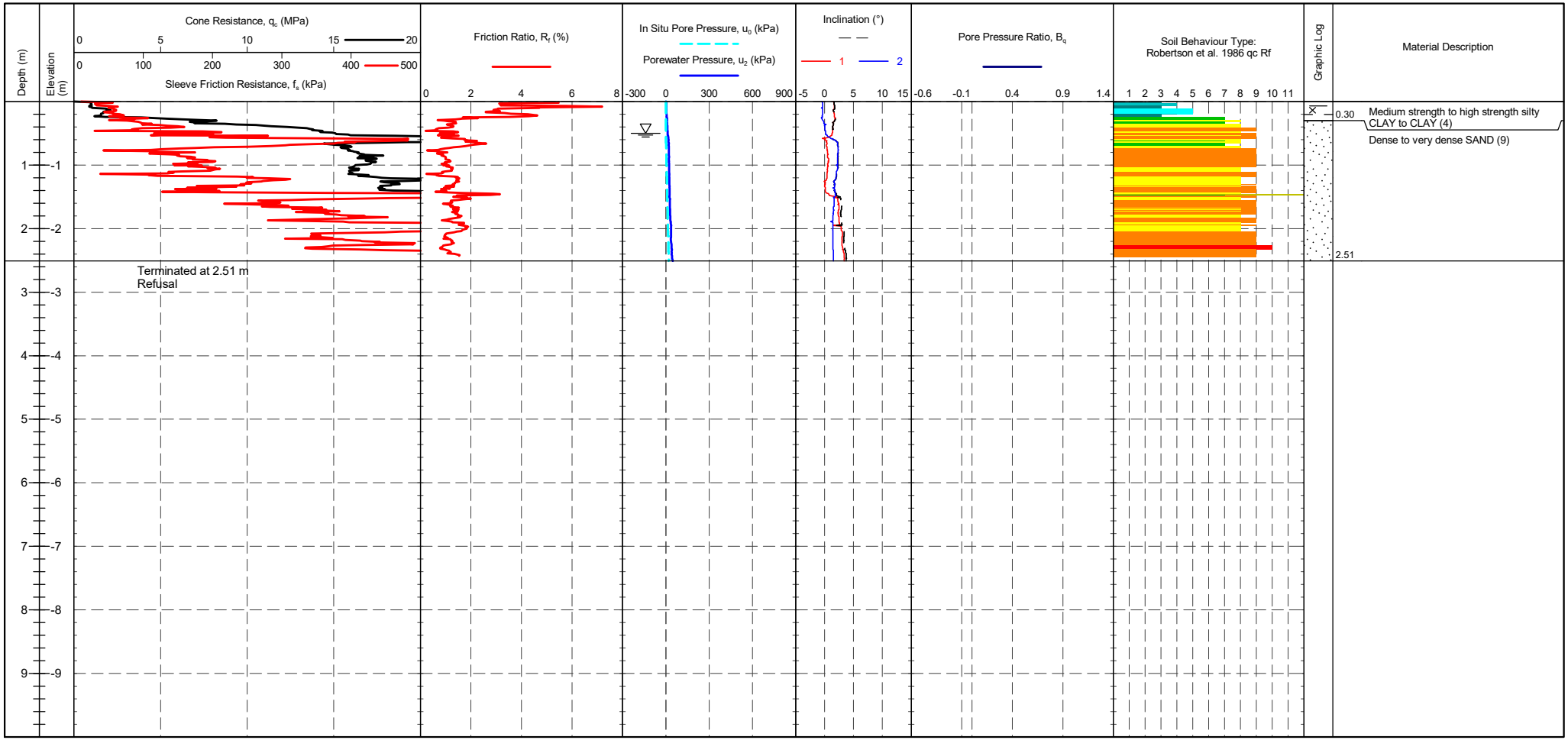
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:10 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID: **CPT218**

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649615.443 m NORTHING : 738107.616 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CALIBRATION DATE : 05/12/2022 CONE MODEL : Subtraction CONE AREA : 15cm² CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild GROUNDWATER DEPTH : Assumed for calculation purposes	CPTU ZERO VALUES	METHOD: Robertson et al. 1986 qc Rf

Transducer	Pre	Post	Difference
Tip	225 mV	226 mV	0.012 MPa
Sleeve	190 mV	190 mV	0 kPa
Pore Pressure 2	329 mV	323 mV	-0.002 kPa
X-Y Inclinometer	2544 mV	2564 mV	

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

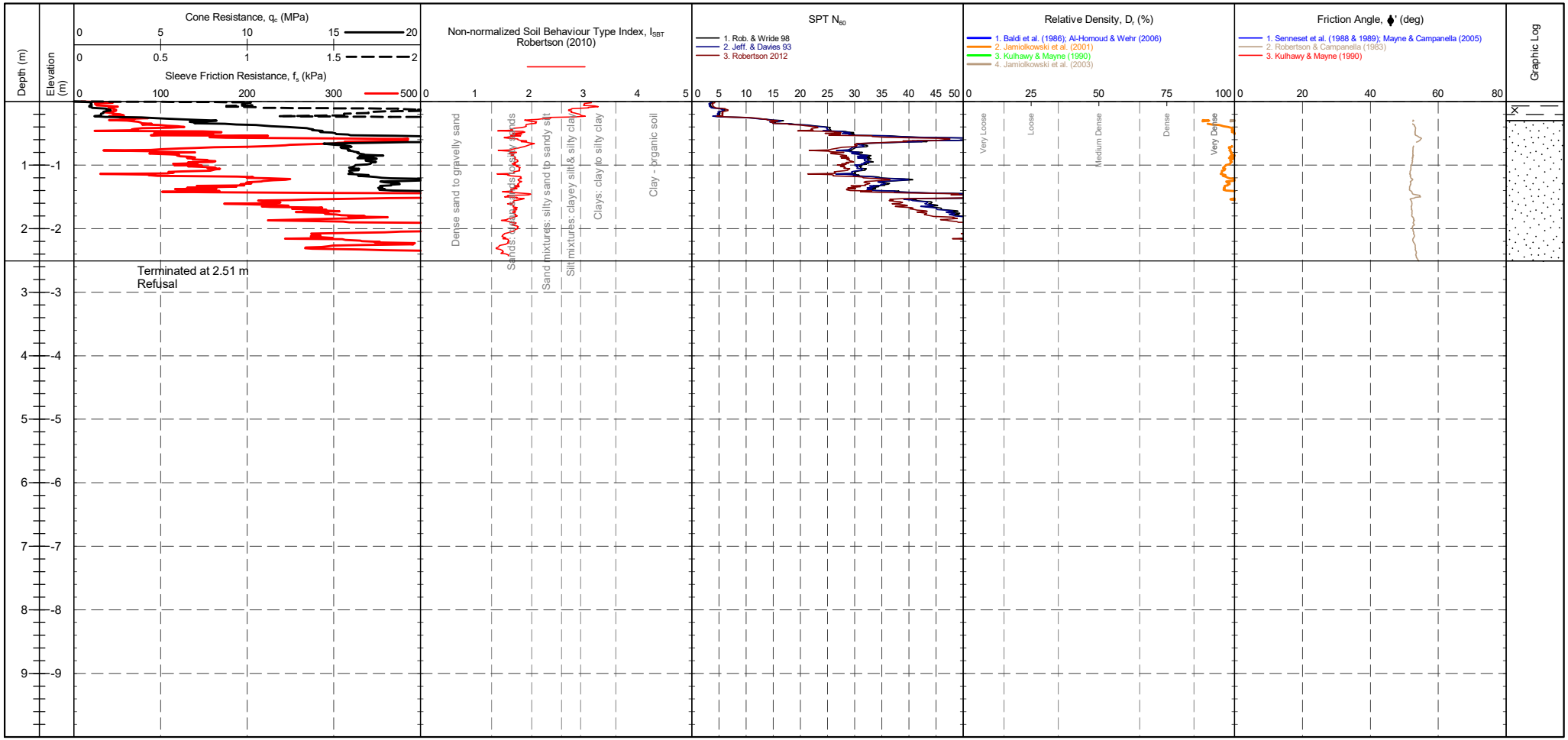
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT218**

CLIENT : Irish Drilling	EASTING : 649615.443 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738107.616 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	226 mV	0.012 MPa
Sleeve	190 mV	190 mV	0 kPa
Pore Pressure 2	329 mV	323 mV	-0.002 kPa
X-Y Inclinometer	2544 mV	2564 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

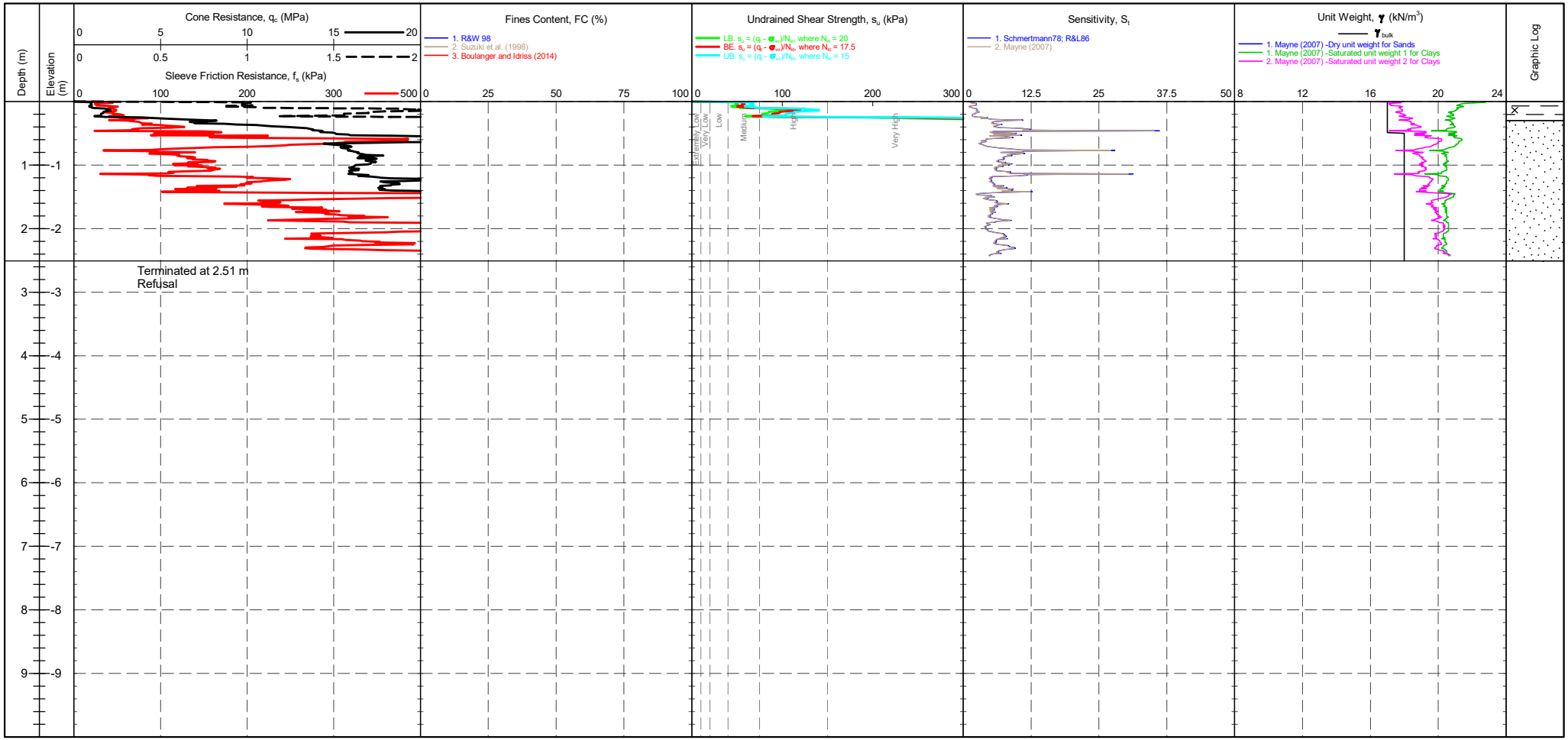
Dissipation Test

CPT LOG 03

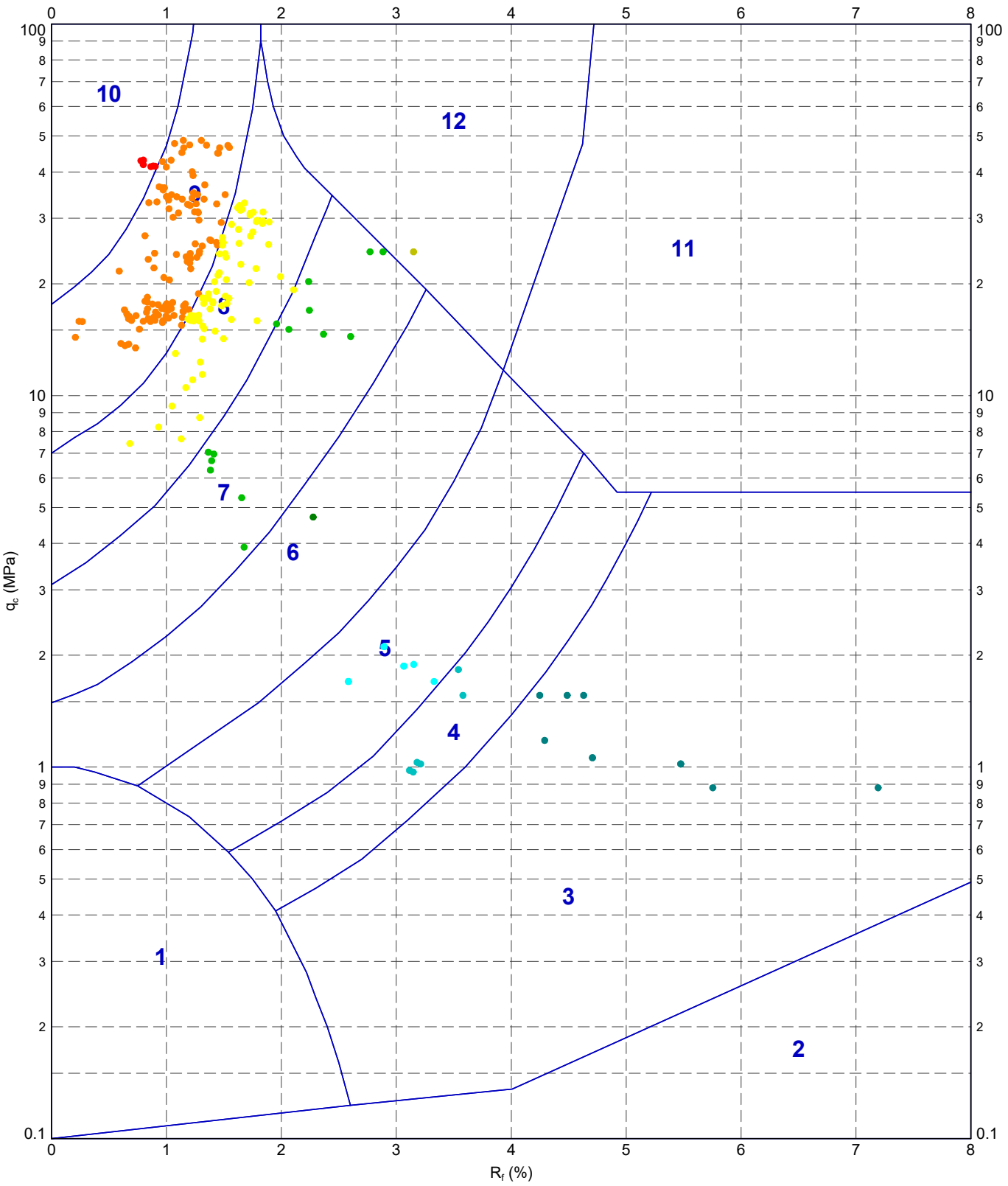
IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT218

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649615.443 m NORTHING : 738107.616 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer / Pre / Post / Difference Tip / 225 mV / 226 mV / 0.012 MPa Sleeve / 190 mV / 190 mV / 0 kPa Pore Pressure 2 / 329 mV / 323 mV / -0.002 kPa X-Y Inclinometer / 2544 mV / 2564 mV	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11 Term based on measurement / su (kPa) Extremely low strength / <10 Very low strength / 10-20 Low strength / 20-40	Term based on measurement / su (kPa) Medium strength / 40-75 High strength / 75-150 Very high strength / 150-300 Extremely high strength / >300	Groundwater Level Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION

TITLE	DRAWN	DATE 03/07/2023
Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT218	CHECKED	DATE 03/07/2023
	SCALE Not To Scale	A4
	PROJECT No 1230267	FIGURE No

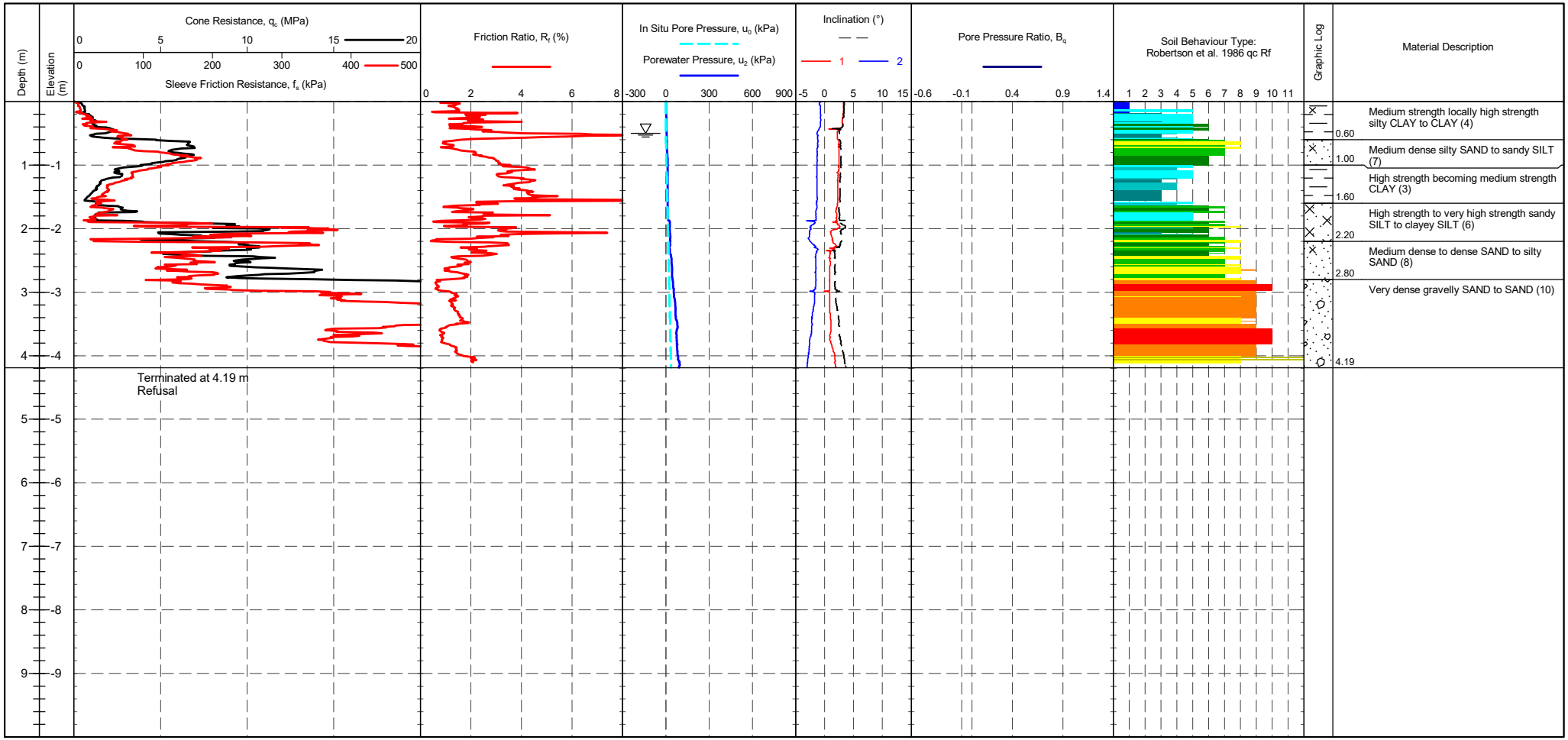
220629-ADVANCED REPORT INSITUSI 2.02.1.LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:10 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

CPT LOG 01

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT219

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649714.458 m NORTHING : 738144.608 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



CONE ID : S15-CFIP.2175	TEST TYPE : TE2		
CALIBRATION DATE : 05/12/2022	APPLICATION CLASS : 2		
CONE MODEL : Subtraction	RIG : CPT 017 - Griffen		
CONE AREA : 15cm²	OPERATOR : RS		
CONE AREA RATIO : 0.79	FRICTION REDUCER : None		
FILTER POSITION : u2	WEATHER : Sunny & Mild		
FILTER TYPE : HDPE	GROUNDWATER DEPTH : Assumed for calculation purposes		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	220 mV	-0.058 MPa
Sleeve	192 mV	186 mV	-0.004 kPa
Pore Pressure 2	273 mV	361 mV	0.023 kPa
X-Y Inclinometer	2728 mV	2728 mV	

METHOD: Robertson et al. 1986 qc Rf

1 - Sensitive fine grained material
2 - Organic material
3 - CLAY
4 - Silty CLAY to CLAY
5 - Clayey SILT to silty CLAY
6 - Sandy SILT to clayey SILT
7 - Silty SAND to sandy SILT
8 - SAND to silty SAND
9 - SAND
10 - Gravelly SAND to SAND
11 - Very stiff fine grained
12 - SAND to clayey SAND

Groundwater Level

Dissipation Test

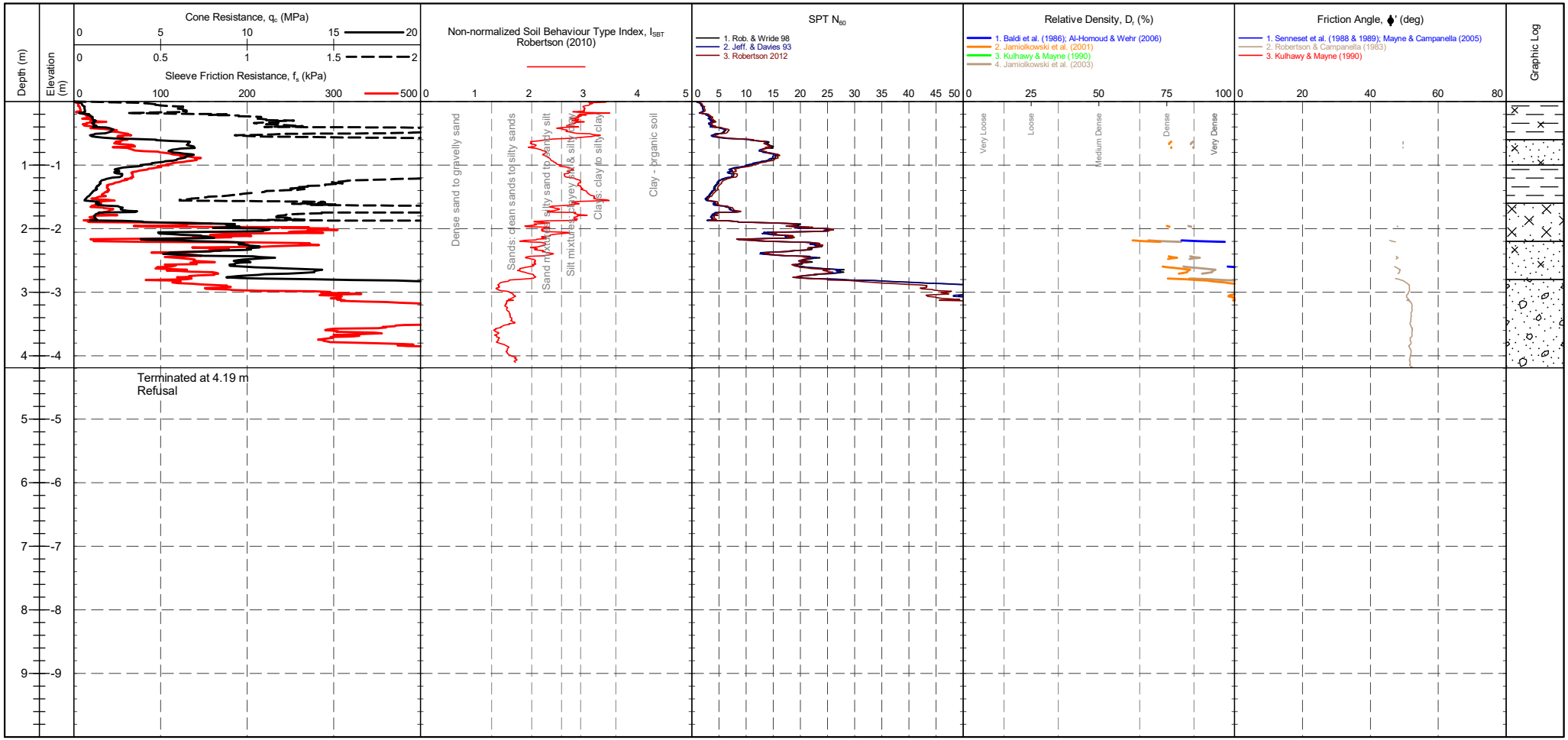
IN SITU SITE INVESTIGATION

Working with: IRISH DRILLING LIMITED

CPT LOG 02

PointID: **CPT219**

CLIENT : Irish Drilling	EASTING : 649714.458 m	Remark:	SHEET : 1 OF 1
PROJECT : Derrygreenagh Power	NORTHING : 738144.608 m	Test refused on tip resistance.	STATUS : Final
LOCATION : Derrygreenagh Power	ELEVATION : 0.000 m OD		TEST DATE : 20/06/2023
PROJECT No. : 1230267	CHECKED BY : DW		PLOT DATE : 03/07/2023
	TERMINATION REASON : Refusal		METHOD : ISO 22476-1:2022



CONE ID	: S15-CFIP.2175	TEST TYPE	: TE2		
CONE MODEL	: Subtraction	APPLICATION CLASS	: 2		
CONE AREA	: 15cm²	RIG	: CPT 017 - Griffen		
CONE AREA RATIO	: 0.79	OPERATOR	: RS		
FILTER POSITION	: u2	FRICTION REDUCER	: None		
FILTER TYPE	: HDPE	WEATHER	: Sunny & Mild		

CPTU ZERO VALUES

Transducer	Pre	Post	Difference
Tip	225 mV	220 mV	-0.058 MPa
Sleeve	192 mV	186 mV	-0.004 kPa
Pore Pressure 2	273 mV	361 mV	0.023 kPa
X-Y Inclinometer	2728 mV	2728 mV	

GRANULAR SOILS (Sands & Gravels) Robertson et al. 1986 Zones 7-10 and Zone 12

Description	SBT Index, Ic	Description	SPT N value, NSPT	Description	Relative Density Dr (%)
Clays	2.95-3.60	Very Loose	0 - 4	Very Loose	0 - 15
Silt mixtures	2.60-2.95	Loose	4 - 10	Loose	15 - 35
Sand mixtures	2.05-2.60	Medium Dense	10 - 30	Medium Dense	35 - 65
Sands	1.31-2.05	Dense	30 - 50	Dense	65 - 85
Gravelly sand	<1.31	Very Dense	>50	Very Dense	>85

Groundwater Level

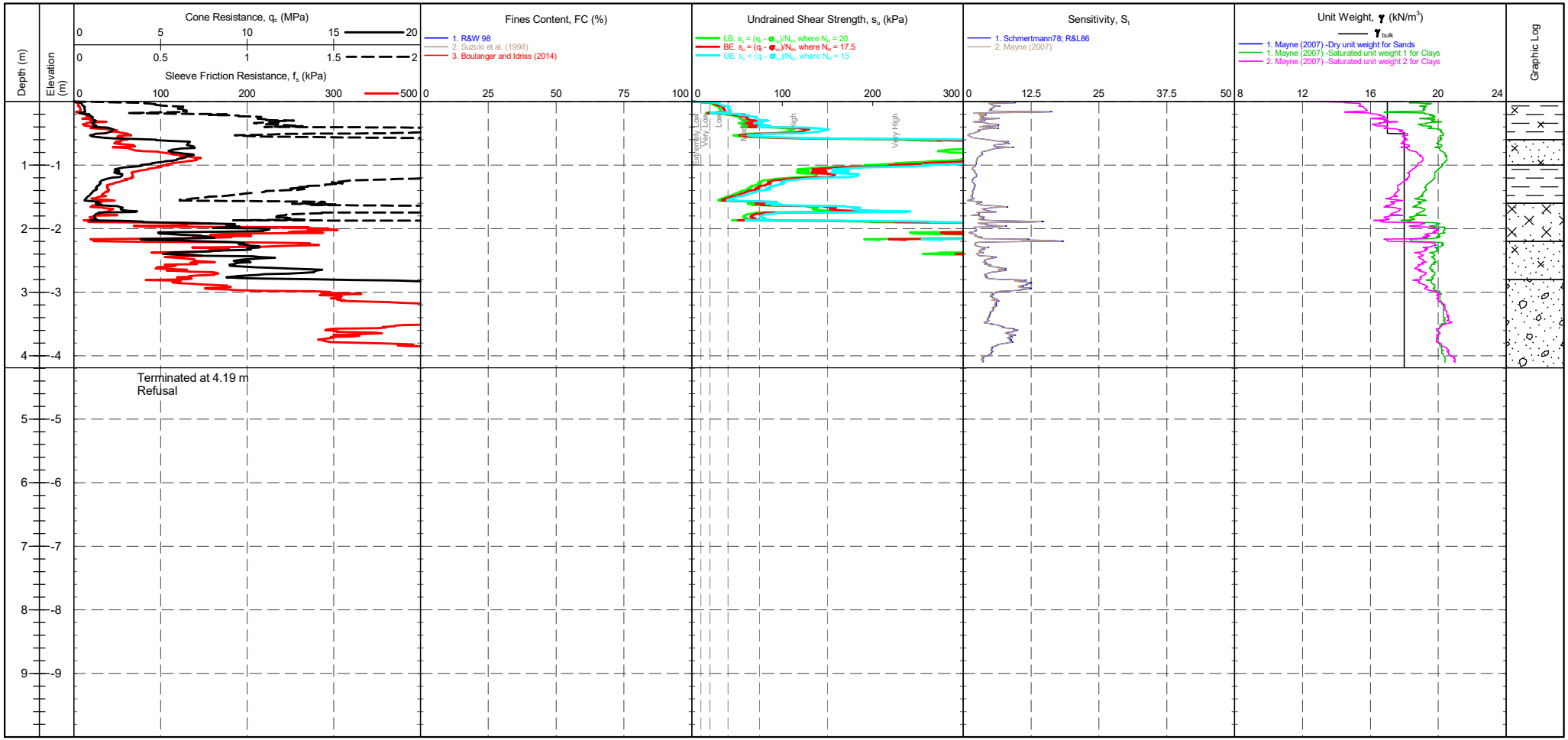
Dissipation Test

CPT LOG 03

IN SITU SITE INVESTIGATION Working with: IRISH DRILLING LIMITED

PointID
CPT219

CLIENT : Irish Drilling PROJECT : Derrygreenagh Power LOCATION : Derrygreenagh Power PROJECT No. : 1230267	EASTING : 649714.458 m NORTHING : 738144.608 m ELEVATION : 0.000 m OD CHECKED BY : DW TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 1 OF 1 STATUS : Final TEST DATE : 20/06/2023 PLOT DATE : 03/07/2023 METHOD : ISO 22476-1:2022



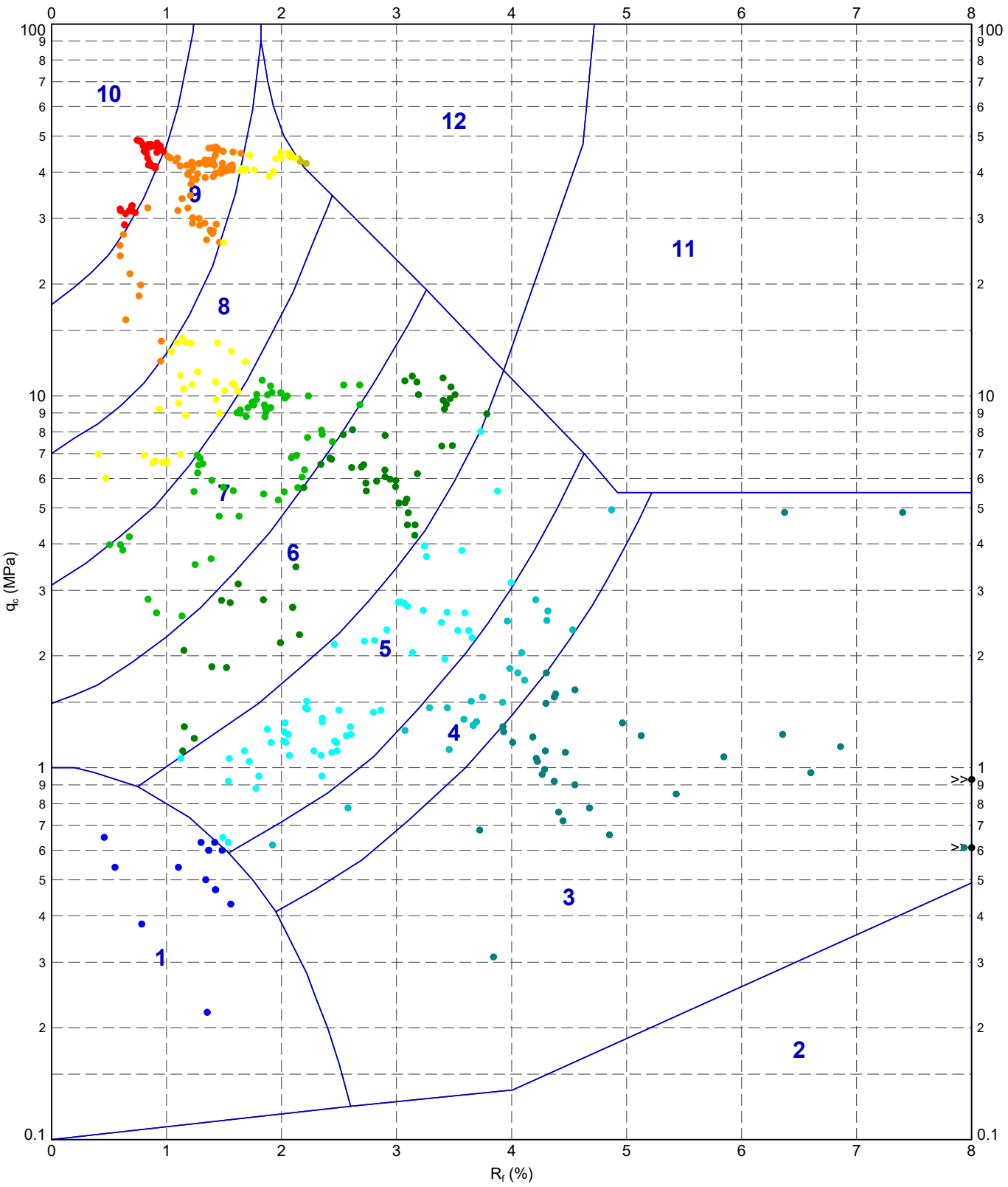
CONE ID : S15-CFIP.2175 CONE MODEL : Subtraction CONE AREA : 15cm^2 CONE AREA RATIO : 0.79 FILTER POSITION : u2 FILTER TYPE : HDPE	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT 017 - Griffen OPERATOR : RS FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES	COHESIVE SOILS (Clays & Silts) Robertson et al. 1986 Zones 1-6 and Zone 11

Transducer	Pre	Post	Difference
Tip	225 mV	220 mV	-0.058 MPa
Sleeve	192 mV	186 mV	-0.004 kPa
Pore Pressure 2	273 mV	361 mV	0.023 kPa
X-Y Inclinometer	2728 mV	2728 mV	

Term based on measurement	su (kPa)	Term based on measurement	su (kPa)
Extremely low strength	<10	Medium strength	40-75
Very low strength	10-20	High strength	75-150
Low strength	20-40	Very high strength	150-300
		Extremely high strength	>300

Groundwater Level

Dissipation Test



METHOD: Robertson et al. 1986 qc Rf

- 1 - Sensitive fine grained material
- 2 - Organic material
- 3 - CLAY
- 4 - Silty CLAY to CLAY
- 5 - Clayey SILT to silty CLAY
- 6 - Sandy SILT to clayey SILT
- 7 - Silty SAND to sandy SILT
- 8 - SAND to silty SAND
- 9 - SAND
- 10 - Gravelly SAND to SAND
- 11 - Very stiff fine grained
- 12 - SAND to clayey SAND

IN SITU SITE INVESTIGATION	TITLE Irish Drilling Derrygreenagh Power Derrygreenagh Power Robertson et al. 1986 q_c vs. R_f - CPT219	DRAWN	DATE 03/07/2023
		CHECKED	DATE 03/07/2023
		SCALE Not To Scale	A4
		PROJECT No 1230267	FIGURE No

220629-ADVANCED REPORT INSITUSI 2.02.1 LIB - CHLOE.GLB Graph CPT ROBERTSON ET AL. 86 QC VS. RF A4P 1230267 DERRYFREENAGH POWER IRISH DRILLING.GPJ <<DrawingFile>> 03/07/2023 14:11 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: In Situ SI 2.02.0 2017-07-10 Prj: In Situ SI 2.02.0 2017-07-10

IN SITU SITE INVESTIGATION

Unit 23 Hastings Innovation Centre,
Highfield Drive
St. Leonards on Sea, East Sussex,
TN38 9UH, U.K.

Company No.: 6339499
VAT No.: 922 3561 41

Appendix 7
Ground Water Readings

Groundwater Levels

Contract:	Derrygreenagh Thermal Power	*Test carried out by:*	**Irish Drilling Ltd.**
Location:	Derrygreenagh, Co. Offaly	*Operators:*	MM
Client:	Bord na Mona.	*Date installed:*	June 23-August '23
Engineer:	Bord na Mona.	*Date:*	18/07/2023

Standpipes	18/07/2023	17/08/2023	13/09/2023	Comments	O.D.
	m +/-(gl)	m +/-(gl)	m +/-(gl)		Ground Level
BH113	-13.04	-12.51	-12.75		

Remarks:
Depth recorded from ground level to top of water level.

Appendix 8
Plate Bearing Test Records

IRISH DRILLING LTD.	Contract:	Derrygreenagh Power		
Loughrea Co. Galway	Client:			2023OY101
	Engineer:			
Tel: (091) 841274	Date:	05/05/2023		
Lab@IrishDrilling.ie	Tested by:	DF	Checked:	DCD

Plate Bearing Test: BS 1377:Part 9: 1990

Plate diameter (mm) **600**

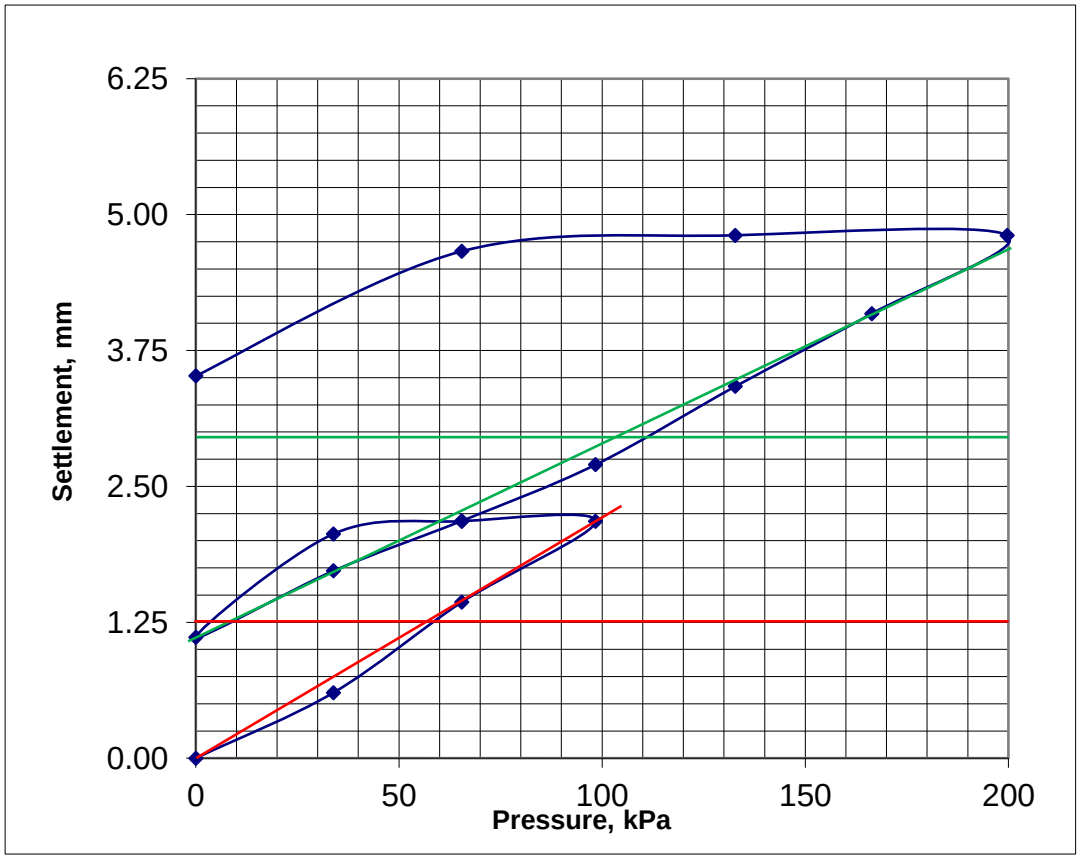
Pump D

Test Location Number:	TP 216	Depth / Level:	0.5m bgl

Brown gravelly cobbly clay.

PLATE TEST

Pressure kN/m^2	Settlement mm
0	0.00
33.9	0.60
65.5	1.44
98.4	2.18
65.5	2.18
33.9	2.06
0	1.11
33.9	1.72
65.5	2.18
98.4	2.70
132.8	3.42
166.4	4.09
199.7	4.81
132.8	4.81
65.5	4.66
0	3.52



Pressures to give 1.25mm settlement

Cycle 1		Cycle 2
1.25	(y) Settlement mm	1.25
58	(p) Pressure kN/m^2	105
46.40	Gradient (p/y)	84.00
0.829	Correction factor (to 762mm plate)	0.829
38.47	(k_s) Modulus of subgrade reaction kPa/mm	69.64
5.4	Approximate CBR (%)*	15.1

$$CBR = 6.1 \times 10^{-8} \times (k_{762})^{1.733}\%$$

*National Roads Authority, Design Manual for Roads and Bridges; Volume 7 Section 2, Part 2A HD25-26/10 (2010)**

IRISH DRILLING LTD.	Contract:	Derrygreenagh Power		
Loughrea Co. Galway	Client:			2023OY101
	Engineer:			
Tel: (091) 841274	Date:	09/05/2023		
Lab@IrishDrilling.ie	Tested by:	DF	Checked:	DCD

Plate Bearing Test: BS 1377:Part 9: 1990

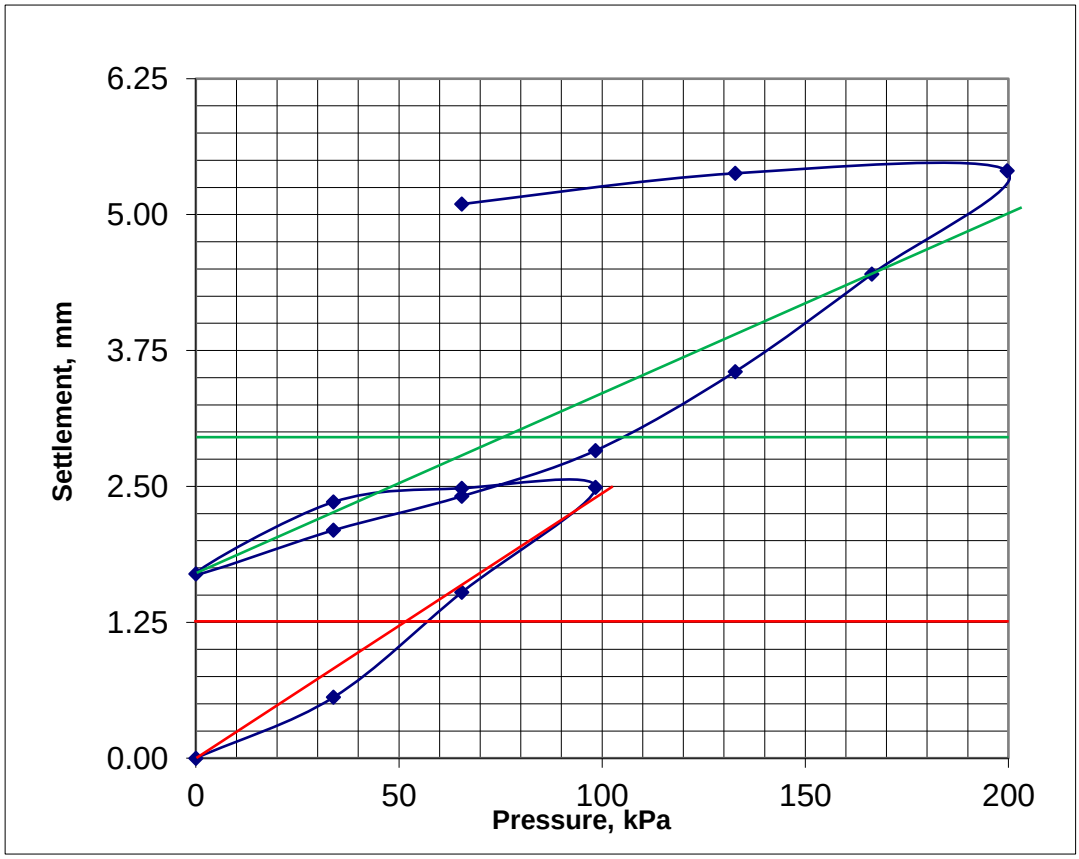
Plate diameter (mm) **600**

Pump D

Test Location Number:	TP 217	Depth / Level:	m bgl
Orange-brown cobbly clay.			

PLATE TEST

Pressure kN/m^2	Settlement mm
0	0.00
33.9	0.56
65.5	1.53
98.4	2.49
65.5	2.48
33.9	2.36
0	1.70
33.9	2.10
65.5	2.41
98.4	2.83
132.8	3.56
166.4	4.45
199.7	5.40
132.8	5.38
65.5	5.10



Pressures to give 1.25mm settlement

Cycle 1		Cycle 2
1.25	(y) Settlement mm	1.25
50	(p) Pressure kN/m^2	75
40.00	Gradient (p/y)	60.00
0.829	Correction factor (to 762mm plate)	0.829
33.16	(k_s) Modulus of subgrade reaction kPa/mm	49.74
4.2	Approximate CBR (%)*	8.4

$$CBR = 6.1 \times 10^{-8} \times (k_{762})^{1.733}\%$$

*National Roads Authority, Design Manual for Roads and Bridges; Volume 7 Section 2, Part 2A HD25-26/10 (2010)**

https://irishdrilling-my.sharepoint.com/personal/lab_irishdrilling_ie/Documents/Documents/CurrentDocuments/2023/23OY104.Derrrygreenagh/PlateD600.TP217@

Print Date: 02/06/2023

IRISH DRILLING LTD.	Contract:	Derrygreenagh Power		
Loughrea Co. Galway	Client:			2023OY101
	Engineer:			
Tel: (091) 841274	Date:	04/05/2023		
Lab@IrishDrilling.ie	Tested by:	DF	Checked:	DCD

Plate Bearing Test: BS 1377:Part 9: 1990

Plate diameter (mm) **600**

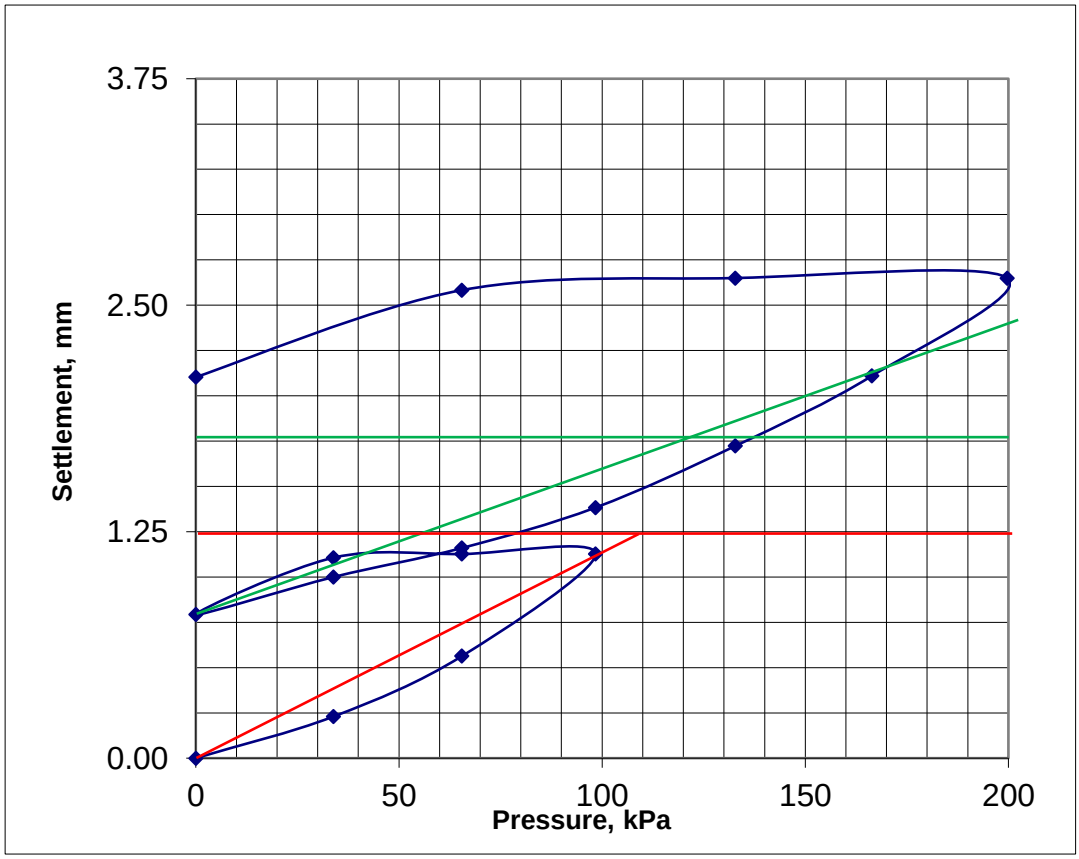
Pump D

Test Location Number:	TP 218	Depth / Level:	0.5m bgl

Brown gravelly cobbly clay.

PLATE TEST

Pressure kN/m^2	Settlement mm
0	0.00
33.9	0.23
65.5	0.56
98.4	1.13
65.5	1.13
33.9	1.11
0	0.79
33.9	1.00
65.5	1.16
98.4	1.38
132.8	1.72
166.4	2.11
199.7	2.65
132.8	2.65
65.5	2.58
0	2.10



Pressures to give 1.25mm settlement

Cycle 1		Cycle 2
1.25	(y) Settlement mm	1.25
110	(p) Pressure kN/m^2	120
88.00	Gradient (p/y)	96.00
0.829	Correction factor (to 762mm plate)	0.829
72.95	(k_s) Modulus of subgrade reaction kPa/mm	79.58
16.4	Approximate CBR (%)*	19.1

$$CBR = 6.1 \times 10^{-8} \times (k_{762})^{1.733}\%$$

*National Roads Authority, Design Manual for Roads and Bridges; Volume 7 Section 2, Part 2A HD25-26/10 (2010)**

IRISH DRILLING LTD.	Contract:	Derrygreenagh Power		
Loughrea Co. Galway	Client:			2023OY101
	Engineer:			
Tel: (091) 841274	Date:	04/05/2023		
Lab@IrishDrilling.ie	Tested by:	DF	Checked:	DCD

Plate Bearing Test: BS 1377:Part 9: 1990

Plate diameter (mm) **600**

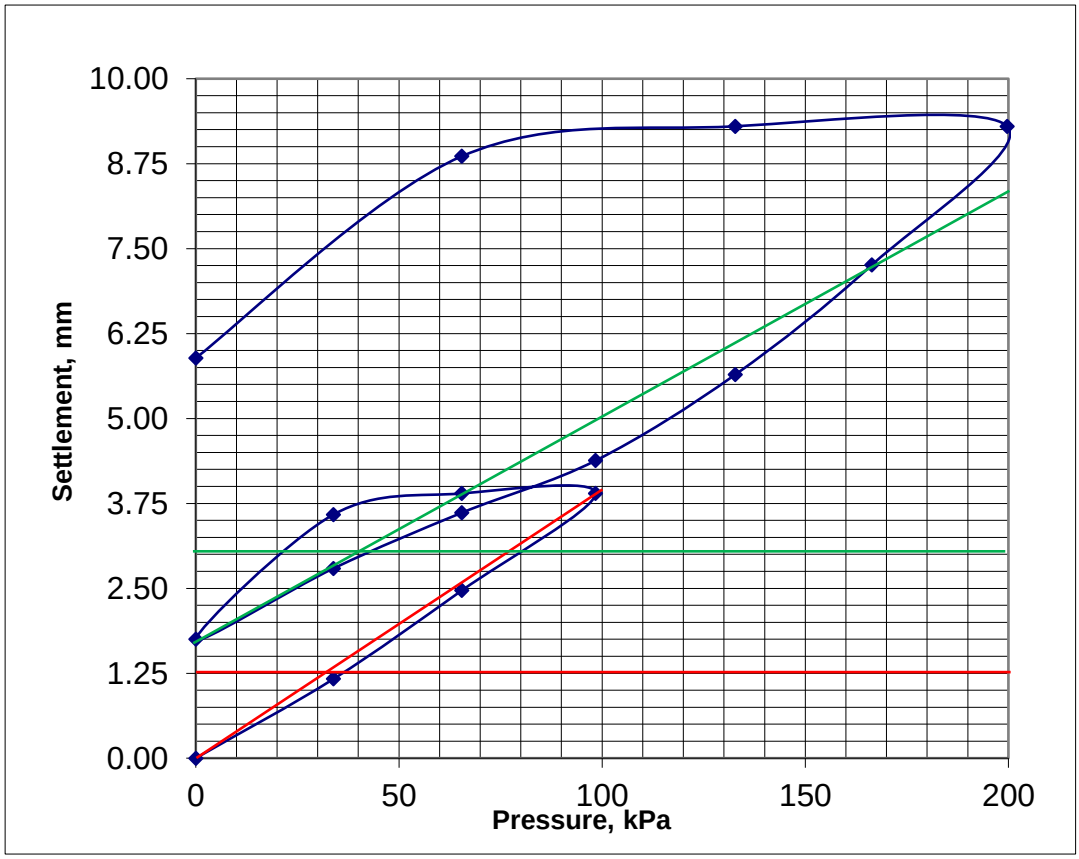
Pump D

Test Location Number:	TP 219	Depth / Level:	0.65m bgl

Brown gravelly cobbly clay.

PLATE TEST

Pressure kN/m^2	Settlement mm
0	0.00
33.9	1.17
65.5	2.47
98.4	3.90
65.5	3.90
33.9	3.59
0	1.75
33.9	2.79
65.5	3.61
98.4	4.38
132.8	5.65
166.4	7.26
199.7	9.30
132.8	9.30
65.5	8.86
0	5.89



Pressures to give 1.25mm settlement

Cycle 1		Cycle 2
1.25	(y) Settlement mm	1.25
30	(p) Pressure kN/m^2	40
24.00	Gradient (p/y)	32.00
0.829	Correction factor (to 762mm plate)	0.829
19.90	(k_s) Modulus of subgrade reaction kPa/mm	26.53
1.7	Approximate CBR (%)*	2.8

$$CBR = 6.1 \times 10^{-8} \times (k_{762})^{1.733}\%$$

*National Roads Authority, Design Manual for Roads and Bridges; Volume 7 Section 2, Part 2A HD25-26/10 (2010)**

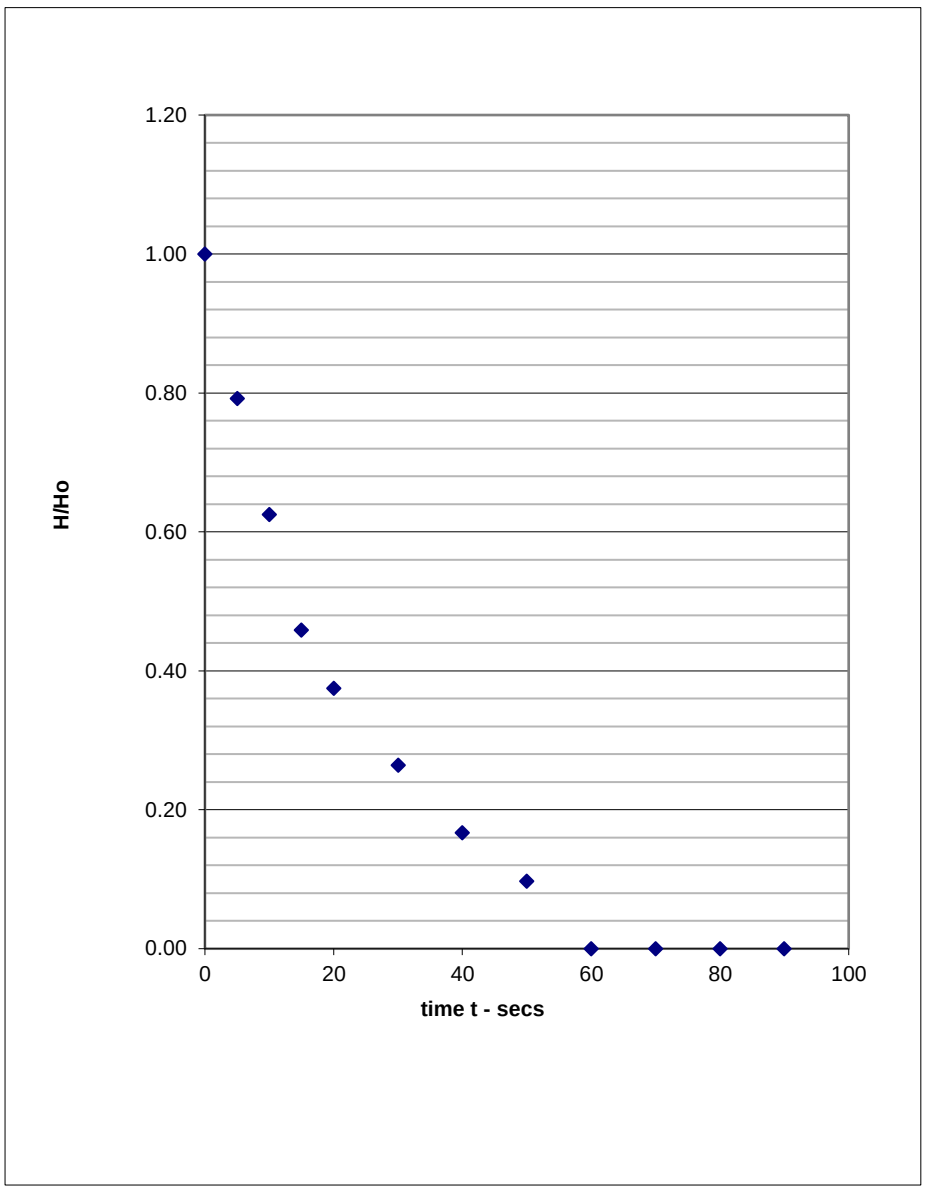
Appendix 9
Permeability Test Records

IRISH DRILLING LTD.	Contract:	Derrygreenagh Thermal Power	Borehole:
Loughrea Co. Galway			BH 108
Tel: (091) 841274			
Fax: (091) 680110	Date:	25.04.2023	Revision:
	Eng.:	**Fichtner**	Operators: BT

Bottom of borehole (below G.L.)	3.50m	Weather	Fair
Bottom of solid casing (below g.L.)	3.00m	Type of test	Falling Head
Top of filter material (m O.D.)	N/A	Diameter of borehole	0.200m
Initial water level (m bgl)	Dry	Length of filter	0.50m
Ground level (m O.D.)	88.494	Diameter of filter	0.200m
Co-ordinates 649453.235E	738119.968N	Type of piezometer	N/A

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	0.720	1.00
5	0.150	0.570	0.79
10	0.270	0.450	0.63
15	0.390	0.330	0.46
20	0.450	0.270	0.38
30	0.530	0.190	0.26
40	0.600	0.120	0.17
50	0.650	0.070	0.10
60	0.720	0.000	0.00
70	0.720	0.000	0.00
80	0.720	0.000	0.00
90	0.720	0.000	0.00



L	0.500	m
D	0.200	m
F	1.960	
A	0.0316	m^2
$t_2 - t_1$	60	min

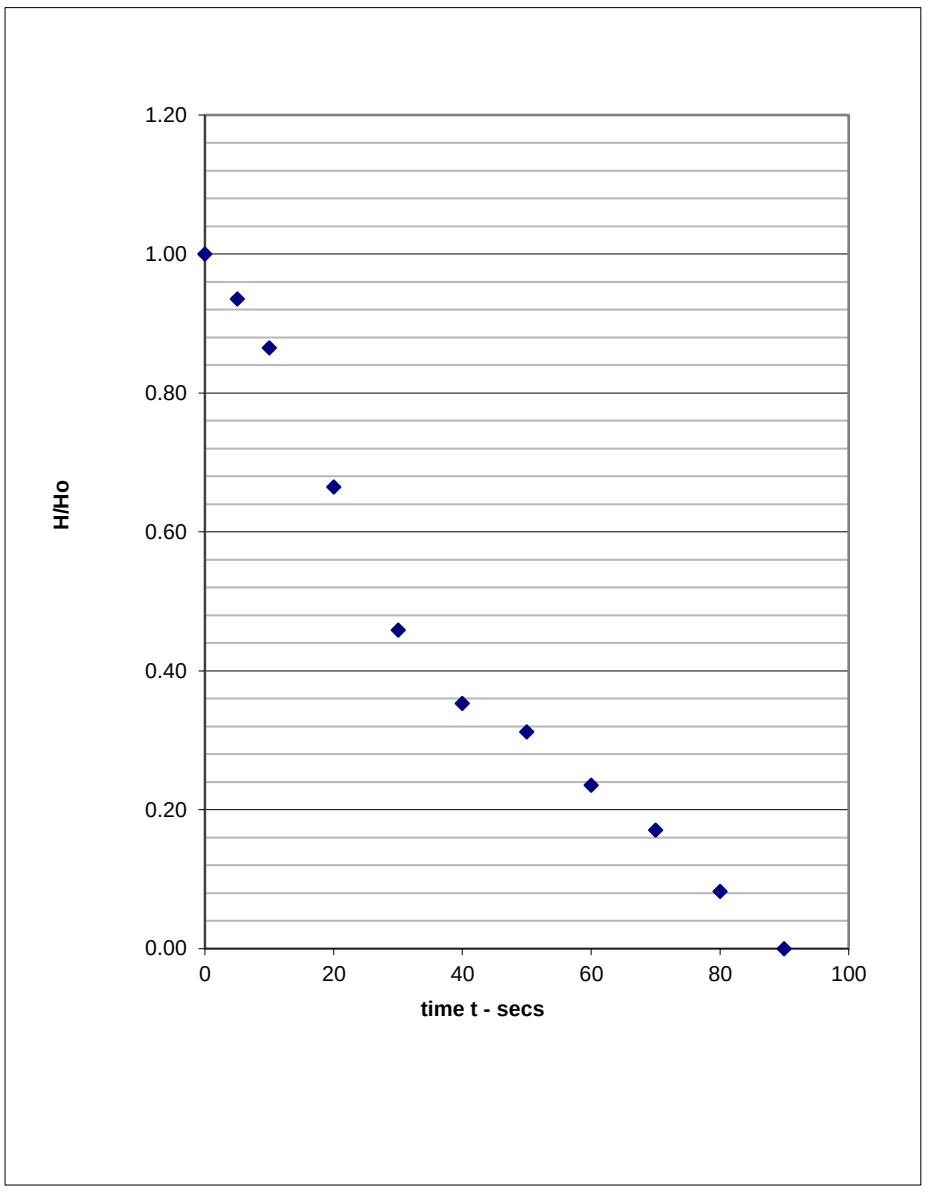
k (permeability) = -1.36E-05 m/sec

IRISH DRILLING LTD.	Contract:	Derrygreenagh Thermal Power	Borehole:
Loughrea Co. Galway			BH 113
Tel: (091) 841274			
Fax: (091) 680110	Date:	24.04.2023	Revision:
	Eng.:	**Fichtner**	Operators: BT

Bottom of borehole (below G.L.)	6.60m	Weather	Fair
Bottom of solid casing (below g.L.)	6.00m	Type of test	Falling Head
Top of filter material (m O.D.)	N/A	Diameter of borehole	0.200m
Initial water level (m bgl)	Dry	Length of filter	0.60m
Ground level (m O.D.)	88.898	Diameter of filter	0.200m
Co-ordinates 649571.431E	738123.187N	Type of piezometer	NA

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	0.170	1.00
5	0.011	0.159	0.94
10	0.023	0.147	0.86
20	0.057	0.113	0.66
30	0.092	0.078	0.46
40	0.110	0.060	0.35
50	0.117	0.053	0.31
60	0.130	0.040	0.24
70	0.141	0.029	0.17
80	0.156	0.014	0.08
90	0.170	0.000	0.00



L	0.600	m
D	0.200	m
F	2.100	
A	0.0316	m^2
$t_2 - t_1$	90	min

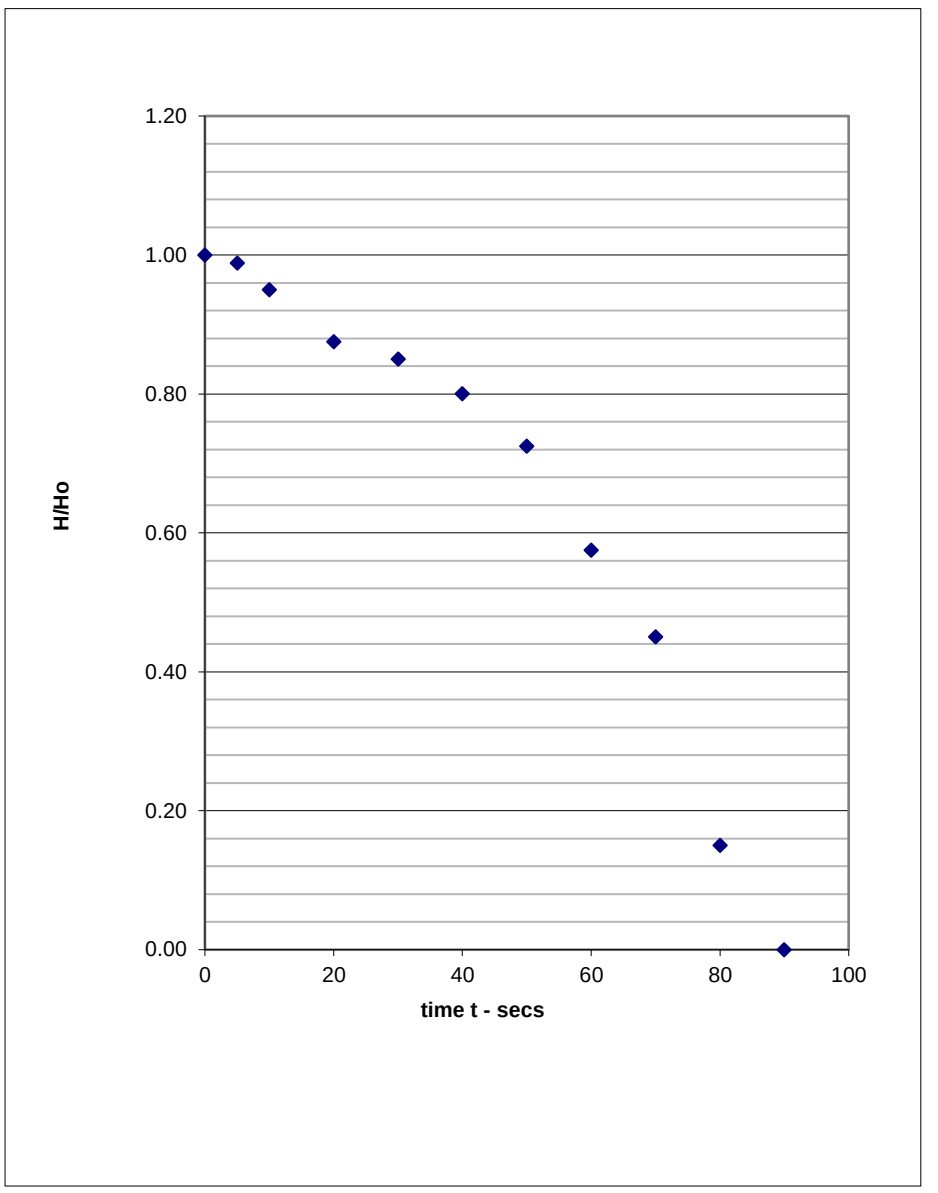
k (permeability) = 1.57E-06 m/sec

IRISH DRILLING LTD.	Contract:	Derrygreenagh Thermal Power	Borehole:
Loughrea Co. Galway			BH 114
Tel: (091) 841274			
Fax: (091) 680110	Date:	20.04.2023	Revision:
	Eng.:	**Fichtner**	Operators: BT

Bottom of borehole (below G.L.)	7.10m	Weather	Fair
Bottom of solid casing (below g.L.)	6.00m	Type of test	Falling Head
Top of filter material (m O.D.)	N/A	Diameter of borehole	0.200m
Initial water level (m bgl)	Dry	Length of filter	1.10m
Ground level (m O.D.)	87.732	Diameter of filter	0.200m
Co-ordinates 649645.862E	738128.704N	Type of piezometer	NA

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	2.000	1.00
5	0.023	1.977	0.99
10	0.100	1.900	0.95
20	0.250	1.750	0.88
30	0.300	1.700	0.85
40	0.400	1.600	0.80
50	0.550	1.450	0.73
60	0.850	1.150	0.58
70	1.100	0.900	0.45
80	1.700	0.300	0.15
90	2.000	0.000	0.00



L	1.100	m
D	0.200	m
F	2.890	
A	0.0316	m^2
$t_2 - t_1$	90	min

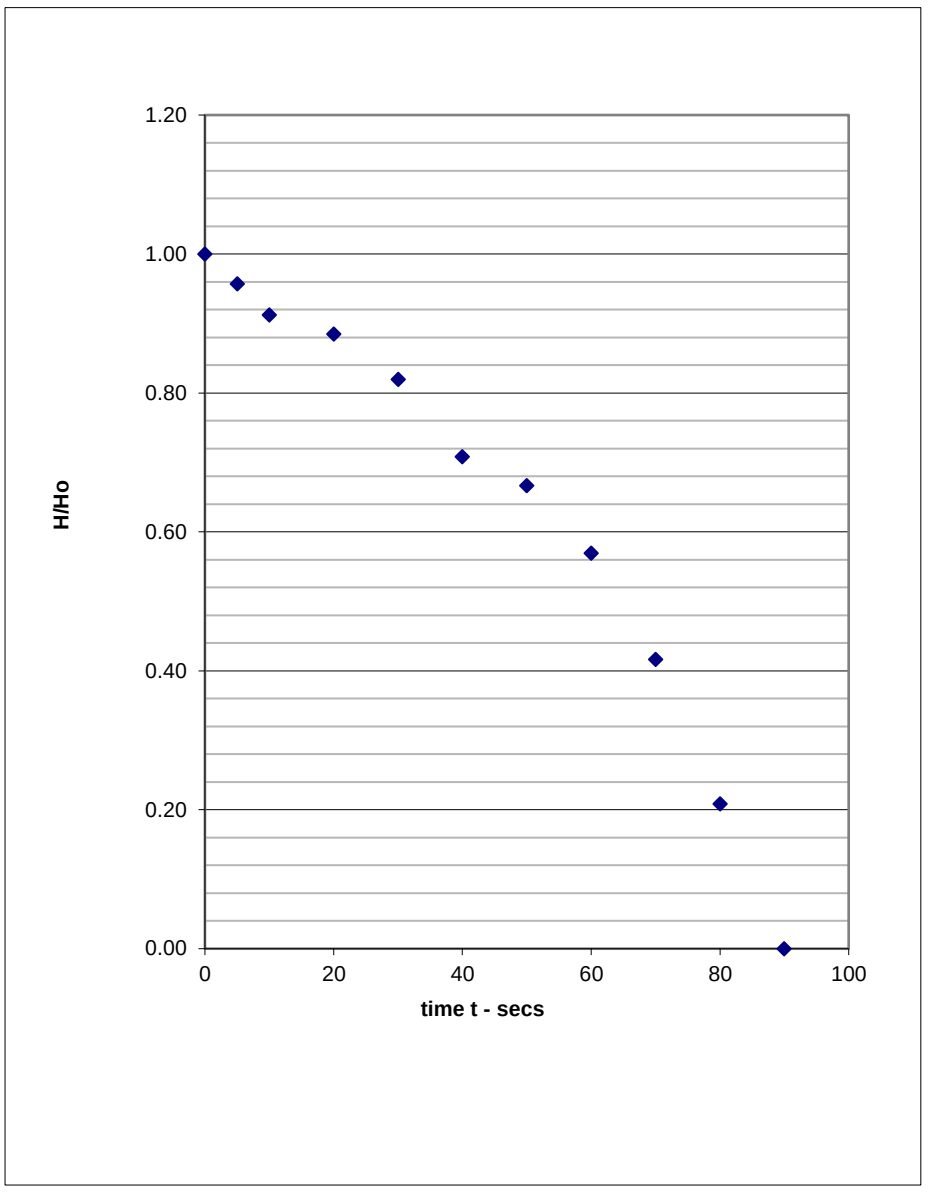
k (permeability) = 2.92E-06 m/sec

IRISH DRILLING LTD.	Contract:	Derrygreenagh Thermal Power	Borehole:
Loughrea Co. Galway			BH 115
Tel: (091) 841274			
Fax: (091) 680110	Date:	21.04.2023	Revision:
	Eng.:	**Fichtner**	Operators: BT

Bottom of borehole (below G.L.)	7.00m	Weather	Fair
Bottom of solid casing (below g.L.)	6.00m	Type of test	Falling Head
Top of filter material (m O.D.)	N/A	Diameter of borehole	0.200m
Initial water level (m bgl)	Dry	Length of filter	1.00m
Ground level (m O.D.)	86.87	Diameter of filter	0.200m
Co-ordinates 649663.111E	738176.537N	Type of piezometer	NA

Falling HEAD TEST

time min	water level m	H	H/Ho
0	0.000	0.720	1.00
5	0.031	0.689	0.96
10	0.063	0.657	0.91
20	0.083	0.637	0.88
30	0.130	0.590	0.82
40	0.210	0.510	0.71
50	0.240	0.480	0.67
60	0.310	0.410	0.57
70	0.420	0.300	0.42
80	0.570	0.150	0.21
90	0.720	0.000	0.00



L	1.000	m
D	0.200	m
F	2.730	
A	0.0316	m^2
$t_2 - t_1$	90	min

k (permeability) = 6.53E-06 m/sec

Appendix 10
Laboratory Test Results

Project ID 2023OY104

Project Name Derrygreenagh Power

Schedule ID 2023OY104_all All 3 sections.

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Sulphate Total	Chloride Content	pH	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	CBR	Consolidation	Pressures
	Total scheduled						178	151	44		154	99	95	1	24		24		2	51	2	45	10	
	Completed to date						178	151	44		154	98	95	1	24		24		2	39	2	156	10	
BH109	2.00	2.45	U100	6	20.4.23	a.	1	1			1												1	
BH109	6.00	6.50	B	19	21.4.23	a.	1	1			1	1								1				
BH113	4.00	4.50	B	13	24.4.23	a.	1	1			1	1								1				
BH114	2.00	2.50	B	7	24.4.23	a.	1	1			1	1								1				
BHTo5	5		ES		1.6.23	ALS																		
TPSS02	8	ES 1	ES 1		5.5.23	als																		
BH101	1.00	1.50	B	4	13.4.23	AX21	1	1			1	1	1											
BH101	2.00	2.45	U100	5	13.4.23	AX21	1	1			1												1	
BH101	4.00	4.50	B	13	13.4.23	AX21	1	1			1													
BH102	3.00	3.45	U100	9	17.4.23	AX21	1	1			1												1	
BH102	4.00	4.50	B	13	17.4.23	AX21	1	1			1									1		5		
BH103	2.00	2.50	B	7	17.4.23	AX21	1	1			1	1												
BH103	3.00	3.50	B	10	17.4.23	AX21	1	1			1	1								1				
BH105	3.00	3.45	U100	9	18.4.23	AX21	1	1			1												1	
BH105	4.00	4.50	B	12	18.4.23	AX21	1	1			1	1								1				
BH106	2.00	2.50	B	7	20.4.23	AX21	1	0*			1	1								1				
BH112	3.00	3.50	B	10	12.4.23	AX21	1				1									1		5		
BH115	3.00	3.50	B	10	21.4.23	AX21							1									0*		
BH115	3.00	3.50	B	10	21.4.23	AX21	1	1			1	1								1				
BH104	1.00	1.45	U100	3	18.4.23	AX21?/	1	1			1												1	
BH104	2.00	2.50	B	7	18.4.23	AX21?/	1	1			1	0*	1											
BH104	4.00	4.50	B	13	18.4.23	AX21?/	1	1			1	1								1				
BH107	2.00	2.50	B	7	26.4.23	AX24	1	1			1									1		5		
BH107	3.00	3.50	B	10	26.4.23	ax24	1				1													
BH108	3.00	3.50	B	10	25.4.23	ax24	1	1																
BH110	1.00	1.50	B	4	27.4.23	AX24	1	1			1		1							1		5		
BH110	3.00	3.50	B	10	27.4.23	AX24	1	1			1	1								1				
BH111	3.00	3.50	B	10	2.5.23	AX24	1	1																
BH111	3.50		D	11	2.5.23	AX24	1				1													
BH111	4.00	4.50	B	13	2.5.23	AX24	1				1									1		5		
BHSS02	1.00	1.45	U100	3	5.5.23	AX24																	1	
BHSS02	3.00	3.50	B	9	5.5.23	AX24	1	1			1	1	1								1	5		
BHSS04	1.00	1.45	U100	3	4.5.23	AX24																		
BHSS05	1.00	1.45	U100	3	3.5.23	AX24	1	1			1												1	
BHSS05	3.00	3.50	B	10	3.5.23	AX24	1	1			1	1	1											
TP201	2.80	3.00	B	2	2.5.23	AX25	1	1			1	1	1											
TP201	3.40	3.60	B	4	2.5.23	AX25	1	1																
TP202	3.00	3.20	B	2	2.5.23	AX25	1	1			0*	0*	1											
TP203	2.80	3.00	B	2	3.5.23	AX25	1	0*			0*	0*	1											
TP204	2.50	2.70	B	5	2.5.23	AX25	1	1			1	1								1				
TP204	2.50	2.70	D	6	2.5.23	AX25							1											
TP205	2.50	2.70	B	2	3.5.23	AX25	1	1			1	1	1											
TP207	1.40	1.60	B	3	3.5.23	AX25	1	1			1	1	1											
TP209	1.30	1.50	B	2	3.5.23	AX25	1	1			1	1	1							1		5		
TP217	1.60	1.80	B	4	5.5.23	AX25	1	1			1	1	1							1		5		
TP220	2.40	2.60	B	4	4.5.23	AX25	1	1			1									1		4		
TP206A	0.50	0.70	B	1	8.5.23	AX26	1	1			1	1	1							1		5		
TP210	0.50	0.70	B	1	8.5.23	AX26	1	1			1	1	1							1		5		
TP211	1.00	1.20	B	3	9.5.23	AX26	1	1			1	1	1							1		5		
TP212	1.10	1.30	B	3	9.5.23	AX26	1	1			1	1								1		5		
TP216	0.50	0.70	B	1	5.5.23	AX26	1	1			1	1	1							1		5		
TP218	0.60	0.80	B	1	4.5.23	AX26	1	1			1	1	1							1		5		
TP219	0.60	0.80	B	1	4.5.23	AX26	1	1			1	1	1											

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Sulphate Total	Chloride Content	ph	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	CBR	Consolidation	Pressures
TP214	1.70	1.90	B	2	10.5.23	AX26?	1	1			1	1	1											
TP215	1.60	1.80	B	3	10.5.23	AX26?	1	1			1	1	1											
TP302	0.90	1.00	B	3	16.5.23	ax27	1	1			1	1	1											
TP303	2.20	2.30	B	3	16.5.23	ax27	1	1			1	1	1											
TP305	0.80	0.80	B	1	17.5.23	ax27	1	1			1	1	1											
TPSS02	1.90	2.10	B	1	10.5.23	AX27	1	1			1	1	1											
TPSS04	2.10	2.20	B	1	11.5.23	AX27	1	1			1	1	1											
TPSS06	2.00	2.20	B	2	11.5.23	AX27	1	1			1	1	1											
TPT14	1.50	1.60	B	4	16.5.23	AX27	1	1			1	0*	1											
TPT16	0.80	0.90	B	3	15.5.23	AX27	1	1			1	1	1											
TPT18	1.30	1.40	B	3	15.5.23	AX27	1	1			1	1	1											
TP308	1.30	1.40	B	3	22.5.23	ax43	1	1			1	1	1											
TPBP01	1.40	1.50	B	3	23.5.23	ax43	1	1			1	1	1											
TPBP03	1.40	1.50	B	3	23.5.23	ax43	1													0		0		
TPBP05	1.50	1.60	B	4	23.5.23	ax43	1													0		0		
TPBP06	1.20	1.30	B	4	24.5.23	ax43	1	1			1	1	1											
TPBP08	0.40	0.50	B	1	24.5.23	ax43	1	1			1	1	1											
TPC01	0.50	0.60	B	1	29.5.23	ax44	1	0*					1											
TPC02	0.50	0.60	B	1	29.5.23	ax44																		
TPC02	2.50	3.00	B	5	29.5.23	ax44	1	1			1	1	1											
TPC03	0.70	0.80	B	1	29.5.23	ax44																		
TPC04	0.80	0.90	B	1	30.5.23	ax44																		
TPC04	1.60	1.70	B	3	30.5.23	ax44	1	1			1	1	1											
TPC05	0.50	0.60	B	1	30.5.23	ax44																		
TPCC01	0.50	0.60	B	1	29.5.23	ax44																		
TPCC01	2.90	3.00	B	5	29.5.23	ax44	1	1			1	1	1											
TPT01	3.40	3.50	B	6	26.5.23	AX44	1				1									1		5		
TPT03	1.50	1.60	B	3	26.5.23	AX44	1				1									1		5		
TPT04	2.10	2.20	B	5	26.5.23	AX44	1	1			1									0*		1		
TPT05	1.00	1.10	B	3	25.5.23	AX44	1	1			1	1	1											
TPT09	0.50	0.60	B	1	25.5.23	AX44	1	1			1	1	1											
BH113	2.00	2.45	U100	6	24.4.23	ax47	1	1			1												1	
BH113	3.00	3.50	B	10	24.4.23	ax47	1	1			1	1												
BH116	1.00	1.45	U100	3	11.5.23	AX47																		
BH116	3.00	3.50	B	9	11.5.23	AX47	1				1	1												
BH117	1.00	1.45	U100	3	10.5.23	AX47																		
BH117	2.00	2.50	B	6	10.5.23	AX47	1				1	1	1							1		5		
BHPW301	2.00	2.45	U100	6	19.4.23	ax47	1	1			1												1	
BHPW301	3.00	3.50	B	9	19.4.23	ax47	1	1			0*	0*	1											
BHPW301	4.00	4.45	U100	11	19.4.23	ax47	1	1			1												1	
BHPW301	7.00	7.50	B	20	20.4.23	ax47	1	1																
BHPW301	8.00	8.50	B	23	20.4.23	ax47	1		1		1													
BHSS01	1.00	1.45	U100	3	16.5.23	AX47																		
BHSS01	3.00	3.45	U100	8	16.5.23	AX47																		
BHSS01	4.00	4.50	B	11	16.5.23	AX47	1	1			1	1	1								1	5		
BHSS03	1.00	1.45	U100	3	8.5.23	ax47																		
BHSS03	1.00	1.50	B	4	8.5.23	ax47	1	1			1	1	1											
BHT14	2.00	2.50	B	7	22.5.23	ax47	1				1													
BHT17	1.00	1.45	U100	3	17.5.23	ax47																		
BHT17	3.00	3.50	B	9	17.5.23	ax47	1				1													
BH118	1.00	1.45	U100	3	12.5.23	AX47?																		
BHT05	1.00	1.45	U100	3	31.5.23	ax48																		
BHT05	2.00	2.50	B	6	31.5.23	ax48	1				1									1		5		
BHT06	1.00	1.50	B	4	1.6.23	ax48	1	1			1									1		5		
BHT07	1.00	1.50	B	4	30.5.23	ax48	1				1									1		5		
BHT09	2.00	2.50	B	7	26.5.23	ax48	1				1									0*		0*		
BHT10	2.00	2.50	B	7	25.5.23	ax48	1				1													
BHT11	2.00	2.50	B	7	24.5.23	ax48	1				1													
BHT12	1.00	1.50	B	4	23.5.23	ax48	1				1													
BHCC01	0.00	1.00	B	1	14.6.23	AX49	1	0*					1											

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Sulphate Total	Chloride Content	ph	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	CBR	Consolidation	Pressures
BHCC01	1.00	1.45	U100	3	14.6.23	AX49																		
BHCC01	4.00	4.50	B	12	15.6.23	AX49	1	1			1	0*								0*		0*		
BHCC01	5.00	5.50	B	15	15.6.23	AX49	1	1	0*		1	0*												
BHCC01	9.50	10.00	B	24	15.6.23	AX49	1	1	1		1													
BHCC02	0.00	1.00	B	1	13.6.23	AX49	1	1			0*	0*												
BHCC02	1.00	1.45	U100	3	13.6.23	AX49																		
BHCC02	4.00	4.50	B	12	14.6.23	AX49	1	1	1		1										0*	0*		
BHCC02	8.00	8.50	B	21	14.6.23	AX49	1	1	1		1													
BHSS06	0.00	1.00	B	1	13.6.23	AX49	1	1			0*	0*	1											
BHSS06	2.00	2.45	U100	6	14.6.23	AX49																		
BHSS06	3.00	3.50	B	9	14.6.23	AX49	1	1	1		1	1	1											
BHT01	1.00	1.45	U100	3	9.6.23	AX49																		
BHT01	3.00	3.50	B	9	13.6.23	AX49	1	1	1		1	0*	1		1		1							
BHT01	5.00	5.50	B	15	13.6.23	AX49	1	1			1	1								0		0		
BHT02	0.00	1.00	B	1	8.6.23	AX49	1	1							1		1							
BHT02	3.00	3.50	B	10	8.6.23	AX49	1	1	1		1	1	1							0		0		
BHT02	5.00	5.50	B	16	8.6.23	AX49	1	1			1													
BHT03	1.00	1.45	U100	3	7.6.23	ax49																		
BHT03	2.00	2.50	B	6	7.6.23	ax49	1	1			1	0*	1											
BHT03	4.50		PISTON	13	7.6.23	ax49																		
BHT04	1.00	1.50	B	4	6.6.23	ax49	1	1			1	1	1							1		5		
BHT08	0.00	1.00	B	1	16.6.23	AX49	1	1	1		1	0	1		1		1							
BHT08	1.00	1.50	B	4	16.6.23	AX49	1	1	1		1	1												
BHT08	2.00	2.50	B	7	19.6.23	AX49	1	0*	1		1	0*	1		1		1							
BHT08	3.00	3.50	B	10	19.6.23	AX49	1												1	0		0		
BHT16	0.00	1.00	B	1	22.6.23	AX49	1	1	1		1	0*	1		1		1							
BHT16	1.00	1.50	B	4	22.6.23	AX49	1	1	1		1	0*												
BHT16	2.00	2.50	B	7	22.6.23	AX49													1	0		0		
BHT16	4.00	4.50	B	13	22.6.23	AX49	1	1	1		1	0*												
BHT16	8.00	8.50	B	22	23.6.23	AX49	1	1	1		1													
TP208	0.50	0.60	B	1	29.6.23	AX59	1	1					1											
TP208	2.00	2.10	B	3	29.6.23	AX59	1	1	1		1	1	1		1		1							
TP208	2.50	2.60	B	6	29.6.23	AX59	1	1			1	1								1		5		
TP221	3.00	3.20	B	1	14.6.23	ax59	1	1			1	1	1											
TP222	2.70	3.00	B	2	14.6.23	ax59	1				1									1		5		
TP224	2.30	2.50	B	2	14.6.23	ax59	1				1									0*		1		
TP312	1.20	1.30	B	2	31.5.23	ax59	1	1			1	1												
TPC06	0.90	1.00	B	1	30.5.23	ax59																		
TPC06	2.50	2.60	B	3	30.5.23	ax59	1	1			1	1	1											
TPC07	0.40	0.50	B	1	30.5.23	ax59																		
TPC08	0.80	0.90	B	3	28.6.23	AX59	1	1	1		1	1	1		1		1							
TPC08	2.30	2.60	B	6	28.6.23	AX59	1	1			1	1								0		0		
TPC09	0.40	0.50	B	1	28.6.23	AX59	1	1					1											
TPC09	1.30	1.40	B	3	28.6.23	AX59	1	1	1		1	1	1		1		1							
TPC09	2.70	2.80	B	6	28.6.23	AX59														1		5		
TPSS101	0.40	0.50	B	1	27.6.23	AX59	1	1	1		1	1	1											
TPSS101	1.40	1.50	B	4	27.6.23	AX59	1	1	1		1	1	1		1		1							
TPSS101	2.40	2.50	B	6	27.6.23	AX59	1	1			1	1	1											
TPSS102	0.40	0.50	B	1	27.6.23	AX59	1	1	1		1	1	1											
TPSS102	1.40	1.50	B	4	27.6.23	AX59	1	1	1		1	1	1											
TPSS102	2.40	2.50	B	6	27.6.23	AX59														0		0		
TPSS103	0.40	0.50	B	1	27.6.23	AX59	1	1	1		1	1	1		1		1							
TPSS103	1.40	1.50	B	4	27.6.23	AX59	1	1			1	1	1											
TPSS104	0.30	0.40	B	1	28.6.23	AX59	1	1					1											
TPSS104	0.70	0.80	B	3	28.6.23	AX59	1	1	1		1	1	1		1		1							
TPSS104	2.00	2.10	B	6	28.6.23	AX59														0		0		
TPSS105	0.40	0.50	B	1	27.6.23	AX59	1	1	1		1	1	1		1		1							
TPSS105	1.40	1.50	B	4	27.6.23	AX59	1	1			1	1												
TPSS105	2.40	2.50	B	6	27.6.23	AX59	1	1			1	1												
TPSS106	0.40	0.50	B	1	27.6.23	AX59	1	1	1		1	1	1											

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Sulphate Total	Chloride Content Water	Chloride Content Acid	ph	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	CBR	Consolidation	Pressures
TPSS106	1.40	1.50	B	4	27.6.23	AX59	1	1																	
TPSS106	2.40	2.50	B	6	27.6.23	AX59	1	1					1												
TPSS107	0.40	0.50	B	1	28.6.23	AX59	1	1	1		1	1	1												
TPSS107	1.80	1.90	B	4	28.6.23	AX59	1	1			1										1		5		
BHSS101	0.00	1.00	B	1	17.7.23	AX62	1	1	1		1	1	1		1			1							
BHSS101	2.00	2.50	B	7	17.7.23	AX62	1	1	1		1	1	1		1			1							
BHSS101	3.00	3.50	B	10	18.7.23	AX62															1		5		
BHSS101	5.00	5.40	B	16	18.7.23	AX62	1	1			1	1													
BHSS102	0.00	1.00	B	1	18.7.23	AX62	1	1						1											
BHSS102	1.00	1.50	B	4	18.7.23	AX62	1	1	1		1	1	1		1			1							
BHSS102	2.00	2.50	B	7	18.7.23	AX62															0		0		
BHSS102	3.00	3.50	B	10	18.7.23	AX62	1	1	1		1	1													
BHSS103	0.00	1.00	B	1	17.7.23	AX62	1	1	1		1	1	1												
BHSS103	1.00	1.50	B	4	17.7.23	AX62	1	1			1	1	1		1			1							
BHSS103	2.00	2.50	B	7	17.7.23	AX62															1		5		
BHSS103	4.00	4.50	B	13	17.7.23	AX62	1	1			1														
BHSS104	1.00	1.50	B	4	19.7.23	AX62	1	1	1		1	1	1												
BHSS104	2.00	2.50	B	7	19.7.23	AX62	1	1	1		1														
BHSS104	3.00	3.50	B	10	19.7.23	AX62	1	1	1		1	1	1		1			1							
BHSS105	0.00	1.00	B	1	14.7.23	AX62	1	1	1		1	1	1												
BHSS105	1.00	1.50	B	4	14.7.23	AX62	1	1	1		1	1	1		1			1							
BHSS106	0.00	1.00	B	1	20.7.23	AX62	1	1					1												
BHSS106	1.00	1.50	B	4	20.7.23	AX62	1	1	1		1	1	1		1			1							
BHSS106	2.00	2.50	B	7	20.7.23	AX62															1		5		
BHSS106	3.00	3.50	B	10	20.7.23	AX62	1	1			1	1													
BHSS106	4.00	4.50	B	13	20.7.23	AX62	1	1			1	0*													
BHSS107	0.00	1.00	B	1	20.7.23	AX62	1	1	1		1	1	1												
BHSS107	1.00	1.50	B	4	20.7.23	AX62	1	1			1	1			1			1							
BHSS107	2.00	2.50	B	7	20.7.23	AX62	1	1			1														
BHSS1M08	0.00	1.00	B	1	19.7.23	AX62	1	1	1		1	1	1												
BHSS1M08	1.00	1.50	B	4	19.7.23	AX62	1	1			1	1			1			1							
BHSS1M08	2.00	2.50	B	7	19.7.23	AX62															0		0		
BHSS1M08	3.00	3.40	B	10	19.7.23	AX62	1	1			1	1													
BHT16A	0.00	1.00	B	1	1.8.23	AX62	1	1			1	1	1												
BHT16A	1.00	1.50	B	4	1.8.23	AX62	1	1	1		1	0*	1		1			1							
BHT17A	0.00	1.00	B	1	31.7.23	AX62	1	1			0*	0*	1												
BHT17A	2.00	2.50	B	7	31.7.23	AX62	1	1	1		1	1	1												
BHT17A	3.00	3.50	B	10	31.7.23	AX62	1	1	1		1				1			1							
BHT17A	4.00	4.50	B	13	31.7.23	AX62															1		5		
BHT18A	0.00	1.00	B	1	2.8.23	AX62	1	1			0*	0*	1												
BHT18A	3.00	3.50	B	10	3.8.23	AX62	1	1	1		1	1	1		1			1							
BHT18A	4.00	4.50	B	13	3.8.23	AX62															0		0		
BHT18A	5.00	5.50	B	16	3.8.23	AX62	1	1	1		1	1	1												

Project ID 2023OY104
Project Name Derrygreenagh Power
Schedule ID 2023OY104_all

2023OY104
Derrygreenagh Power
2023OY104_all

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
	Total scheduled						4				5	11	8	14	87	152	155	33	41	10		
	Completed to date						4				4	10	2	14	87	152	155	33	41	10		
BH109	2.00	2.45	U100	6	20.4.23	a.	*				*	1										
BH109	6.00	6.50	B	19	21.4.23	a.																
BH113	4.00	4.50	B	13	24.4.23	a.																
BH114	2.00	2.50	B	7	24.4.23	a.																
BHT05	5		ES		1.6.23	ALS										0*	0*				230605-71 - NDP	not possible
TPSS02	8	ES 1	ES 1		5.5.23	als															230515-35	chem?
BH101	1.00	1.50	B	4	13.4.23	AX21															ALS 230915-61	
BH101	2.00	2.45	U100	5	13.4.23	AX21	1				*	1										
BH101	4.00	4.50	B	13	13.4.23	AX21																
BH102	3.00	3.45	U100	9	17.4.23	AX21	1				*	1										
BH102	4.00	4.50	B	13	17.4.23	AX21																
BH103	2.00	2.50	B	7	17.4.23	AX21																
BH103	3.00	3.50	B	10	17.4.23	AX21																
BH105	3.00	3.45	U100	9	18.4.23	AX21	1				*	1										
BH105	4.00	4.50	B	12	18.4.23	AX21																
BH106	2.00	2.50	B	7	20.4.23	AX21																* rotten
BH112	3.00	3.50	B	10	12.4.23	AX21																
BH115	3.00	3.50	B	10	21.4.23	AX21															ALS 230915-61	*cbr not done
BH115	3.00	3.50	B	10	21.4.23	AX21																
BH104	1.00	1.45	U100	3	18.4.23	AX21?/	1				*	1										
BH104	2.00	2.50	B	7	18.4.23	AX21?/															230915-61	peat
BH104	4.00	4.50	B	13	18.4.23	AX21?/																
BH107	2.00	2.50	B	7	26.4.23	AX24																
BH107	3.00	3.50	B	10	26.4.23	ax24																
BH108	3.00	3.50	B	10	25.4.23	ax24																
BH110	1.00	1.50	B	4	27.4.23	AX24															230915-61	
BH110	3.00	3.50	B	10	27.4.23	AX24																
BH111	3.00	3.50	B	10	2.5.23	AX24																
BH111	3.50		D	11	2.5.23	AX24																
BH111	4.00	4.50	B	13	2.5.23	AX24																
BHSS02	1.00	1.45	U100	3	5.5.23	AX24																
BHSS02	3.00	3.50	B	9	5.5.23	AX24															231005-93	
BHSS04	1.00	1.45	U100	3	4.5.23	AX24							1									
BHSS05	1.00	1.45	U100	3	3.5.23	AX24	*				*	1										
BHSS05	3.00	3.50	B	10	3.5.23	AX24															ALS 230915-61	
TP201	2.80	3.00	B	2	2.5.23	AX25													1		230915-61	
TP201	3.40	3.60	B	4	2.5.23	AX25																
TP202	3.00	3.20	B	2	2.5.23	AX25													1		230915-61	* not suitable, PEAT
TP203	2.80	3.00	B	2	3.5.23	AX25													1		230915-61	* not suitable, PEAT
TP204	2.50	2.70	B	5	2.5.23	AX25																
TP204	2.50	2.70	D	6	2.5.23	AX25													1		230915-61	
TP205	2.50	2.70	B	2	3.5.23	AX25													1		230915-61	
TP207	1.40	1.60	B	3	3.5.23	AX25													1		ALS 230915-61	
TP209	1.30	1.50	B	2	3.5.23	AX25													1		ALS 230915-61	
TP217	1.60	1.80	B	4	5.5.23	AX25													1		230915-61	
TP220	2.40	2.60	B	4	4.5.23	AX25																
TP206A	0.50	0.70	B	1	8.5.23	AX26													1		ALS 230915-61	
TP210	0.50	0.70	B	1	8.5.23	AX26															230915-61	
TP211	1.00	1.20	B	3	9.5.23	AX26													1		230915-61	
TP212	1.10	1.30	B	3	9.5.23	AX26																
TP216	0.50	0.70	B	1	5.5.23	AX26													1		230915-61	
TP218	0.60	0.80	B	1	4.5.23	AX26													1		230915-61	
TP219	0.60	0.80	B	1	4.5.23	AX26													1		230915-61	

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
TP214	1.70	1.90	B	2	10.5.23	AX26?													1		231005-93	
TP215	1.60	1.80	B	3	10.5.23	AX26?													1		231005-93	
TP302	0.90	1.00	B	3	16.5.23	ax27													1		231005-93	
TP303	2.20	2.30	B	3	16.5.23	ax27													1		231005-93	
TP305	0.80	0.80	B	1	17.5.23	ax27													1		231005-93	
TPSS02	1.90	2.10	B	1	10.5.23	AX27													1		231005-93	
TPSS04	2.10	2.20	B	1	11.5.23	AX27													1		231005-93	
TPSS06	2.00	2.20	B	2	11.5.23	AX27													1		231005-93	
TPT14	1.50	1.60	B	4	16.5.23	AX27													1		231005-93	* not enough fines
TPT16	0.80	0.90	B	3	15.5.23	AX27													1		231005-93	
TPT18	1.30	1.40	B	3	15.5.23	AX27													1		231005-93	
TP308	1.30	1.40	B	3	22.5.23	ax43													1		231005-93	
TPBP01	1.40	1.50	B	3	23.5.23	ax43													1		231005-93	
TPBP03	1.40	1.50	B	3	23.5.23	ax43																
TPBP05	1.50	1.60	B	4	23.5.23	ax43																
TPBP06	1.20	1.30	B	4	24.5.23	ax43													1		231005-93	
TPBP08	0.40	0.50	B	1	24.5.23	ax43													1		231005-93	
TPC01	0.50	0.60	B	1	29.5.23	ax44													0*	1	230925-27	Too fibrous for LL
TPC02	0.50	0.60	B	1	29.5.23	ax44														1		
TPC02	2.50	3.00	B	5	29.5.23	ax44													1		230925-27	
TPC03	0.70	0.80	B	1	29.5.23	ax44														1		
TPC04	0.80	0.90	B	1	30.5.23	ax44														1		
TPC04	1.60	1.70	B	3	30.5.23	ax44													1		230925-27	
TPC05	0.50	0.60	B	1	30.5.23	ax44														1		
TPCC01	0.50	0.60	B	1	29.5.23	ax44														1		
TPCC01	2.90	3.00	B	5	29.5.23	ax44													1		230925-27	
TPT01	3.40	3.50	B	6	26.5.23	AX44													1		230925-27	
TPT03	1.50	1.60	B	3	26.5.23	AX44													1		230925-27	
TPT04	2.10	2.20	B	5	26.5.23	AX44													1		230925-27	Not suitable for 5 Point test.
TPT05	1.00	1.10	B	3	25.5.23	AX44													1		231005-93	
TPT09	0.50	0.60	B	1	25.5.23	AX44													1		230925-27	
BH113	2.00	2.45	U100	6	24.4.23	ax47	*				*	1										
BH113	3.00	3.50	B	10	24.4.23	ax47																
BH116	1.00	1.45	U100	3	11.5.23	AX47					1											
BH116	3.00	3.50	B	9	11.5.23	AX47																
BH117	1.00	1.45	U100	3	10.5.23	AX47					1											
BH117	2.00	2.50	B	6	10.5.23	AX47															231005-93	
BHPW301	2.00	2.45	U100	6	19.4.23	ax47	*				*	1										
BHPW301	3.00	3.50	B	9	19.4.23	ax47															230915-61	* Peat
BHPW301	4.00	4.45	U100	11	19.4.23	ax47	*				*	1										
BHPW301	7.00	7.50	B	20	20.4.23	ax47																
BHPW301	8.00	8.50	B	23	20.4.23	ax47																
BHSS01	1.00	1.45	U100	3	16.5.23	AX47					1											
BHSS01	3.00	3.45	U100	8	16.5.23	AX47					1											
BHSS01	4.00	4.50	B	11	16.5.23	AX47															231005-93	
BHSS03	1.00	1.45	U100	3	8.5.23	ax47							0									
BHSS03	1.00	1.50	B	4	8.5.23	ax47															231005-93	
BHT14	2.00	2.50	B	7	22.5.23	ax47																
BHT17	1.00	1.45	U100	3	17.5.23	ax47							0									
BHT17	3.00	3.50	B	9	17.5.23	ax47																
BH118	1.00	1.45	U100	3	12.5.23	AX47?					0											
BHT05	1.00	1.45	U100	3	31.5.23	ax48							1									
BHT05	2.00	2.50	B	6	31.5.23	ax48																
BHT06	1.00	1.50	B	4	1.6.23	ax48																
BHT07	1.00	1.50	B	4	30.5.23	ax48																
BHT09	2.00	2.50	B	7	26.5.23	ax48																* too gravelly
BHT10	2.00	2.50	B	7	25.5.23	ax48																
BHT11	2.00	2.50	B	7	24.5.23	ax48																
BHT12	1.00	1.50	B	4	23.5.23	ax48																
BHCC01	0.00	1.00	B	1	14.6.23	AX49															ALS 231017-51	* not enough fines

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
BHCC01	1.00	1.45	U100	3	14.6.23	AX49							0									
BHCC01	4.00	4.50	B	12	15.6.23	AX49																* too gravelly
BHCC01	5.00	5.50	B	15	15.6.23	AX49																* too gravelly
BHCC01	9.50	10.00	B	24	15.6.23	AX49																
BHCC02	0.00	1.00	B	1	13.6.23	AX49																* PEAT too fibrous
BHCC02	1.00	1.45	U100	3	13.6.23	AX49							0									
BHCC02	4.00	4.50	B	12	14.6.23	AX49																* too gravelly
BHCC02	8.00	8.50	B	21	14.6.23	AX49																
BHSS06	0.00	1.00	B	1	13.6.23	AX49															ALS 231017-51	* Peat too fibrous
BHSS06	2.00	2.45	U100	6	14.6.23	AX49							0									
BHSS06	3.00	3.50	B	9	14.6.23	AX49															ALS 231017-51	
BHT01	1.00	1.45	U100	3	9.6.23	AX49							0									
BHT01	3.00	3.50	B	9	13.6.23	AX49															ALS 231017-51	
BHT01	5.00	5.50	B	15	13.6.23	AX49																
BHT02	0.00	1.00	B	1	8.6.23	AX49															ALS 231017-51	
BHT02	3.00	3.50	B	10	8.6.23	AX49															ALS 231017-51	
BHT02	5.00	5.50	B	16	8.6.23	AX49																
BHT03	1.00	1.45	U100	3	7.6.23	ax49						1										
BHT03	2.00	2.50	B	6	7.6.23	ax49															ALS 230915-61	*Not enough fines
BHT03	4.50		PISTON	13	7.6.23	ax49						0										
BHT04	1.00	1.50	B	4	6.6.23	ax49															230915-61	
BHT08	0.00	1.00	B	1	16.6.23	AX49															ALS 231017-51	
BHT08	1.00	1.50	B	4	16.6.23	AX49																
BHT08	2.00	2.50	B	7	19.6.23	AX49															ALS 231017-51	* not enough fines
BHT08	3.00	3.50	B	10	19.6.23	AX49															ALS 231017-51	should be 5Comp?
BHT16	0.00	1.00	B	1	22.6.23	AX49															ALS 231017-51	
BHT16	1.00	1.50	B	4	22.6.23	AX49																
BHT16	2.00	2.50	B	7	22.6.23	AX49															ALS 231017-51	should be 5Comp?
BHT16	4.00	4.50	B	13	22.6.23	AX49																
BHT16	8.00	8.50	B	22	23.6.23	AX49																
TP208	0.50	0.60	B	1	29.6.23	AX59															ALS 231017-51	
TP208	2.00	2.10	B	3	29.6.23	AX59															ALS 231017-51	
TP208	2.50	2.60	B	6	29.6.23	AX59																
TP221	3.00	3.20	B	1	14.6.23	ax59													1		ALS 230915-61	
TP222	2.70	3.00	B	2	14.6.23	ax59													1		ALS 230915-61	
TP224	2.30	2.50	B	2	14.6.23	ax59													1		ALS 230915-61	Not suitable for 5 point Compaction
TP312	1.20	1.30	B	2	31.5.23	ax59													1		231005-93	
TPC06	0.90	1.00	B	1	30.5.23	ax59														1		
TPC06	2.50	2.60	B	3	30.5.23	ax59													1		231005-93	
TPC07	0.40	0.50	B	1	30.5.23	ax59														1		
TPC08	0.80	0.90	B	3	28.6.23	AX59														1	ALS 231017-51	
TPC08	2.30	2.60	B	6	28.6.23	AX59																
TPC09	0.40	0.50	B	1	28.6.23	AX59															ALS 231017-51	
TPC09	1.30	1.40	B	3	28.6.23	AX59														1	ALS 231017-51	
TPC09	2.70	2.80	B	6	28.6.23	AX59																
TPSS101	0.40	0.50	B	1	27.6.23	AX59															ALS 231017-51	
TPSS101	1.40	1.50	B	4	27.6.23	AX59															ALS 231017-51	
TPSS101	2.40	2.50	B	6	27.6.23	AX59															ALS 231017-51	
TPSS102	0.40	0.50	B	1	27.6.23	AX59															ALS 231017-51	
TPSS102	1.40	1.50	B	4	27.6.23	AX59															ALS 231017-51	
TPSS102	2.40	2.50	B	6	27.6.23	AX59																
TPSS103	0.40	0.50	B	1	27.6.23	AX59															ALS 231017-51	
TPSS103	1.40	1.50	B	4	27.6.23	AX59															ALS 231017-51	
TPSS104	0.30	0.40	B	1	28.6.23	AX59															ALS 231017-51	
TPSS104	0.70	0.80	B	3	28.6.23	AX59															ALS 231017-51	
TPSS104	2.00	2.10	B	6	28.6.23	AX59																
TPSS105	0.40	0.50	B	1	27.6.23	AX59															ALS 231017-51	
TPSS105	1.40	1.50	B	4	27.6.23	AX59																
TPSS105	2.40	2.50	B	6	27.6.23	AX59																
TPSS106	0.40	0.50	B	1	27.6.23	AX59															ALS 231017-51	

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
TPSS106	1.40	1.50	B	4	27.6.23	AX59																
TPSS106	2.40	2.50	B	6	27.6.23	AX59															ALS 231017-51	
TPSS107	0.40	0.50	B	1	28.6.23	AX59															ALS 231017-51	
TPSS107	1.80	1.90	B	4	28.6.23	AX59																
BHSS101	0.00	1.00	B	1	17.7.23	AX62															ALS 231017-51	
BHSS101	2.00	2.50	B	7	17.7.23	AX62															ALS 231017-51	
BHSS101	3.00	3.50	B	10	18.7.23	AX62																
BHSS101	5.00	5.40	B	16	18.7.23	AX62																
BHSS102	0.00	1.00	B	1	18.7.23	AX62															ALS 231017-51	
BHSS102	1.00	1.50	B	4	18.7.23	AX62															ALS 231017-51	
BHSS102	2.00	2.50	B	7	18.7.23	AX62																
BHSS102	3.00	3.50	B	10	18.7.23	AX62																
BHSS103	0.00	1.00	B	1	17.7.23	AX62															ALS 231017-51	
BHSS103	1.00	1.50	B	4	17.7.23	AX62															ALS 231017-51	
BHSS103	2.00	2.50	B	7	17.7.23	AX62																
BHSS103	4.00	4.50	B	13	17.7.23	AX62																
BHSS104	1.00	1.50	B	4	19.7.23	AX62															ALS 231017-51	
BHSS104	2.00	2.50	B	7	19.7.23	AX62																
BHSS104	3.00	3.50	B	10	19.7.23	AX62															ALS 231017-51	
BHSS105	0.00	1.00	B	1	14.7.23	AX62															ALS 231017-51	
BHSS105	1.00	1.50	B	4	14.7.23	AX62															ALS 231017-51	
BHSS106	0.00	1.00	B	1	20.7.23	AX62															ALS 231017-51	
BHSS106	1.00	1.50	B	4	20.7.23	AX62															ALS 231017-51	
BHSS106	2.00	2.50	B	7	20.7.23	AX62																
BHSS106	3.00	3.50	B	10	20.7.23	AX62																
BHSS106	4.00	4.50	B	13	20.7.23	AX62																
BHSS107	0.00	1.00	B	1	20.7.23	AX62															ALS 231017-51	
BHSS107	1.00	1.50	B	4	20.7.23	AX62															ALS 231017-51	
BHSS107	2.00	2.50	B	7	20.7.23	AX62																
BHSS1M08	0.00	1.00	B	1	19.7.23	AX62															ALS 231017-51	
BHSS1M08	1.00	1.50	B	4	19.7.23	AX62															ALS 231017-51	
BHSS1M08	2.00	2.50	B	7	19.7.23	AX62																
BHSS1M08	3.00	3.40	B	10	19.7.23	AX62																
BHT16A	0.00	1.00	B	1	1.8.23	AX62															ALS 231017-51	
BHT16A	1.00	1.50	B	4	1.8.23	AX62															ALS 231017-51	
BHT17A	0.00	1.00	B	1	31.7.23	AX62															ALS 231017-51	*too fibrous
BHT17A	2.00	2.50	B	7	31.7.23	AX62															ALS 231017-51	
BHT17A	3.00	3.50	B	10	31.7.23	AX62															ALS 231017-51	
BHT17A	4.00	4.50	B	13	31.7.23	AX62																
BHT18A	0.00	1.00	B	1	2.8.23	AX62															ALS 231017-51	* too fibrous
BHT18A	3.00	3.50	B	10	3.8.23	AX62															ALS 231017-51	
BHT18A	4.00	4.50	B	13	3.8.23	AX62																
BHT18A	5.00	5.50	B	16	3.8.23	AX62															ALS 231017-51	

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
BHT08	22.10	23.60	C		5.7.23	core								1	1							
BHT08	23.60	25.10	C		5.7.23	core									1							
BHT08	25.10	26.30	C		5.7.23	core									1							
BHT08	26.30	27.40	C		5.7.23	core								1	1							
BH102	17.00	18.50	C		25.4.23	core	0*															* not suitable
BH102	24.50	26.00	C		25.4.23	core	0*															* not suitable
BH102	38.00	40.00	C		25.4.23	core									1							
BH102	40.00	41.30	C		26.4.23	core									1							
BH102	41.30	42.50	C		26.4.23	core									1							
BH102	42.50	43.50	C		26.4.23	core									1							
BH102	43.50	45.00	C		26.4.23	core									1							
BH103	20.00	21.50	C		27.4.23	core	0*															* not suitable
BH103	24.50	26.00	C		28.4.23	core	0*															* not suitable
BH103	39.20	40.70	C		2.5.23	core									1							
BH103	40.70	41.00	C		2.5.23	core									1							
BH103	41.00	42.60	C		2.5.23	core									1							
BH103	42.60	43.90	C		2.5.23	core									1							
BH104	37.30	38.40	C		4.5.23	core									1							
BH104	38.40	40.00	C		4.5.23	core									1							
BH104	40.00	41.00	C		5.5.23	core									1							
BH104	41.00	41.80	C		5.5.23	core									1							
BH104	41.80	42.80	C		5.5.23	core									1							
BH104	42.80	44.20	C		5.5.23	core									1							
BH104	44.20	45.50	C		5.5.23	core									1							
BH104	45.50	46.80	C		5.5.23	core									1							
BH104	46.80	48.30	C		5.5.23	core									1							
BH104	48.30	49.40	C		5.5.23	core									1							
BH104	49.40	50.90	C		5.5.23	core									1							
BH105	37.20	38.70	C		9.5.23	core									1							
BH105	38.70	40.20	C		9.5.23	core									1							
BH105	40.20	41.30	C		9.5.23	core									1							
BH105	41.30	42.00	C		9.5.23	core									1							
BH105	42.00	43.50	C		9.5.23	core									1							
BH105	43.50	45.00	C		9.5.23	core									1							
BH106	23.70	25.00	C		11.5.23	core	0*															* not suitable
BH108	11.90	13.40	C		17.5.23	core									1							
BH108	13.40	14.90	C		17.5.23	core									1							
BH108	14.90	16.30	C		17.5.23	core									1							
BH108	16.30	17.20	C		17.5.23	core									1							
BH110	14.70	16.20	C		15.5.23	core									1							
BH110	16.20	17.70	C		15.5.23	core									1							
BH110	17.70	18.70	C		15.5.23	core									1							
BH110	18.70	19.70	C		15.5.23	core									1							
BH110	19.70	20.70	C		15.5.23	core									1							
BH111	5.90	6.90	C		11.5.23	core									1							
BH111	6.90	8.40	C		11.5.23	core									1							
BH111	8.40	9.40	C		11.5.23	core									1							
BH111	9.40	11.00	C		11.5.23	core									1							
BH118	12.30	13.60	C		19.6.23	core								0*	1							* not suitable
BH118	13.60	14.60	C		19.6.23	core									1							
BH118	14.60	15.90	C		19.6.23	core									1							
BH118	16.50	17.60	C		19.6.23	core								0*	1							* not suitable
BH118	17.60	18.70	C		19.6.23	core									1							
BH118	18.70	20.30	C		19.6.23	core									1							
BHSS03	23.70	25.20	C		12.6.23	core									1							
BHSS03	25.20	26.80	C		12.6.23	core									1							
BHSS03	26.80	28.40	C		12.6.23	core									1							
BHSS03	28.40	30.00	C		12.6.23	core									1							
BHT09	16.30	17.80	C		3.7.23	core								0*	1							* not suitable
BHT09	17.80	19.30	C		3.7.23	core									1							
BHT09	19.30	20.80	C		3.7.23	core								1	1							

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
BHT09	20.80	22.30	C		3.7.23	core									1							
BHT10	13.00	14.00	C		3.7.23	core									1							
BHT10	14.00	15.60	C		3.7.23	core								1	1							
BHT10	15.60	16.20	C		3.7.23	core									1							
BHT10	16.20	17.60	C		3.7.23	core								1	1							
BHT10	17.60	19.10	C		4.7.23	core									1							
BHT10	19.10	20.60	C		4.7.23	core									1							
BHT111A	7.00	8.00	C		15.6.23	core								1	1							
BHT111A	8.00	8.60	C		15.6.23	core									1							
BHT111A	8.60	10.20	C		15.6.23	core								1	1							
BHT111A	10.20	11.40	C		15.6.23	core									1							
BHT111A	11.40	13.00	C		15.6.23	core									1							
BHT111A	13.00	14.00	C		15.6.23	core								*	1							
BHT111A	14.00	15.60	C		15.6.23	core								1	1							
BHT111A	15.60	16.40	C		16.6.23	core									1							
BHT111A	16.40	17.70	C		16.6.23	core								0*	1							* not suitable
BHT111A	17.70	19.30	C		16.6.23	core									1							
BHT111A	19.30	20.70	C		16.6.23	core								0*	1							* not suitable
BHT13	17.60	19.10	C		28.6.23	core								1	1							
BHT13	19.10	20.60	C		28.6.23	core								1	1							
BHT15	20.60	22.10	C		23.6.23	core								1	1							
BHT15	22.10	23.10	C		23.6.23	core									1							
BHT15	23.10	23.60	C		23.6.23	core								0*	1							* not suitable
BHT15	23.60	24.60	C		23.6.23	core									1							
BHT15	24.60	25.60	C		23.6.23	core								1	1							
BHT15	25.60	26.60	C		23.6.23	core									1							
BHT15	26.60	27.20	C		23.6.23	core								0*	1							* not suitable
BHT15	27.20	27.70	C		23.6.23	core									0*							not possible
BHT17	15.40	17.00	C		21.6.23	core								1	1							
BHT17	17.00	17.50	C		21.6.23	core									0*							not possible
BHT17	17.50	19.10	C		21.6.23	core									1							
BHT17	19.10	19.50	C		21.6.23	core								1	1							
BHT17	19.50	20.60	C		21.6.23	core									1							

Summary of Classification Test Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
BH101	4	1.00	1.50	B		Black slightly gravelly sandy ORGANIC SILT.			46.0	68	75	58	17		MV
BH101	13	4.00	4.50	B		Orange-brown very sandy very silty fine and medium GRAVEL.			12.0	34	53	43	10		MH
BH102	13	4.00	4.50	B		Brown very silty very sandy fine and medium GRAVEL.			13.0	27	35	26	9		ML
BH103	7	2.00	2.50	B		Greyish-brown slightly gravelly slightly gravelly SILT.			18.0	57	32	24	8		ML
BH103	10	3.00	3.50	B		Greyish-brown slightly sandy gravelly SILT. Gravel is fine.			19.0	52	33	24	9		ML
BH104	7	2.00	2.50	B		Black slighlty gravelly sandy ORGANIC SILT.			288.0	51	486	394	92		MEO
BH104	13	4.00	4.50	B		Yellowish-brown very sandy very gravelly SILT.			22.0	66	29	24	5		ML
BH105	12	4.00	4.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			23.0	66	29	21	8		CL
BH106	7	2.00	2.50	B		Greyish-brown slightly sandy slightly gravelly SILT.			15.0	64					
BH107	7	2.00	2.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			19.0	51	30	23	7		ML
BH107	10	3.00	3.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			24.0	56					
BH108	10	3.00	3.50	B		Grey slightly sandy gravelly SILT.			9.8	60	20	14	6		ML
BH109	19	6.00	6.50	B		Creamy-brown slightly sandy gravelly SILT.			19.0	44	35	22	13		CL
BH110	4	1.00	1.50	B		Light greyish-brown slightly sandy gravelly SILT. Gravel is coarse.			9.6	57	22	16	6		ML
BH110	10	3.00	3.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			22.0	57	33	23	10		CL
BH111	10	3.00	3.50	B		Greenish-grey slightly sandy gravelly SILT.			13.0	69	21	14	7		CL
BH111	11	3.50		D		Greenish-grey slightly gravelly slightly sandy SILT.			12.0	65					
BH111	13	4.00	4.50	B		Greyish-brown slightly gravelly sandy SILT.			12.0	74					
BH112	10	3.00	3.50	B		Brown slightly sandy slightly gravelly SILT.			15.0	59					
BH113	10	3.00	3.50	B		Light brown slightly sandy gravelly SILT.			14.0	50	25	19	6		ML
BH113	13	4.00	4.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			16.0	59	25	18	7		CL
BH114	7	2.00	2.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			19.0	58	31	22	9		CL
BH115	10	3.00	3.50	B		Light brown slightly sandy gravelly SILT.			12.0	50	27	18	9		CL
BH116	9	3.00	3.50	B		Brownish-grey very silty very sandy GRAVEL.			16.0	44					
BH117	6	2.00	2.50	B		Brownish-grey slightly gravelly sandy SILT.			13.0	69					
BHCC01	1	0.00	1.00	B		Black PEAT.			483.0						Not enough fines

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	1pt - single point test	gj - gas jar
wi - immersion in water	NP - Non Plastic	

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Approved By
DCD

Table 1
sheet 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Summary of Classification Test Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
BHCC01	12	4.00	4.50	B		Dark grey slightly silty very sandy GRAVEL.			5.2	16					NP
BHCC01	15	5.00	5.50	B		Dark grey silty very gravelly medium SAND.			10.0	42					NP
BHCC01	24	9.50	10.00	B		Dark grey silty very gravelly medium SAND.			13.0	44				2.72-gj	NP
BHCC02	1	0.00	1.00	B		Black PEAT.			530.0		495	373	122		MEO
BHCC02	12	4.00	4.50	B		Dark bluish-grey silty very sandy GRAVEL.			11.0	27				2.25-gj	Non Plastic
BHCC02	21	8.00	8.50	B		Dark grey silty very gravelly medium and coarse SAND.			12.0	36				2.72-gj	NP
BHPW301	9	3.00	3.50	B		Black PEAT.			477.0		532	425	107		MEO
BHPW301	20	7.00	7.50	B		Cream slightly gravelly slightly sandy SILT.			32.0	73	38	31	7		MI
BHPW301	23	8.00	8.50	B		Cream slightly gravelly slightly sandy SILT.			30.0	72				2.53-gj	
BHSS01	11	4.00	4.50	B		Grey and black slightly sandy gravelly SILT and PEAT.			27.0	55	39	34	5		MI
BHSS02	9	3.00	3.50	B		Light grey slightly gravelly sandy SILT.			10.0	70					NP
BHSS03	4	1.00	1.50	B		Grey and black slightly gravelly sandy PEAT.			121.0	66	124	100	24		MEO
BHSS05	10	3.00	3.50	B		Dark grey slightly gravelly sandy SILT.			19.0	67	25	18	7		CL
BHSS06	1	0.00	1.00	B		Black PEAT.			508.0		617	372	245		MEO
BHSS06	9	3.00	3.50	B		Brownish-black slightly gravelly sandy peaty ORGANIC SILT.			102.0	43	77	56	21	1.51-gj	MV
BHSS101	1	0.00	1.00	B		Greyish-brown slightly gravelly sandy SILT. Sand is medium.			39.0	80	64	40	24	2.42-gj	MH
BHSS101	7	2.00	2.50	B		Light brown slightly gravelly slightly sandy SILT.			11.0	64	22	13	9	2.72-gj	CL
BHSS101	16	5.00	5.40	B		Greyish-brown slighlty sandy SILT.			23.0	100	30	22	8		CL
BHSS102	1	0.00	1.00	B		Black PEAT.			71.0	45	82	58	24		MV
BHSS102	4	1.00	1.50	B		Dark brown very silty SAND and GRAVEL.			25.0	53	41	26	15	2.67-gj	MI
BHSS102	10	3.00	3.50	B		Light grey slightly gravelly slightly sandy SILT.			12.0	64	24	15	9	2.72-gj	CL
BHSS103	1	0.00	1.00	B		Greensih-grey slightly gravelly sandy SILT.			19.0	60	100	69	31	2.67-gj	MEO
BHSS103	4	1.00	1.50	B		Greensih-grey slightly gravelly sandy SILT.			15.0	69	32	18	14		CL
BHSS103	13	4.00	4.50	B		Light greyish-brown slightly gravelly slightly sandy SILT.			14.0	65	24	14	10		CL
BHSS104	4	1.00	1.50	B		Greenish-brown slightly sandy slightly gravelly SILT.			17.0	56	32	18	14	2.69-gj	CL
BHSS104	7	2.00	2.50	B		Light greyish-brown slightly gravelly slightly sandy SILT.			12.0	60	26	17	9	2.67-gj	CL

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test
Linear measurement unless :
wd - water displacement
wi - immersion in water

Liquid Limit
4pt cone unless :
1pt - single point test
NP - Non Plastic

Particle density
sp - small pyknometer
gj - gas jar

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Approved By
DCD

Table 1
sheet 2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Summary of Classification Test Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
BHSS104	10	3.00	3.50	B		Light grey slightly sandy slightly gravelly SILT.			11.0	58	24	15	9	2.25-gj	CL
BHSS105	1	0.00	1.00	B		Brown and greensih-grey gravelly very silty medium and coarse SAND.			35.0	55	97	64	33	2-gj	ME
BHSS105	4	1.00	1.50	B		Greyish-brown slightly gravelly slightly sandy SILT.			15.0	57	32	17	15	2.71-gj	CL
BHSS106	1	0.00	1.00	B		Black slightly sandy PEAT.			138.0	16	93	65	28		MEO
BHSS106	4	1.00	1.50	B		Greenish-grey slightly gravelly sandy SILT.			19.0	59	43	33	10	2.58-gj	MI
BHSS106	10	3.00	3.50	B		Light grey slightly gravelly slightly sandy SILT.			11.0	59	22	13	9		CL
BHSS106	13	4.00	4.50	B		Light grey silty very sandy fine GRAVEL.			10.0	20	26	16	10		CL
BHSS107	1	0.00	1.00	B		Yellowish-brown slightly gravelly slightly sandy SILT.			32.0	82	34	17	17	2.66-gj	CL
BHSS107	4	1.00	1.50	B		Greyish-brown slightly gravelly slightly sandy SILT.			14.0	64	28	15	13		CL
BHSS107	7	2.00	2.50	B		Brownish-grey slightly sandy gravelly SILT. Gravel is coarse.			11.0	51	24	14	10		CL
BHSS1M08	1	0.00	1.00	B		Brown slightly gravelly slightly sandy SILT.			26.0	62	56	32	24	2.65-gj	MH
BHSS1M08	4	1.00	1.50	B		Light brown slightly gravelly slightly sandy SILT.			14.0	67	32	16	16		CL
BHSS1M08	10	3.00	3.40	B		Greyish-brown slightly gravelly slightly sandy SILT.			16.0	61	31	18	13		CL
BHT01	9	3.00	3.50	B		Blackish-grey silty gravelly medium SAND.			45.0	48				2.38-gj	NP
BHT01	15	5.00	5.50	B		Dark grey very sandy very silty coarse GRAVEL.			8.7	42					NP
BHT02	1	0.00	1.00	B		Black PEAT.			388.0	100	607	379	228		MEO
BHT02	10	3.00	3.50	B		Blackish-grey slightly gravelly very silty fine and medium SAND.			38.0	81				2.21-gj	Non Plastic
BHT02	16	5.00	5.50	B		Dark grey slightly gravelly sandy SILT. Sand is fine.			17.0	90					NP
BHT03	6	2.00	2.50	B		Black-grey silty very gravelly medum and coarse SAND.			16.0	28	51	37	14		MH
BHT04	4	1.00	1.50	B		Brownish-grey silty very gravelly medium and coarse SAND.			6.1	34					NP
BHT05	6	2.00	2.50	B		Greyish-brown slightly gravelly sandy SILT. SAND is fine.			13.0	91					
BHT06	4	1.00	1.50	B		Blackish-grey very silty coarse SAND and fine GRAVEL.			19.0	38	54	45	9		MH
BHT07	4	1.00	1.50	B		Black and grey silty SAND and GRAVEL.			37.0	34					
BHT08	1	0.00	1.00	B		Greyish-black very silty SAND and GRAVEL.			61.0	39	119	85	34	2-gj	MEO
BHT08	4	1.00	1.50	B		Greyish-brown slightly gravelly sandy SILT.			31.0	86	52	33	19	2.57-gj	MH
BHT08	7	2.00	2.50	B		Brownish-grey silty coarse SAND and fine-medium GRAVEL.			12.0	20				2.66-gj	Not enough fines

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	1pt - single point test	gj - gas jar
wi - immersion in water	NP - Non Plastic	

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DCD

Table 1
sheet 3

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Summary of Classification Test Results

Project No.: 2023OY104

Project Name: Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
BHT08	10	3.00	3.50	B		Brownish-grey silty coarse SAND and fine-medium GRAVEL.			8.0						
BHT09	7	2.00	2.50	B		Dark bluish-grey slighlty silty very sandy fine and medium GRAVEL.			6.8	11					
BHT10	7	2.00	2.50	B		Dark bluish-grey silty very sandy medium and fine GRAVEL.			5.6	12					
BHT11	7	2.00	2.50	B		Dark bluish-grey silty very sandy medium and fine GRAVEL.			5.5	25					
BHT12	4	1.00	1.50	B		Dark brownish-grey silty very sandy coarse GRAVEL.			11.0	23					
BHT14	7	2.00	2.50	B		Dark brownish-grey silty very sandy medium GRAVEL.			6.5	27					
BHT16	1	0.00	1.00	B		Blackish-brown silty (peaty) SAND and GRAVEL.			37.0	29	79	62	17	2.14-gj	MV
BHT16	4	1.00	1.50	B		Dark bluish-grey coarse SAND and GRAVEL.			6.8	7				2.73-gj	NP
BHT16	13	4.00	4.50	B		Bluish-grey slightly silty very sandy coarse GRAVEL. Sand is coarse.			4.2	7				2.71-gj	NP
BHT16	22	8.00	8.50	B		Bluish-grey very gravelly coarse SAND.			6.8	10				2.7-gj	NP
BHT16A	1	0.00	1.00	B		Dark greyish-brown slightly gravelly slightly sandy SILT.			47.0	62	83	57	26		MV
BHT16A	4	1.00	1.50	B		Dark brownish-grey silty very sandy coarse GRAVEL. Sand is coarse.			9.7	15				2.67-gj	Not enough fines
BHT17	9	3.00	3.50	B		Dark bluish-grey gravelly silty medium SAND.			15.0	82					
BHT17A	1	0.00	1.00	B		Black PEAT.			405.0						Not enough fines
BHT17A	7	2.00	2.50	B		Light grey slightly gravelly sandy SILT.			17.0	64	44	26	18	2.58-gj	CI
BHT17A	10	3.00	3.50	B		Brownish-grey slightly gravelly sandy SILT.			15.0	71	24	17	7	2.71-gj	CL
BHT18A	1	0.00	1.00	B		Black PEAT.			548.0		517	374	143		MEO
BHT18A	10	3.00	3.50	B		Grey slightly gravelly very silty fine SAND.			24.0	93				2.59-gj	NP
BHT18A	16	5.00	5.50	B		Dark grey slightly gravelly sandy SILT. Sand is fine.			15.0	75	20	14	6	2.25-gj	ML
TP201	2	2.80	3.00	B		Dark grey slightly gravelly sandy SILT.			37.0	67	46	26	20		CI
TP201	4	3.40	3.60	B		Grey slightly sandy gravelly SILT.			21.0	74	30	19	11		CL
TP202	2	3.00	3.20	B		Black PEAT.			564.0		699	493	206		MEO
TP203	2	2.80	3.00	B		Black PEAT.			423.0						
TP204	5	2.50	2.70	B		Greenish-grey slightly gravelly slightly sandy SILT.			31.0	73	33	20	13		CL
TP205	2	2.50	2.70	B		Blackish-grey slightly gravelly sandy SILT.			32.0	56	32	24	8		ML
TP206A	1	0.50	0.70	B		Brown slightly gravelly slightly sandy SILT.			14.0	65	43	31	12		MI

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key: w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test: Linear measurement unless : wd - water displacement; wi - immersion in water

Liquid Limit: 4pt cone unless : 1pt - single point test; NP - Non Plastic

Particle density: sp - small pyknometer; gj - gas jar

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Table 1 sheet 4

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Summary of Classification Test Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
TP207	3	1.40	1.60	B		Greenish-grey slightly sandy slightly gravelly SILT.			13.0	62	20	14	6		ML
TP208	1	0.50	0.60	B		Black PEAT.			392.0	90	518	363	155		MEO
TP208	3	2.00	2.10	B		Dark brown slightly gravelly sandy SILT. Sand is medium.			29.0	75	40	24	16	2.63-gj	CI
TP208	6	2.50	2.60	B		Light brown slightly gravelly slightly sandy SILT.			12.0	64	21	15	6		CL
TP209	2	1.30	1.50	B		Yellowish-brown slightly sandy slightly gravelly SILT.			17.0	61	29	22	7		CL
TP210	1	0.50	0.70	B		Light brown slightly sandy slightly gravelly SILT.			19.0	67	33	26	7		ML
TP211	3	1.00	1.20	B		Brown slightly gravelly slightly sandy SILT.			11.0	70	24	15	9		CL
TP212	3	1.10	1.30	B		Brown slightly gravelly sandy SILT. Sand is fine.			12.0	75					NP
TP214	2	1.70	1.90	B		Light grey slightly gravelly slightly sandy SILT.			9.5	65	20	13	7		CL
TP215	3	1.60	1.80	B		Orange-brown slightly gravelly slightly sandy SILT.			29.0	88	37	33	4		ML
TP216	1	0.50	0.70	B		Brown slightly gravelly sandy SILT.			21.0	83	45	23	22		CI
TP217	4	1.60	1.80	B		Greyish-brown slightly gravelly sandy SILT.			10.0	63	20	14	6		ML
TP218	1	0.60	0.80	B		Brown slightly sandy slightly gravelly SILT.			12.0	54	24	20	4		ML
TP219	1	0.60	0.80	B		Brown slightly gravelly slightly sandy SILT.			14.0	80	31	22	9		CL
TP220	4	2.40	2.60	B		Greyish-brown very silty SAND and GRAVEL.			12.0	45					NP
TP221	1	3.00	3.20	B		Greyish-brown very silty very gravelly coarse SAND.			30.0	37	53	43	10		MH
TP222	2	2.70	3.00	B		Greyish-black very silty very sandy fine GRAVEL.			13.0	24					
TP224	2	2.30	2.50	B		Dark brown sandy very silty fine and medium GRAVEL.			13.0	35					
TP302	3	0.90	1.00	B		Blackish-brown very silty SAND and GRAVEL.			66.0	51	88	54	34		MV
TP303	3	2.20	2.30	B		Black-brown PEAT, with sand sized particles.			116.0	81	131	102	29		MEO
TP305	1	0.80	0.80	B		Greyish-brown slightly gravelly sandy SILT.			31.0	62	56	30	26		MH
TP308	3	1.30	1.40	B		Brownish-grey slightly gravelly sandy SILT.			31.0	53	64	46	18		MH
TP312	2	1.20	1.30	B		Brownish-grey slightly gravelly sandy SILT.			12.0	70	19	13	6		ML
TPBP01	3	1.40	1.50	B		Dark blackish-brown slightly sandy gravelly SILT.			119.0	52	166	116	50		MEO
TPBP03	3	1.40	1.50	B		Dark bluish-grey slightly silty very sandy coarse GRAVEL.			2.7						
TPBP05	4	1.50	1.60	B		Dark bluish-grey slightly silty very sandy coarse GRAVEL.			7.1						

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	1pt - single point test	gj - gas jar
wi - immersion in water	NP - Non Plastic	

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Table 1
sheet 5

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Summary of Classification Test Results

Project No. 2023OY104

Project Name: Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
TPBP06	4	1.20	1.30	B		Brownish-grey very silty very sandy GRAVEL.			6.4	40	22	16	6		ML
TPBP08	1	0.40	0.50	B		Brownish-black vey silty very sandy coarse GRAVEL.			34.0	38	94	64	30		MEO
TPC01	1	0.50	0.60	B		Black PEAT.			746.0						Too fibrous to test
TPC02	5	2.50	3.00	B		Dark grey slightly gravelly sandy SILT.			30.0	84	33	22	11		CL
TPC04	3	1.60	1.70	B		Dark greenish-grey gravelly very silty medium SAND.			38.0	66	53	33	20		MH
TPC06	3	2.50	2.60	B		Black and greeenish-grey slightly gravelly slightly sandy SILT.			68.0	94	69	39	30		MH
TPC08	3	0.80	0.90	B		Brownish-grey slightly gravelly sandy SILT.			35.0	61	47	26	21	2.56-gj	CI
TPC08	6	2.30	2.60	B		Brownish-grey slightly gravelly slightly sandy SILT.			10.0	65	23	15	8		CL
TPC09	1	0.40	0.50	B		Black PEAT.			563.0	92	603	389	214		MEO
TPC09	3	1.30	1.40	B		Dark grey slightly gravelly sandy SILT. Sand is fine and medium.			32.0	78	42	30	12	2.2-gj	MI
TPCC01	5	2.90	3.00	B		Black and greeenish-grey gravelly very silty fine and medium SAND.			131.0	73					NP
TPSS02	1	1.90	2.10	B		Greyish-brown slightly gravelly sandy SILT.			38.0	80	41	31	10		MI
TPSS04	1	2.10	2.20	B		Brownish-grey slighlty gravelly sandy SILT.			18.0	80	28	24	4		ML
TPSS06	2	2.00	2.20	B		Greenish-grey slightly gravelly slightly sandy SILT.			22.0	83	28	23	5		ML
TPSS101	1	0.40	0.50	B		Brownish-grey slightly gravelly slightly sandy SILT.			9.2	65	32	21	11	2.68-gj	CL
TPSS101	4	1.40	1.50	B		Light greyish-brown slightly gravelly slightly sandy SILT.			11.0	60	25	15	10	2.71-gj	CL
TPSS101	6	2.40	2.50	B		Light grey slightly gravelly slightly sandy SILT.			12.0	64	23	14	9		CL
TPSS102	1	0.40	0.50	B		Greyish-brown very gravelly very silty medium SAND.			25.0	58	53	29	24	1.99-gj	CH
TPSS102	4	1.40	1.50	B		Greyish-brown slightly gravelly slightly sandy SILT.			14.0	63	28	16	12	2.63-gj	CL
TPSS103	1	0.40	0.50	B		Greenish-brown slightly gravelly sandy SILT.			12.0	63	26	16	10	2.72-gj	CL
TPSS103	4	1.40	1.50	B		Light grey slightly gravelly slightly sandy SILT.			11.0	61	22	13	9		CL
TPSS104	1	0.30	0.40	B		Black PEAT.			469.0	90	561	356	205		MEO
TPSS104	3	0.70	0.80	B		Greyish-brown slightly gravelly sandy SILT. Sand is medium.			38.0	73	46	27	19	1.52-gj	CI
TPSS105	1	0.40	0.50	B		Brownish-grey very silty very gravelly medium SAND.			14.0	52	33	20	13	2.69-gj	CL
TPSS105	4	1.40	1.50	B		Light brownish-grey very sandy very silty GRAVEL.			10.0	51	24	15	9		CL
TPSS105	6	2.40	2.50	B		Light grey slightly gravelly sandy SILT.			11.0	68	22	13	9		CL

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test: Linear measurement unless : wd - water displacement; wi - immersion in water

Liquid Limit: 4pt cone unless : 1pt - single point test; NP - Non Plastic

Particle density: sp - small pyknometer; gj - gas jar

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Table 1 sheet 6

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Summary of Classification Test Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample Ref	Sample Top	Sample Base	Sample Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
TPSS106	1	0.40	0.50	B		Greyish-brown slighlty gravelly sandy SILT. Sand is fine.			24.0	79	40	26	14	2.64-gj	MI
TPSS106	4	1.40	1.50	B		Brownish-grey slightly sandy gravelly SILT			12.0	50	27	16	11		CL
TPSS106	6	2.40	2.50	B		Light grey slightly sandy gravelly SILT.			14.0	58	25	16	9		CL
TPSS107	1	0.40	0.50	B		Greyish-brown slightly gravelly sandy SILT. Sand is fine.			30.0	76	47	25	22	2.62-gj	CI
TPSS107	4	1.80	1.90	B		Light grey very silty SAND and GRAVEL.			9.4	50	22	14	8		CL
TPT01	6	3.40	3.50	B		Dark grey slightly silty very gravelly coarse SAND.			15.0	31					
TPT03	3	1.50	1.60	B		Dark grey silty very gravelly medium SAND.			23.0	50					
TPT04	5	2.10	2.20	B		Dark grey silty very gravelly medium SAND.			12.0	41					NP
TPT05	3	1.00	1.10	B		Dark grey very silty fine SAND.			26.0	97					NP
TPT09	1	0.50	0.60	B		Dark grey very silty very silty (peaty) SAND.			28.0	57					NP
TPT14	4	1.50	1.60	B		Bluish-grey slightly silty SAND and GRAVEL.			4.7	14					Not enough Fines
TPT16	3	0.80	0.90	B		Blackish-brown very silty SAND and GRAVEL.			48.0	48	69	55	14		MH
TPT18	3	1.30	1.40	B		Greenish-brown slightly gravelly sandy SILT.			34.0	81	37	21	16		CI

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	1pt - single point test	gj - gas jar
wi - immersion in water	NP - Non Plastic	

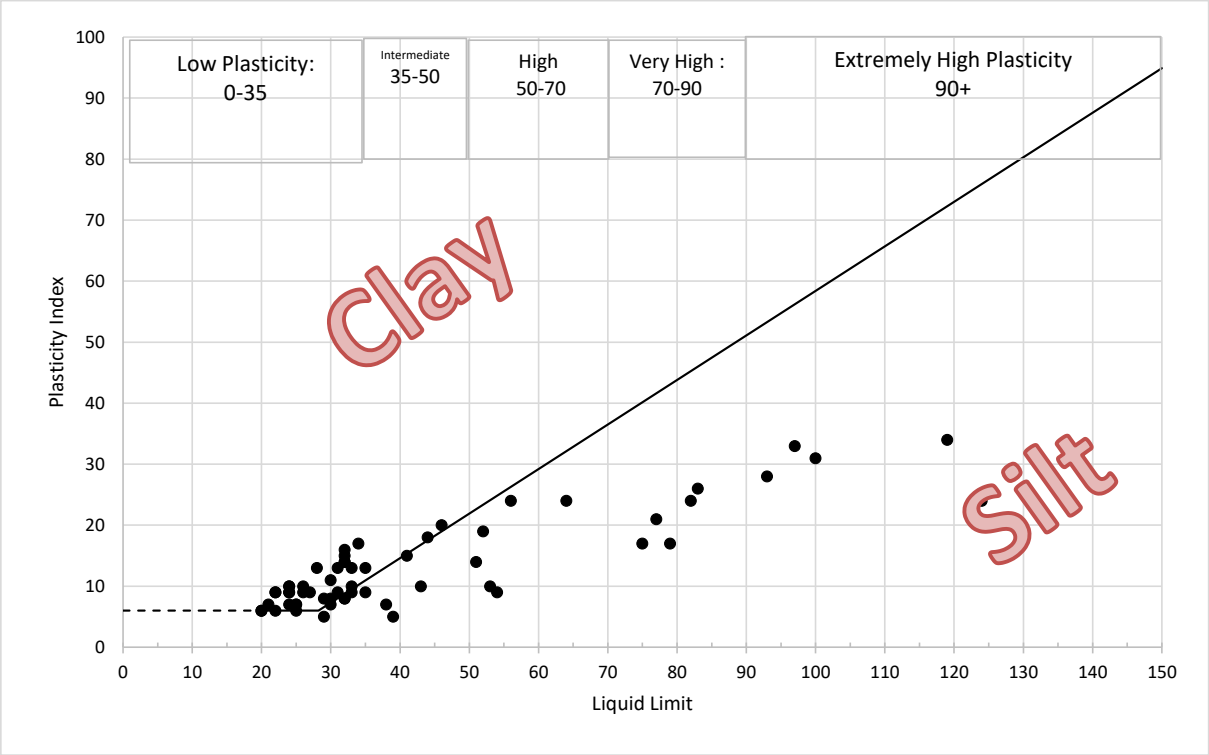
Date Printed
01/11/2023 09:36
QC From No: R1

Approved By
DCD

Table 1
sheet 7

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Plasticity (A-Line) Chart		Project Number
	Project Name:	**Derrygreenagh Power**	
	Location:		2023OY104



Abreviations in the remarks column of the Classification Summary Sheet: C = Clay, M = Silt

Plasticity abeviations: L = Low, I = Intermediate = H = High, V = Very High, E = Extremely High.

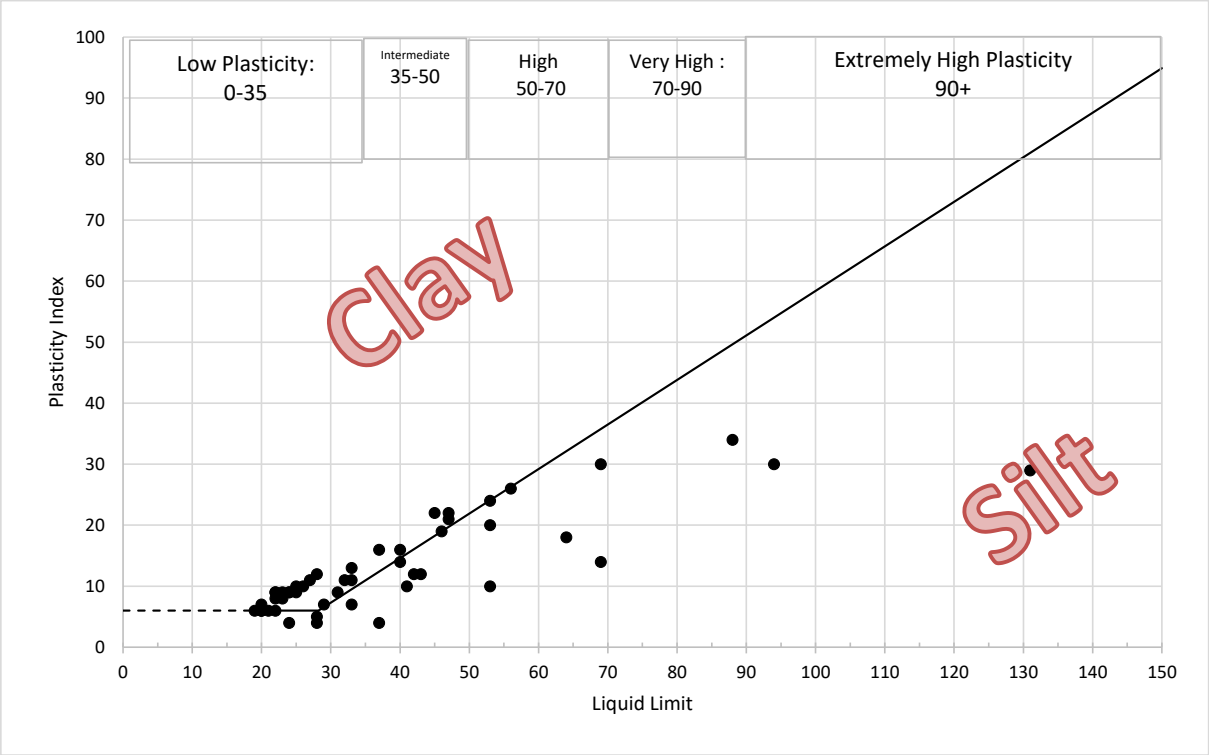
The letter O is added to the symbol of any material containing a significant proportion of organic material.

Chart taken from BS5930: 2010

DCD

QC Form: R1

	Plasticity (A-Line) Chart		Project Number
	Project Name:	Derrygreenagh Power	
	Location:		2023OY104



Abreviations in the remarks column of the Classification Summary Sheet: C = Clay, M = Silt

Plasticity abeviations: L = Low, I = Intermediate = H = High, V = Very High, E = Extremely High.

The letter O is added to the symbol of any material containing a significant proportion of organic material.

Chart taken from BS5930: 2010

BCD

QC Form: R1

Particle Density by Gas Jar Tests - Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample				Soil Description at test horizon	Particle Density Mg/m3	Remarks
	Ref	Top	Base	Type			
BHCC01	24	9.50	10.00	B	Dark grey silty very gravelly medium SAND.	2.72	
BHCC02	12	4.00	4.50	B	Dark bluish-grey silty very sandy GRAVEL.	2.25	
BHCC02	21	8.00	8.50	B	Dark grey silty very gravelly medium and coarse SAND.	2.72	
BHPW301	23	8.00	8.50	B	Cream slightly gravelly slightly sandy SILT.	2.53	
BHSS06	9	3.00	3.50	B	Brownish-black slightly gravelly sandy peaty ORGANIC SILT.	1.51	
BHSS101	1	0.00	1.00	B	Greyish-brown slightly gravelly sandy SILT. Sand is medium.	2.42	
BHSS101	7	2.00	2.50	B	Light brown slightly gravelly slightly sandy SILT.	2.72	
BHSS102	4	1.00	1.50	B	Dark brown very silty SAND and GRAVEL.	2.67	
BHSS102	10	3.00	3.50	B	Light grey slightly gravelly slightly sandy SILT.	2.72	
BHSS103	1	0.00	1.00	B	Greensih-grey slightly gravelly sandy SILT.	2.67	
BHSS104	4	1.00	1.50	B	Greenish-brown slightly sandy slightly gravelly SILT.	2.69	
BHSS104	7	2.00	2.50	B	Light greyish-brown slightly gravelly slightly sandy SILT.	2.67	
BHSS104	10	3.00	3.50	B	Light grey slightly sandy slightly gravelly SILT.	2.25	
BHSS105	1	0.00	1.00	B	Brown and greensih-grey gravelly very silty medium and coarse SAND.	2.00	
BHSS105	4	1.00	1.50	B	Greyish-brown slightly gravelly slightly sandy SILT.	2.71	
BHSS106	4	1.00	1.50	B	Greenish-grey slightly gravelly sandy SILT.	2.58	
BHSS107	1	0.00	1.00	B	Yellowish-brown slightly gravelly slightly sandy SILT.	2.66	
BHSS1M08	1	0.00	1.00	B	Brown slightly gravelly slightly sandy SILT.	2.65	
BHT01	9	3.00	3.50	B	Blackish-grey silty gravelly medium SAND.	2.38	
BHT02	10	3.00	3.50	B	Blackish-grey slightly gravelly very silty fine and medium SAND.	2.21	
BHT08	1	0.00	1.00	B	Greyish-black very silty SAND and GRAVEL.	2.00	
BHT08	4	1.00	1.50	B	Greyish-brown slightly gravelly sandy SILT.	2.57	
BHT16	1	0.00	1.00	B	Blackish-brown silty (peaty) SAND and GRAVEL.	2.14	
BHT08	7	2.00	2.50	B	Brownish-grey silty coarse SAND and fine-medium GRAVEL.	2.66	
BHT16	4	1.00	1.50	B	Dark bluish-grey coarse SAND and GRAVEL.	2.73	
BHT16	13	4.00	4.50	B	Bluish-grey slightly silty very sandy coarse GRAVEL. Sand is coarse.	2.71	

Notes
Tests performed in accordance with BS 1377 unless annotated otherwise
Gas Jar tests to BS1377: Part 2 : 1990, clause 8.2

Date Printed
########

Table
sheet
BCD (01.11.23)

Particle Density by Gas Jar Tests - Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample				Soil Description at test horizon	Particle Density Mg/m3	Remarks
	Ref	Top	Base	Type			
BHT16	22	8.00	8.50	B	Bluish-grey very gravelly coarse SAND.	2.70	
BHT16A	4	1.00	1.50	B	Dark brownish-grey silty very sandy coarse GRAVEL. Sand is coarse.	2.67	
BHT17A	7	2.00	2.50	B	Light grey slightly gravelly sandy SILT.	2.58	
BHT17A	10	3.00	3.50	B	Brownish-grey slightly gravelly sandy SILT.	2.71	
BHT18A	10	3.00	3.50	B	Grey slightly gravelly very silty fine SAND.	2.59	
BHT18A	16	5.00	5.50	B	Dark grey slightly gravelly sandy SILT. Sand is fine.	2.25	
TP208	3	2.00	2.10	B	Dark brown slightly gravelly sandy SILT. Sand is medium.	2.63	
TPC08	3	0.80	0.90	B	Brownish-grey slightly gravelly sandy SILT.	2.56	
TPC09	3	1.30	1.40	B	Dark grey slightly gravelly sandy SILT. Sand is fine and medium.	2.20	
TPSS101	1	0.40	0.50	B	Brownish-grey slightly gravelly slightly sandy SILT.	2.68	
TPSS101	4	1.40	1.50	B	Light greyish-brown slightly gravelly slightly sandy SILT.	2.71	
TPSS102	1	0.40	0.50	B	Greyish-brown very gravelly very silty medium SAND.	1.99	
TPSS102	4	1.40	1.50	B	Greyish-brown slightly gravelly slightly sandy SILT.	2.63	
TPSS103	1	0.40	0.50	B	Greenish-brown slightly gravelly sandy SILT.	2.72	
TPSS104	3	0.70	0.80	B	Greyish-brown slightly gravelly sandy SILT. Sand is medium.	1.52	
TPSS105	1	0.40	0.50	B	Brownish-grey very silty very gravelly medium SAND.	2.69	
TPSS106	1	0.40	0.50	B	Greyish-brown slighlty gravelly sandy SILT. Sand is fine.	2.64	
TPSS107	1	0.40	0.50	B	Greyish-brown slightly gravelly sandy SILT. Sand is fine.	2.62	

Notes
Tests performed in accordance with BS 1377 unless annotated otherwise
Gas Jar tests to BS1377: Part 2 : 1990, clause 8.2

Date Printed
########

Table
BCS (01.11.23)
sheet

Irish Drilling Ltd.	Summary of Thermal Conductivity test results
Project No. 2023OY104	Project Name Derrygreenagh Power

Hole No.	Sample					Date of test	Bulk density Mg/m3	Dry density Mg/m3	Water Content %	Thermal Conductivity W/m.K	Thermal Resistivity m.K/W	Remarks
	Ref	Top	Base	Type	Description							
TPC01	1	0.50	0.60	B	Black PEAT.		0.91	0.16	468.4	0.72	1.40	
TPC02	1	0.50	0.60	B	Black PEAT.		0.90	0.12	635.6	0.65	1.53	
TPC03	1	0.70	0.80	B	Black PEAT.		0.93	0.13	638.9	0.67	1.50	
TPC04	1	0.80	0.90	B	Black PEAT.		0.84	0.15	459.0	0.64	1.56	
TPC05	1	0.50	0.60	B	Black PEAT.		0.94	0.13	618.2	0.74	1.35	
TPC06	1	0.90	1.00	B	Black PEAT.		0.89	0.12	631.2	0.67	1.49	
TPC07	1	0.40	0.50	B	Black PEAT.		0.93	0.17	458.8	0.63	1.59	
TPC08	3	0.80	0.90	B	Brownish-grey slightly gravelly sandy SILT.		0.93	0.16	492.4	0.63	1.58	
TPC09	3	1.30	1.40	B	Dark grey slightly gravelly sandy SILT. Sand is fine and		0.95	0.16	502.5	0.61	1.65	
TPCC01	1	0.50	0.60	B	Black PEAT.		0.87	0.09	845.0	0.68	1.47	

Notes	Date Printed	Approved By	Table
Tests performed in accordance with in house method based on ASTM D5334 using a direct reading system in accordance with the Manufacturer's instructions. System calibrated against reference standard prior to each suite of tests. Calculations performed using intergrated algorithms for non-steady state thermal probe technique.	############ BCD	(01.11.23)	1 sheet 1

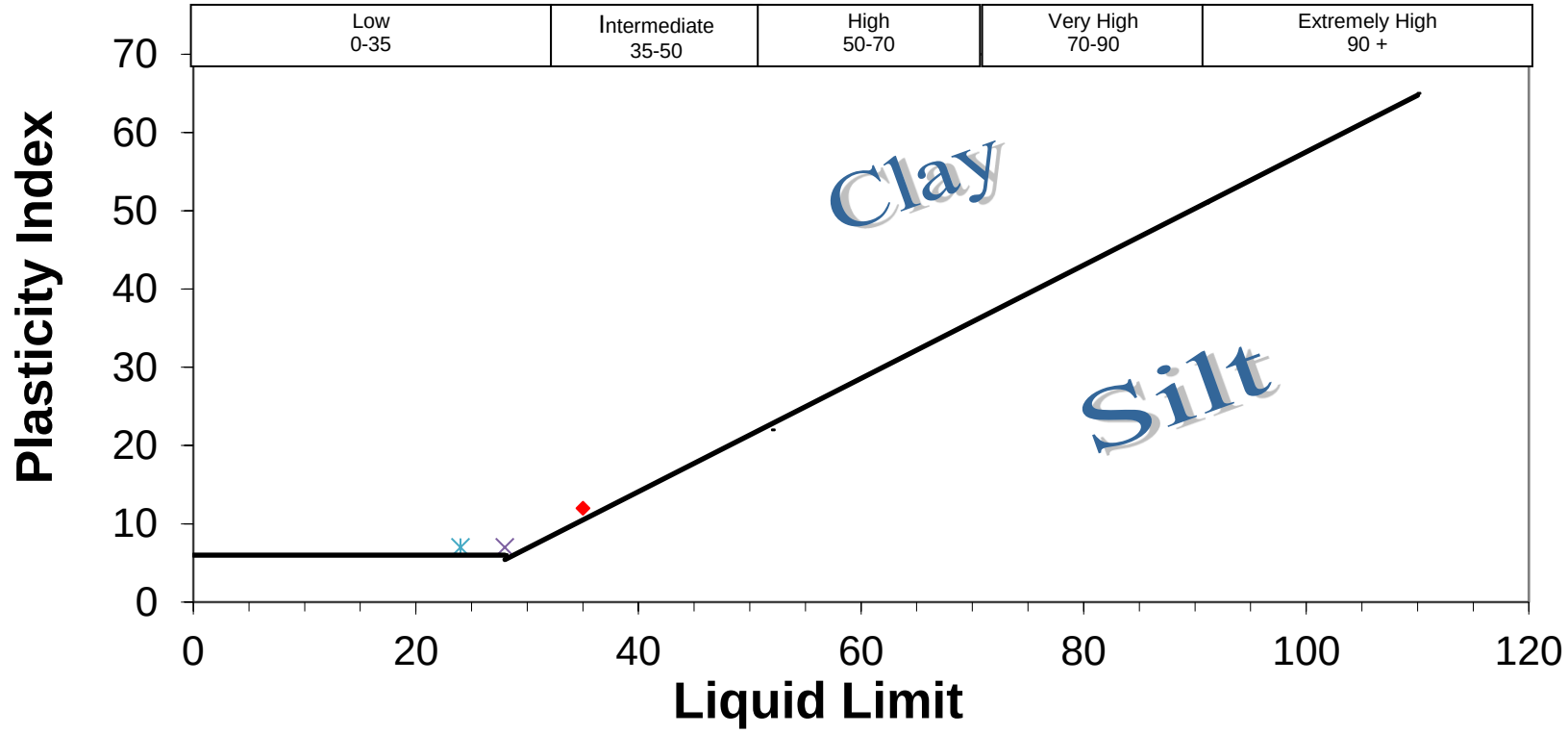
National Materials Testing Laboratory Ltd.

SUMMARY OF TEST RESULTS

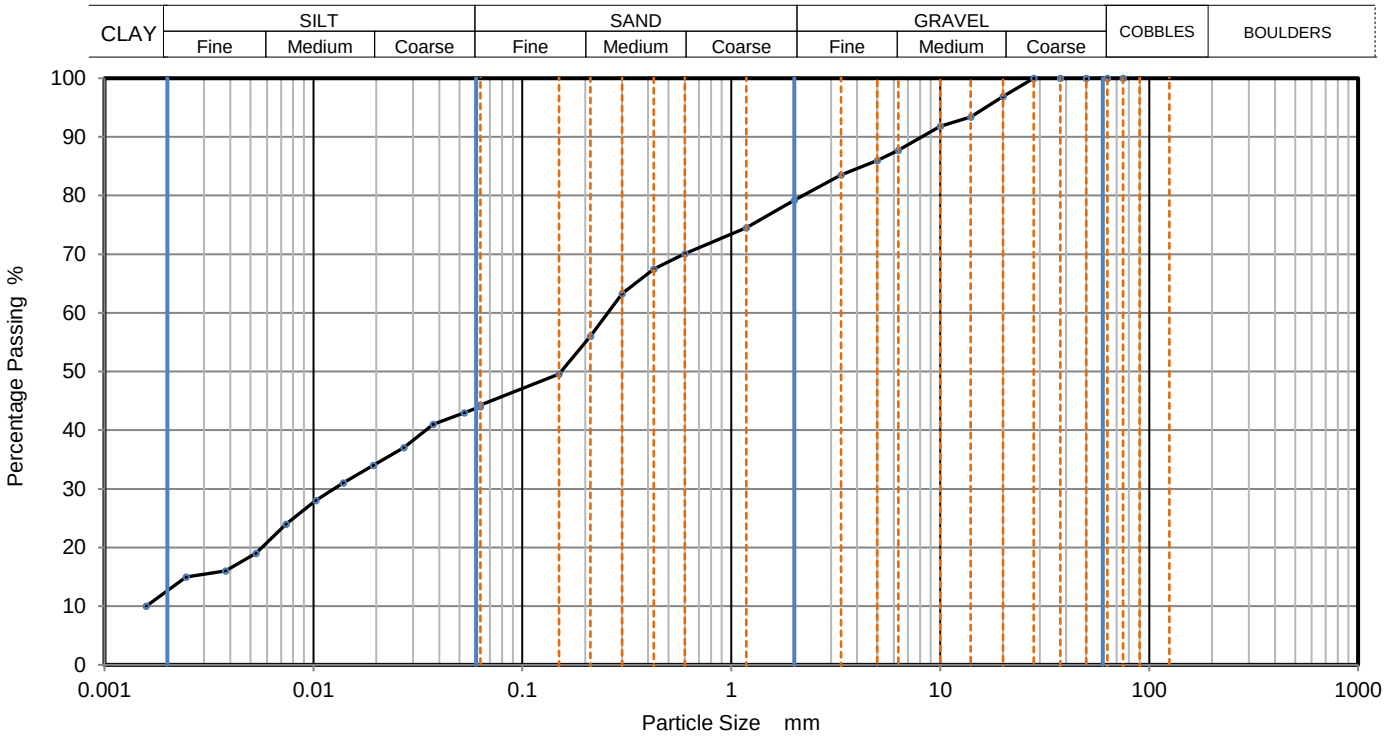
				Particle			Index Properties		Bulk	Cell	Undrained Triaxial Tests		Lab	
BH/TP	Depth	sample	Moisture	Density	<425um	LL	PL	PI	Density	Presssure	Compressive	Strain at	Vane	Remarks
No	m	No.	%	Mg/m3	%	%	%	%	Mg/m3	kPa	Stress kPa	Failure %	kPa	
BH101	2.0-2.45	U5	24.4		48.7	35	23	12						
BH102	3.0-3.45	U9	154.0		62.5	225	130	95						
BH104	1.0-1.45	U3	519.0		68.7	570	377	193						
BH105	3.0-3.45	U9	18.3		62.4	28	21	7						
BH109	2.0-2.45	U6	703		77.3	620	319	301						
BH113	2.0-3.45	U6	10.7		44.4	24	17	7						
BHPW301	2.0-2.45	U6	702.0		81.4	780	429	351						
BHPW301	4.0-4.45	U11	498.0		64.2	585	370	215						
BHSS05	1.0-1.45	U3	553.0		84.7	760	454	306						

NMTL	Notes :	Job ref No.	NMTL 3631	IDL Project ID:	2023OY104
	1. All BS tests carried out using preferred (definitive) method unless otherwise stated.	Location	Derrygreenagh Power		

NMTL LTD	**Contract:**	**Derrygreenagh Power**	
Unit 18c, Tullow Industrial Estate	**Client:**	**Irish Drilling Limited**	
Tullow	**Engineer:**		
County Carlow	**GII Project ID**	**2023OY104**	
Tel: 00353 59 9180822	**Date:**	**29/08/2023**	
Mob: 00353 872575508	**Tested By:**	**Js**	**Checked:** **Bc**
billa@nmtl.ie	**Job ref No.**	**NMTL 3631**	



IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH101
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Black slightly gravelly sandy ORGANIC SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426143



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	44
		0.0527	43
75	100	0.0375	41
63	100	0.0271	37
50	100	0.0194	34
37.5	100	0.0139	31
28	100	0.0103	28
20	97	0.0074	24
14	93	0.0053	19
10	92	0.0038	16
6.3	88	0.0025	15
5	86	0.0016	10
3.35	84		
2	79		
1.18	75		
0.6	70	Particle density	(assumed)
0.425	68	2.65	Mg/m3
0.3	63		
0.212	56		
0.15	50		
0.063	44		

Dry Mass of sample, g: 431

Sample Proportions	% dry mass
Very coarse	0
Gravel	21
Sand	35
Silt	32
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.256
D30	mm	0.0125
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:37	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	96.9
20.000	93.3
14.000	88.6
10.000	83.3
6.300	75.1
5.000	70.9
3.350	66.7
2.000	61.0
1.180	56.2
0.600	51.2
0.425	48.7
0.300	46.1
0.212	43.0
0.150	40.1
0.063	34.9

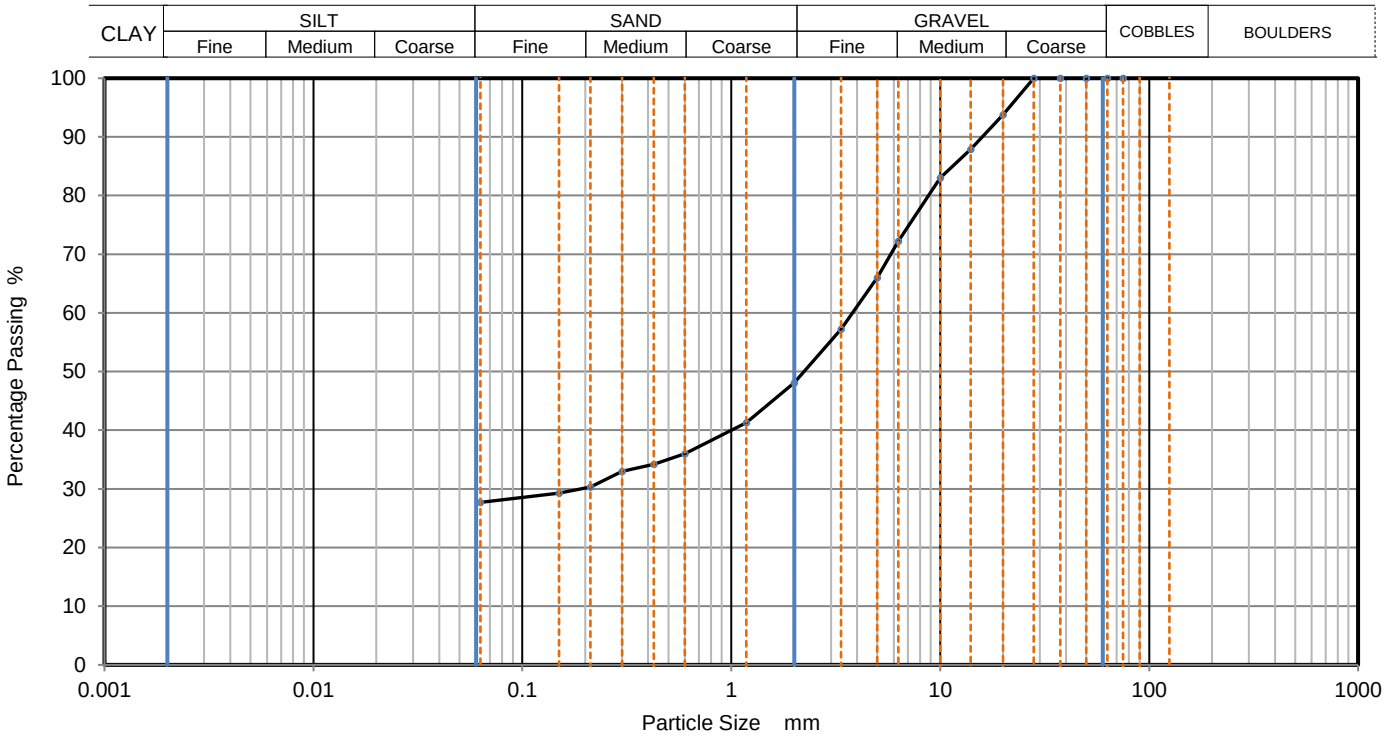
Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		34.9			26.1			39.0		0.0	0.0

Sample Description	Brown/grey slightly sandy gravelly silty CLAY.	Project No.	NMTL 3631
		BH/TP No.	BH101
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U5
Operator Js	Checked Nc / Approved Bc / Date sample tested 10/07/2023	Depth	2.00-2.45m

NM TL Ltd

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH101
Site Name	Derrygreenagh Power	Sample No.	13
Soil Description	Orange-brown very sandy very silty fine and medium GRAVEL.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230426152



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	94		
14	88		
10	83		
6.3	72		
5	66		
3.35	57		
2	48		
1.18	41		
0.6	36		
0.425	34		
0.3	33		
0.212	30		
0.15	29		
0.063	28		

Dry Mass of sample, g: 735

Sample Proportions	% dry mass
Very coarse	0
Gravel	52
Sand	20
Fines <0.063mm	28

Grading Analysis		
D100	mm	
D60	mm	3.81
D30	mm	0.19
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:37	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	96.9
10.000	94.1
6.300	88.8
5.000	86.3
3.350	82.3
2.000	77.1
1.180	71.9
0.600	65.6
0.425	62.5
0.300	59.4
0.212	56.7
0.150	54.5
0.063	51.7

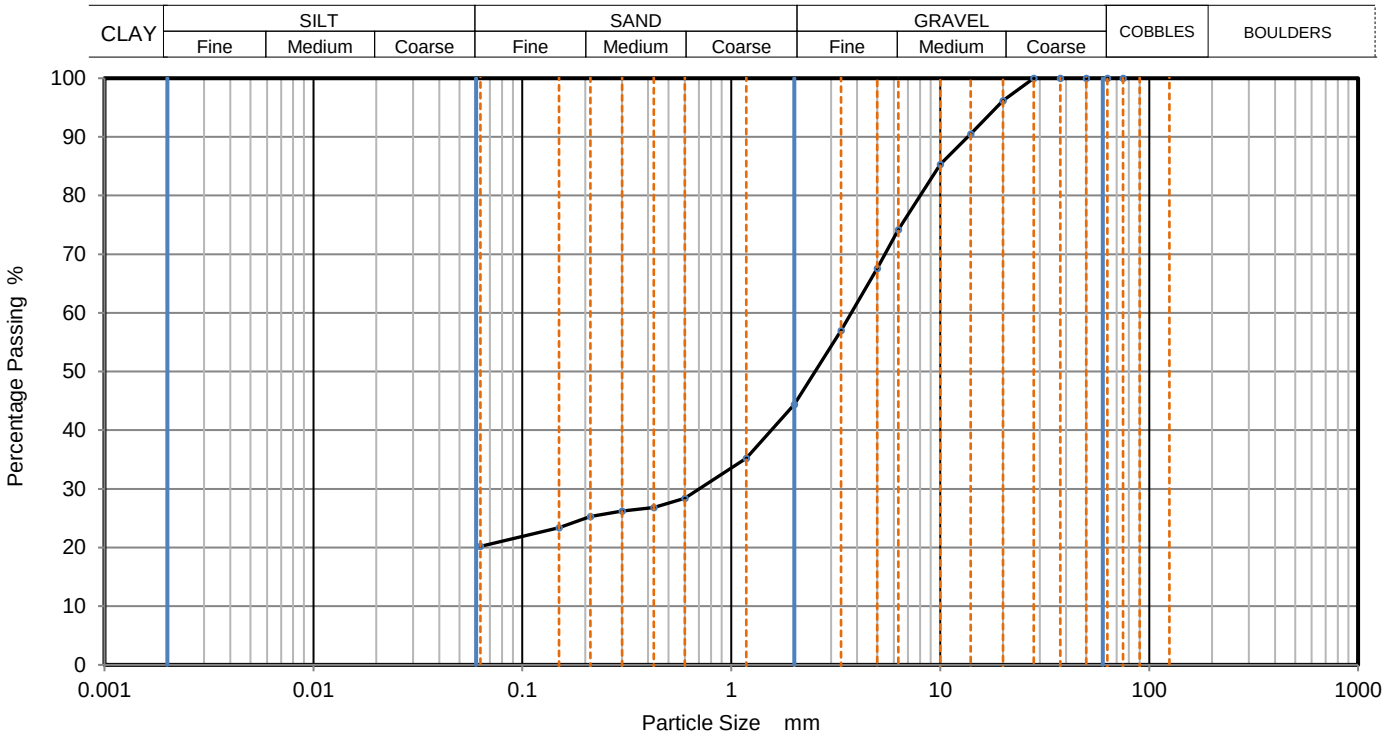
Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		51.7			25.4			22.9		0.0	0.0

Sample Description	Dark brown slightly fiberous PEAT.	Project No.	NMTL 3631
	sands and gravel are root and fibre particles	BH/TP No.	BH102
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U9
Operator Js	Checked Nc / Approved Bc / Date sample tested 10/07/2023	Depth	3.00-3.45m

NM TL Ltd

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	BH102
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description	Brown very silty very sandy fine and medium GRAVEL.			Depth, m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120230426195



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	91		
10	85		
6.3	74		
5	68		
3.35	57		
2	44		
1.18	35		
0.6	28		
0.425	27		
0.3	26		
0.212	25		
0.15	23		
0.063	20		

Dry Mass of sample, g	1057

Sample Proportions	% dry mass
Very coarse	0
Gravel	56
Sand	24
Fines <0.063mm	20

Grading Analysis		
D100	mm	
D60	mm	3.75
D30	mm	0.701
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

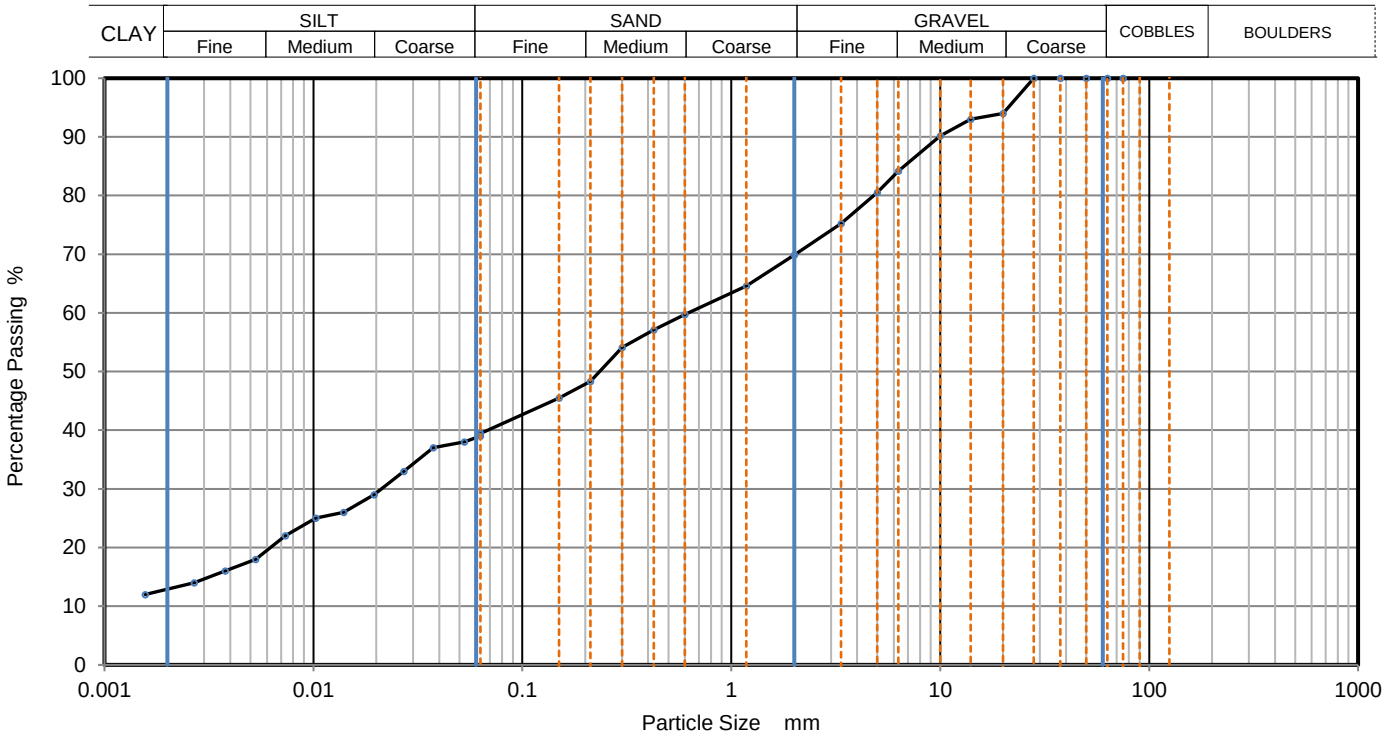
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:37	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH103
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Greyish-brown slightly gravelly slightly gravelly SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426204



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	39
		0.0527	38
75	100	0.0375	37
63	100	0.0271	33
50	100	0.0195	29
37.5	100	0.0140	26
28	100	0.0103	25
20	94	0.0073	22
14	93	0.0053	18
10	90	0.0038	16
6.3	84	0.0027	14
5	81	0.0016	12
3.35	75		
2	70		
1.18	65		
0.6	60	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	54		
0.212	48		
0.15	46		
0.063	39		

Dry Mass of sample, g	713

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	31
Silt	26
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.629
D30	mm	0.0214
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
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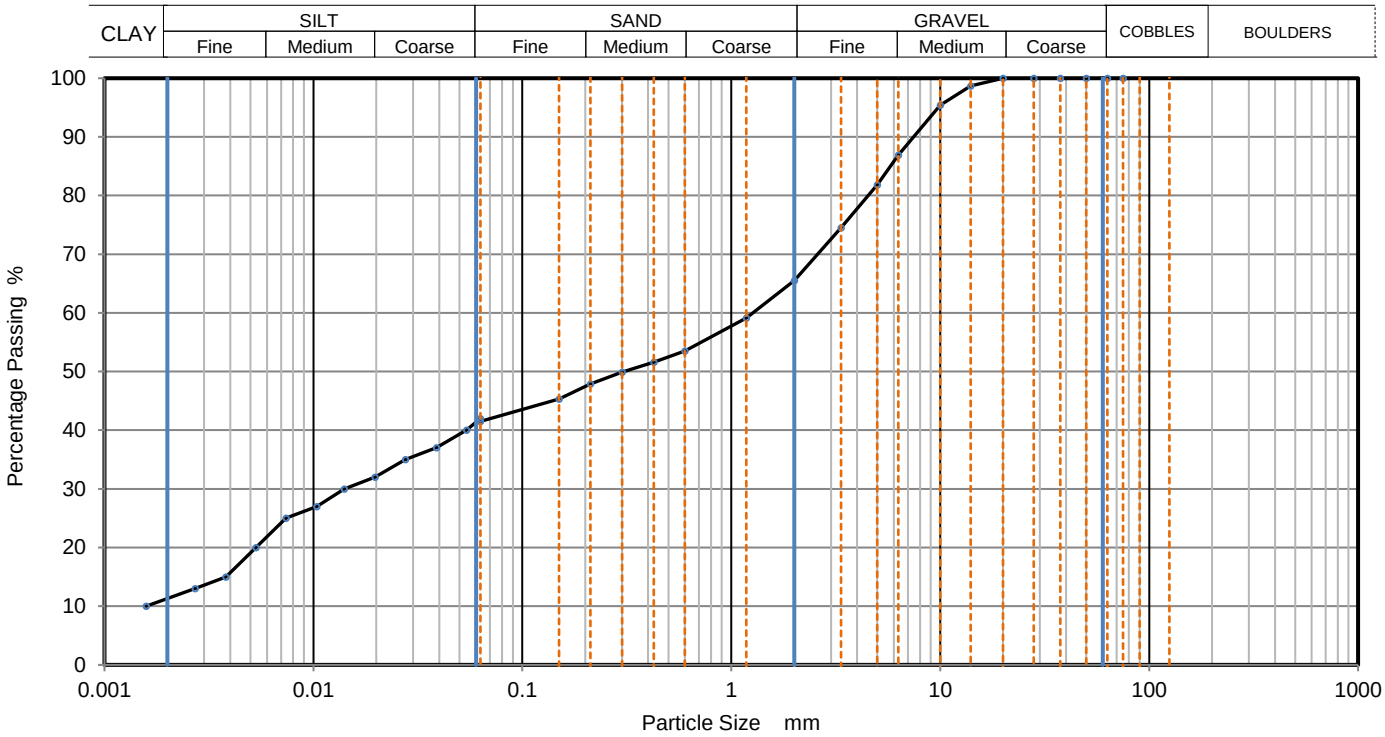
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH103
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Greyish-brown slightly sandy gravelly SILT. Gravel is fine.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426207



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	42
		0.0541	40
75	100	0.0388	37
63	100	0.0276	35
50	100	0.0197	32
37.5	100	0.0140	30
28	100	0.0104	27
20	100	0.0074	25
14	99	0.0053	20
10	95	0.0038	15
6.3	87	0.0027	13
5	82	0.0016	10
3.35	75		
2	66		
1.18	59		
0.6	54	Particle density	(assumed)
0.425	52	2.65	Mg/m3
0.3	50		
0.212	48		
0.15	45		
0.063	42		

Dry Mass of sample, g	735

Sample Proportions	% dry mass
Very coarse	0
Gravel	35
Sand	24
Silt	30
Clay	11

Grading Analysis		
D100	mm	
D60	mm	1.27
D30	mm	0.0144
D10	mm	0.00159
Uniformity Coefficient		800
Curvature Coefficient		0.1

Remarks

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Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	99.7
5.000	97.8
3.350	96.2
2.000	92.1
1.180	85.0
0.600	74.7
0.425	68.7
0.300	61.7
0.212	55.9
0.150	51.9
0.063	44.8

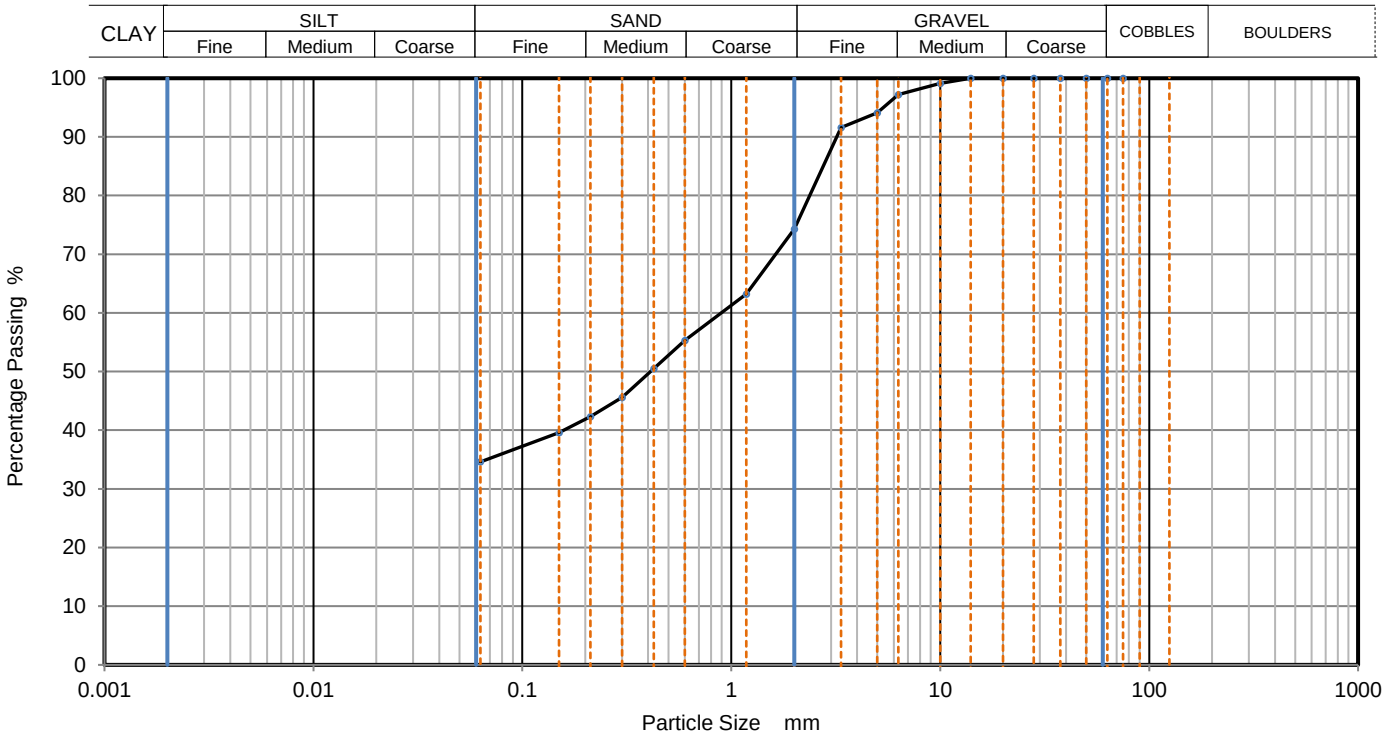
Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		44.8			47.3			7.9		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT.	Project No.	NMTL 3631
	sands and gravel are root and fibre particles	BH/TP No.	BH104
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U3
Operator Js	Checked Nc / Approved Bc / Date sample tested 10/07/2023	Depth	1.00-1.45m

NM TL Ltd

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH104
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Black slighlty gravelly sandy ORGANIC SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230426216



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	97		
5	94		
3.35	92		
2	74		
1.18	63		
0.6	55		
0.425	51		
0.3	46		
0.212	42		
0.15	40		
0.063	35		

Dry Mass of sample, g	78

Sample Proportions	% dry mass
Very coarse	0
Gravel	26
Sand	40
Fines <0.063mm	35

Grading Analysis		
D100	mm	
D60	mm	0.896
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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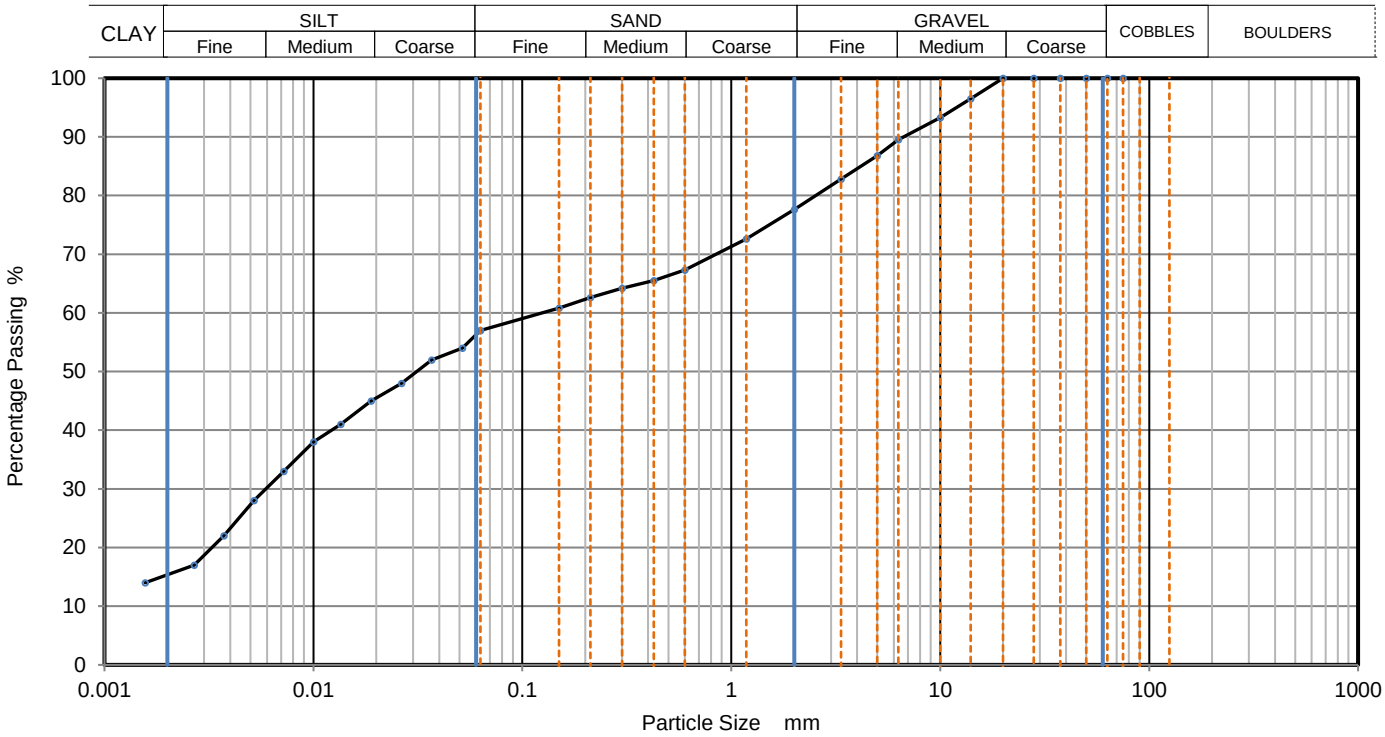
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH104
Site Name	Derrygreenagh Power	Sample No.	13
Soil Description	Yellowish-brown very sandy very gravelly SILT.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426222



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	57
		0.0517	54
75	100	0.0368	52
63	100	0.0264	48
50	100	0.0189	45
37.5	100	0.0135	41
28	100	0.0100	38
20	100	0.0072	33
14	97	0.0052	28
10	93	0.0037	22
6.3	90	0.0027	17
5	87	0.0016	14
3.35	83		
2	78		
1.18	73		
0.6	67	Particle density	(assumed)
0.425	66	2.65	Mg/m3
0.3	64		
0.212	63		
0.15	61		
0.063	57		

Dry Mass of sample, g: 650

Sample Proportions	% dry mass
Very coarse	0
Gravel	22
Sand	21
Silt	42
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.124
D30	mm	0.00603
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	97.8
10.000	95.2
6.300	90.7
5.000	85.9
3.350	82.7
2.000	76.2
1.180	70.0
0.600	64.5
0.425	62.4
0.300	60.5
0.212	58.6
0.150	56.7
0.063	52.2

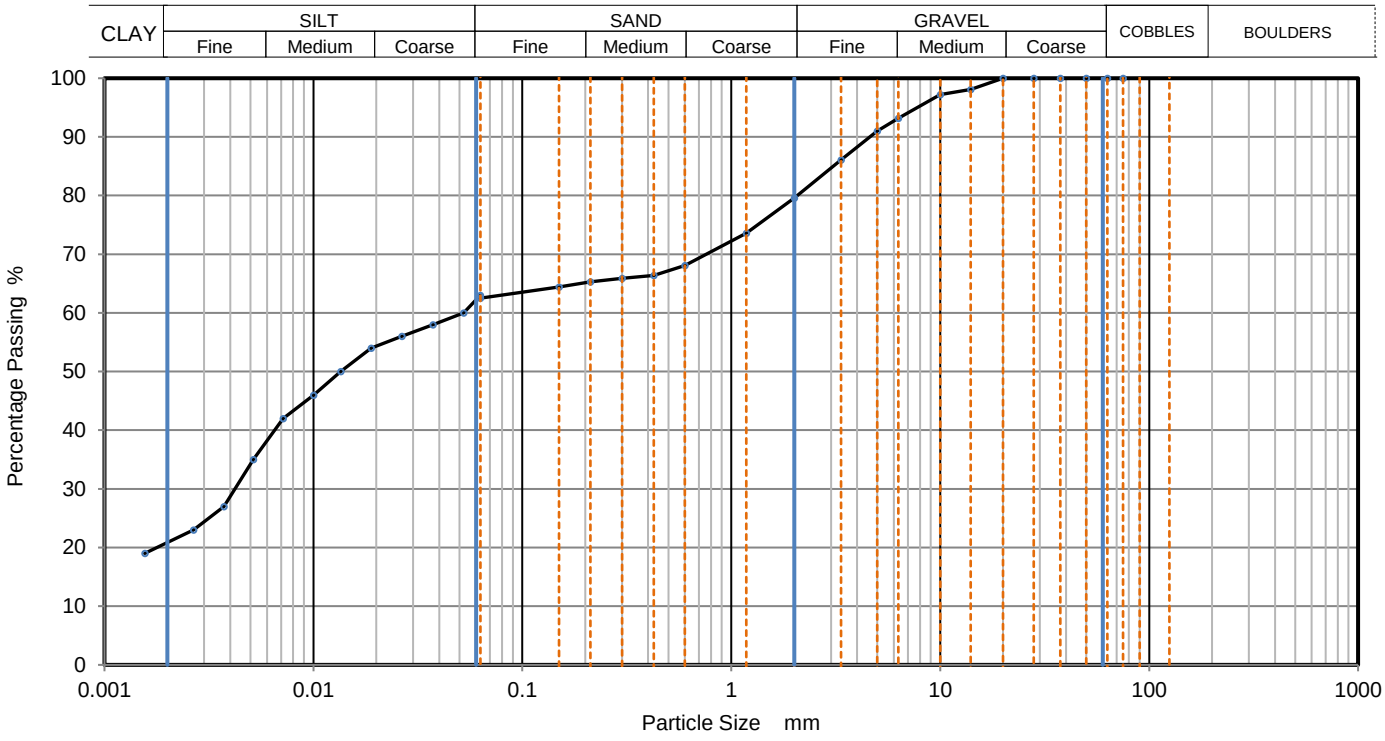
Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		52.2			24.0			23.8		0.0	0.0

Sample Description	Brown/grey slightly sandy slightly gravelly silty CLAY.	Project No.	NMTL 3631
		BH/TP No.	BH105
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U9
Operator Js	Checked Nc / Approved Bc / Date sample tested 09/08/2023	Depth	3.00-3.45m

NM TL Ltd

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH105
Site Name	Derrygreenagh Power	Sample No.	12
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426245



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	63
		0.0524	60
75	100	0.0373	58
63	100	0.0265	56
50	100	0.0189	54
37.5	100	0.0135	50
28	100	0.0100	46
20	100	0.0072	42
14	98	0.0052	35
10	97	0.0037	27
6.3	93	0.0027	23
5	91	0.0016	19
3.35	86		
2	80		
1.18	74		
0.6	68	Particle density (assumed)	
0.425	66	2.65 Mg/m3	
0.3	66		
0.212	65		
0.15	64		
0.063	63		

Dry Mass of sample, g	741

Sample Proportions	% dry mass
Very coarse	0
Gravel	20
Sand	17
Silt	42
Clay	21

Grading Analysis		
D100	mm	
D60	mm	0.0489
D30	mm	0.00418
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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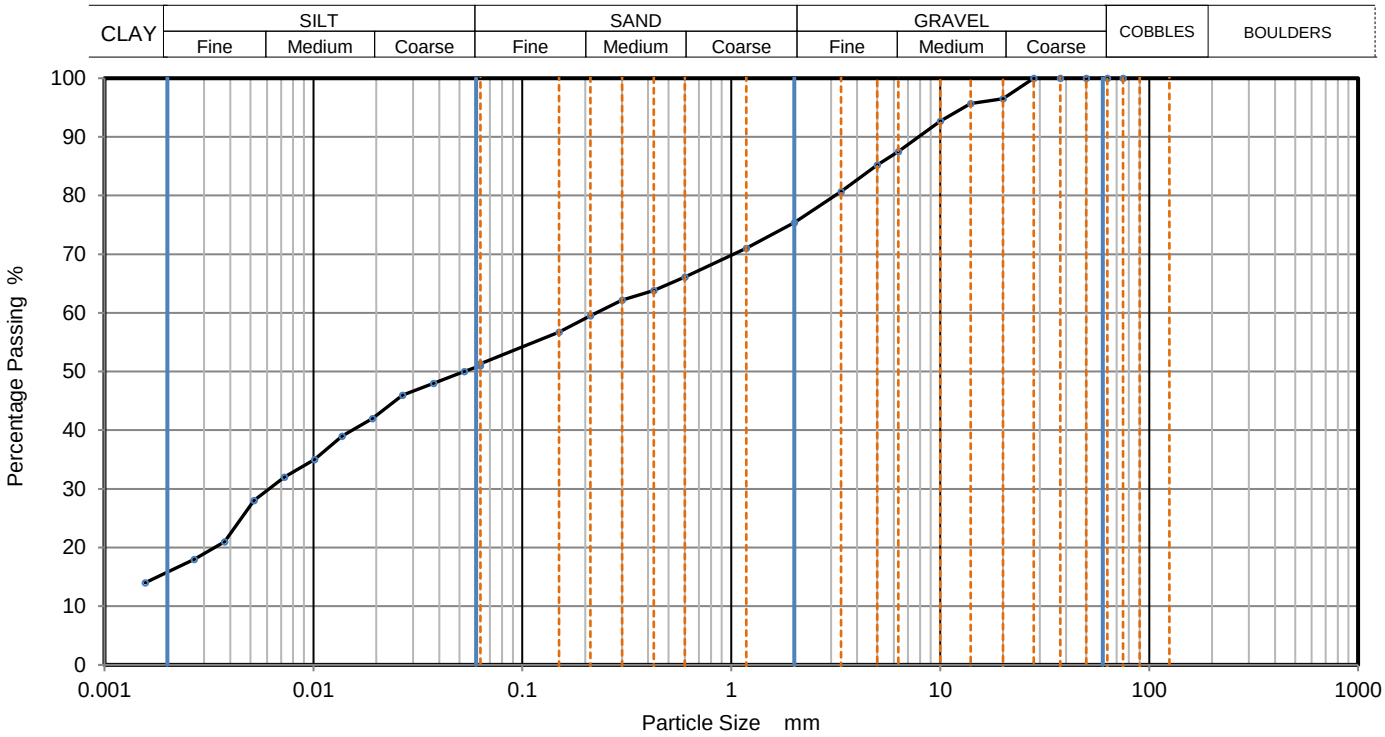
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH106
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Greyish-brown slightly sandy slightly gravelly SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426266



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	51
		0.0527	50
75	100	0.0375	48
63	100	0.0267	46
50	100	0.0191	42
37.5	100	0.0137	39
28	100	0.0101	35
20	97	0.0073	32
14	96	0.0052	28
10	93	0.0038	21
6.3	88	0.0027	18
5	85	0.0016	14
3.35	81		
2	75		
1.18	71		
0.6	66	Particle density (assumed)	
0.425	64	2.65 Mg/m3	
0.3	62		
0.212	60		
0.15	57		
0.063	51		

Dry Mass of sample, g	1021

Sample Proportions	% dry mass
Very coarse	0
Gravel	25
Sand	24
Silt	36
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.227
D30	mm	0.00609
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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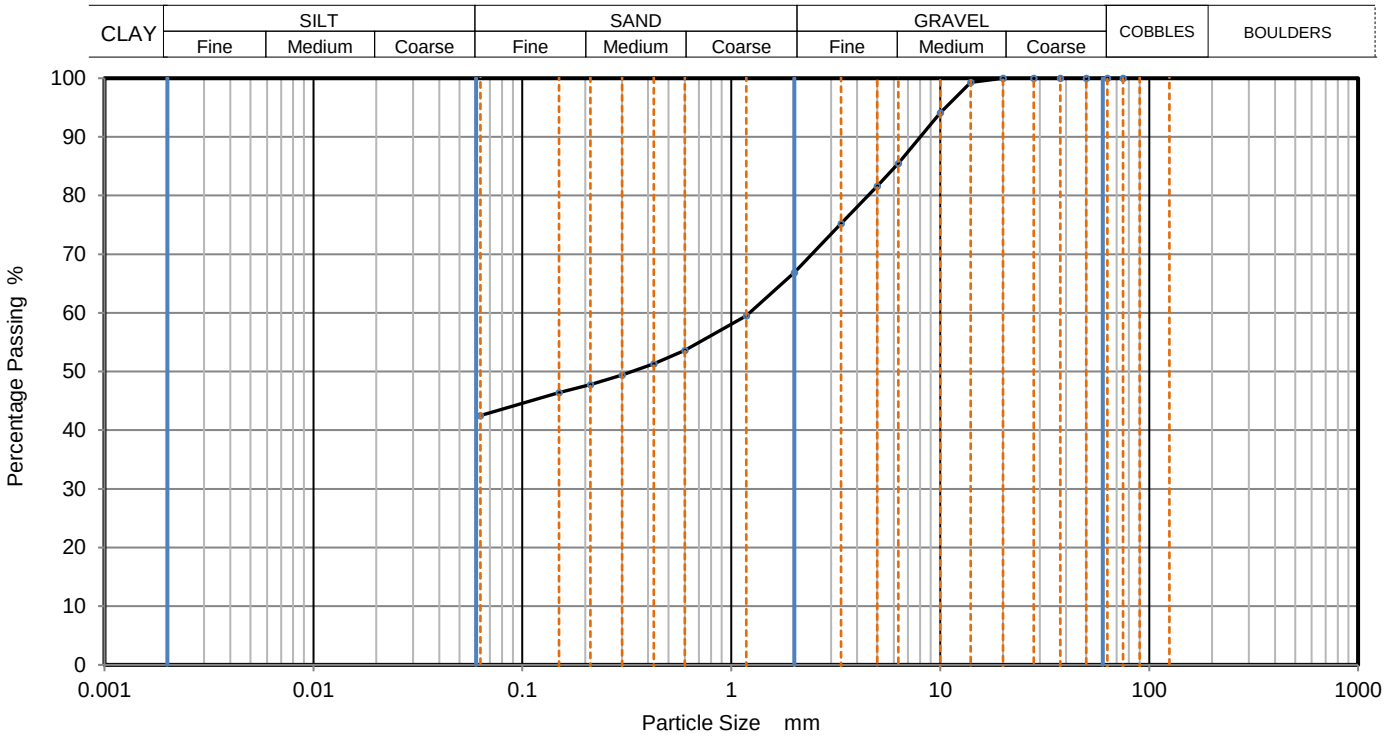
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL1202305057



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	94		
6.3	86		
5	82		
3.35	75		
2	67		
1.18	60		
0.6	54		
0.425	51		
0.3	49		
0.212	48		
0.15	46		
0.063	43		

Dry Mass of sample, g	948

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	24
Fines <0.063mm	43

Grading Analysis		
D100	mm	
D60	mm	1.23
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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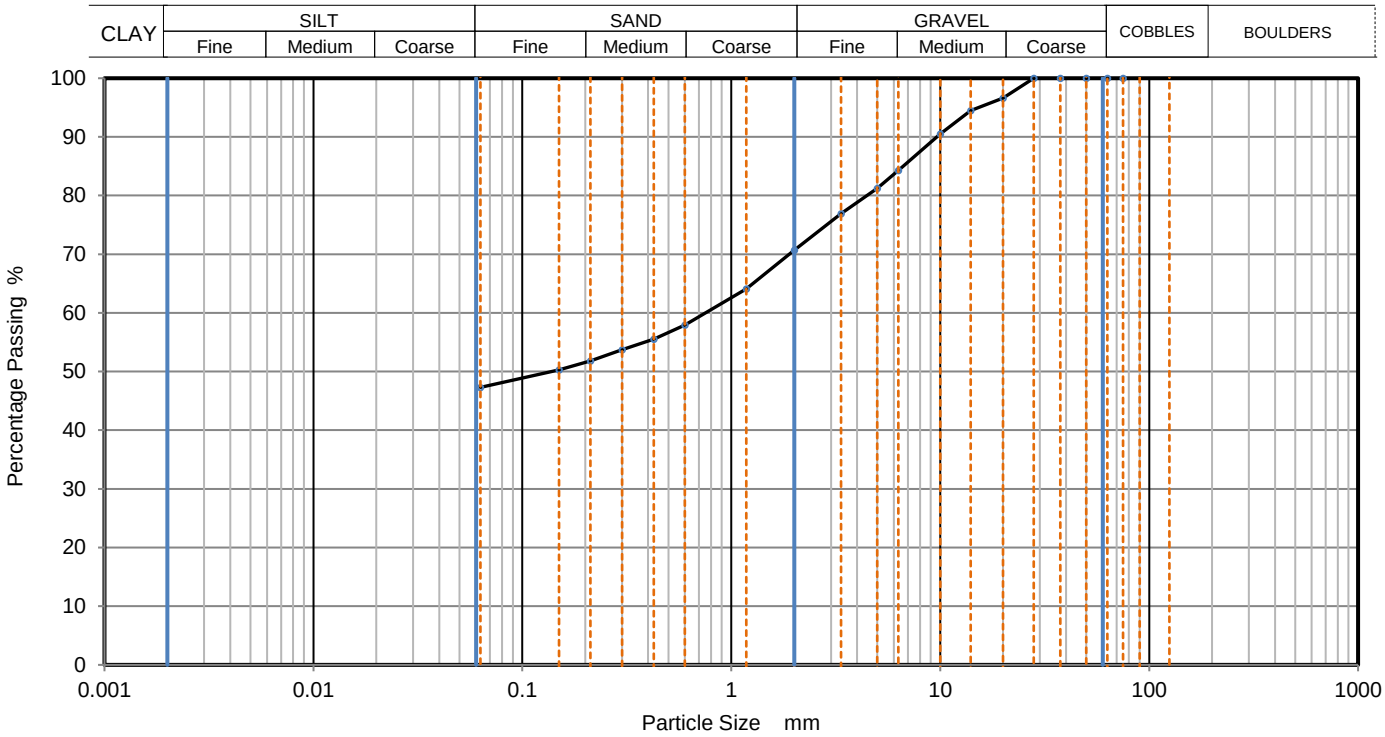
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023050510



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	95		
10	91		
6.3	84		
5	81		
3.35	77		
2	71		
1.18	64		
0.6	58		
0.425	56		
0.3	54		
0.212	52		
0.15	50		
0.063	47		

Dry Mass of sample, g: 756

Sample Proportions	% dry mass
Very coarse	0
Gravel	29
Sand	23
Fines <0.063mm	47

Grading Analysis		
D100	mm	
D60	mm	0.752
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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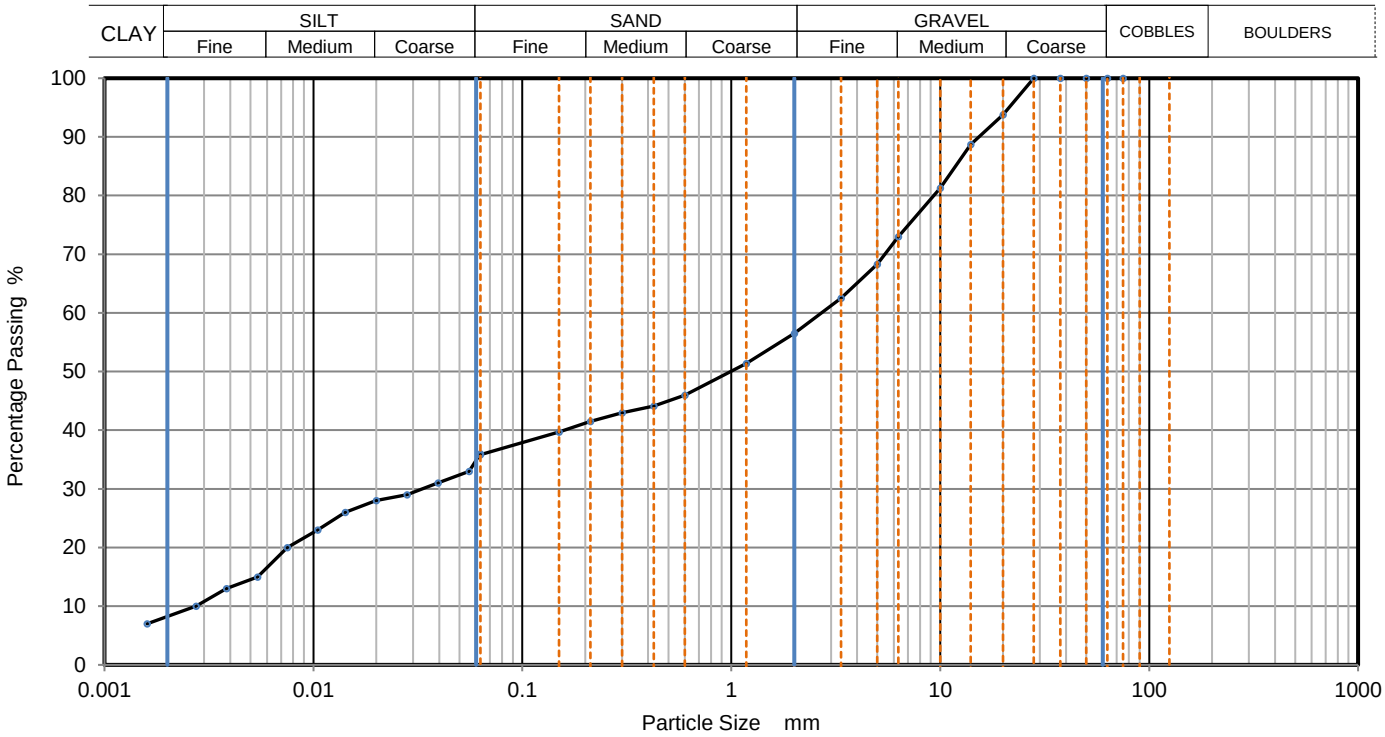
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH109
Site Name	Derrygreenagh Power	Sample No.	19
Soil Description	Creamy-brown slightly sandy gravelly SILT.	Depth, m	6.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426297



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	36
		0.0555	33
75	100	0.0395	31
63	100	0.0281	29
50	100	0.0200	28
37.5	100	0.0142	26
28	100	0.0105	23
20	94	0.0075	20
14	89	0.0054	15
10	81	0.0038	13
6.3	73	0.0027	10
5	68	0.0016	7
3.35	63		
2	57		
1.18	51		
0.6	46	Particle density	(assumed)
0.425	44	2.65	Mg/m3
0.3	43		
0.212	42		
0.15	40		
0.063	36		

Dry Mass of sample, g	864

Sample Proportions	% dry mass
Very coarse	0
Gravel	44
Sand	21
Silt	28
Clay	8

Grading Analysis		
D100	mm	
D60	mm	2.7
D30	mm	0.0326
D10	mm	0.00281
Uniformity Coefficient		960
Curvature Coefficient		0.14

Remarks

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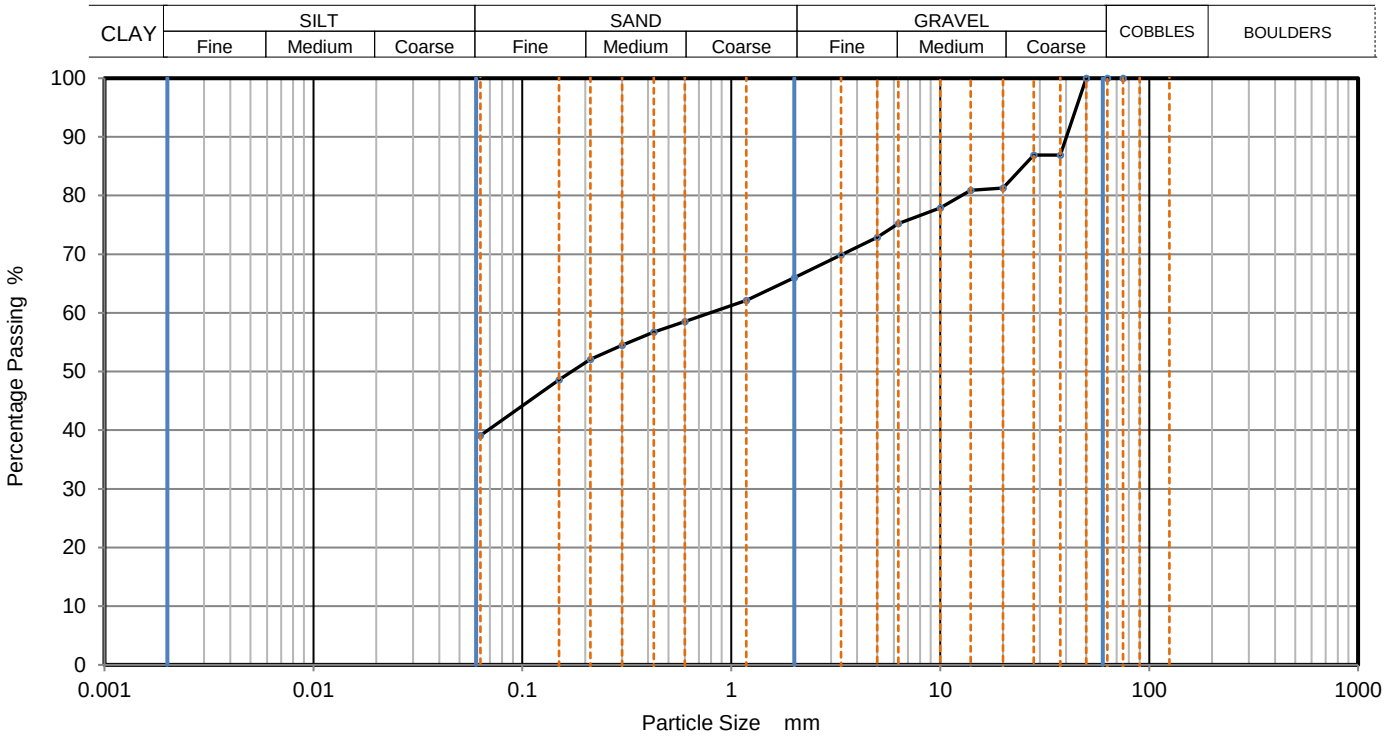
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Light greyish-brown slightly sandy gravelly SILT. Gravel is coarse.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023050539



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	87		
28	87		
20	81		
14	81		
10	78		
6.3	75		
5	73		
3.35	70		
2	66		
1.18	62		
0.6	59		
0.425	57		
0.3	55		
0.212	52		
0.15	49		
0.063	39		

Dry Mass of sample, g	829

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	27
Fines <0.063mm	39

Grading Analysis		
D100	mm	
D60	mm	0.795
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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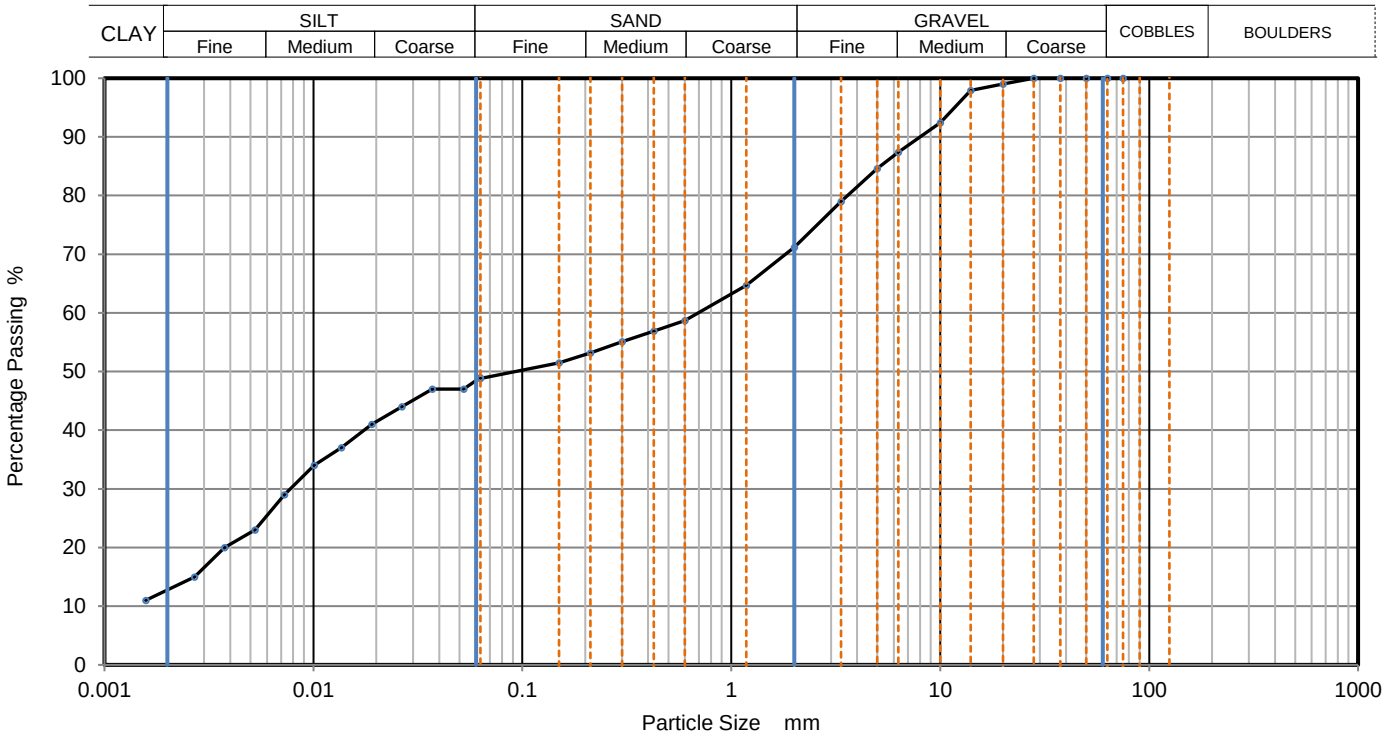
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023050545



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	49
		0.0524	47
75	100	0.0370	47
63	100	0.0265	44
50	100	0.0190	41
37.5	100	0.0136	37
28	100	0.0101	34
20	99	0.0073	29
14	98	0.0052	23
10	92	0.0038	20
6.3	87	0.0027	15
5	85	0.0016	11
3.35	79		
2	71		
1.18	65		
0.6	59	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	55		
0.212	53		
0.15	52		
0.063	49		

Dry Mass of sample, g	921

Sample Proportions	% dry mass
Very coarse	0
Gravel	29
Sand	23
Silt	36
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.692
D30	mm	0.00761
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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Operator	Checked	Approved	Sheet printed	
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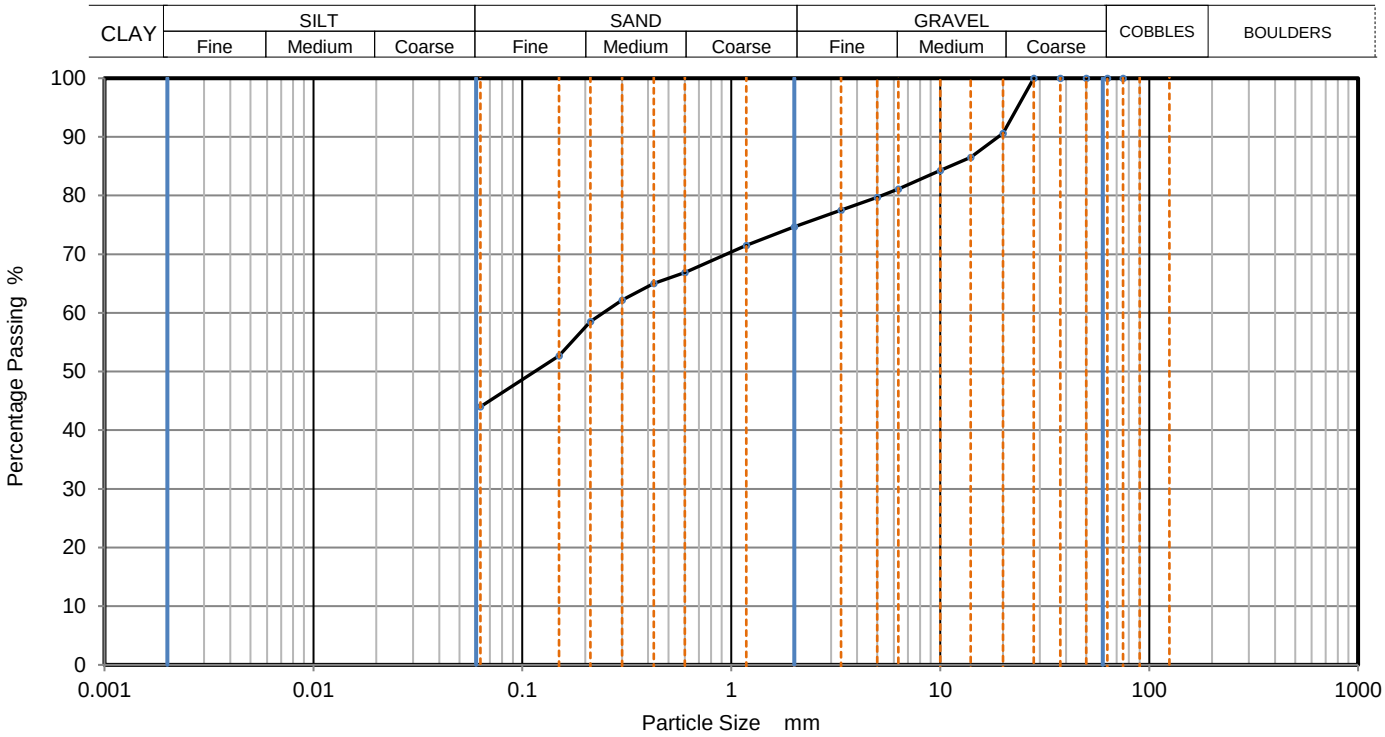
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power	Sample No.	11
Soil Description	Greenish-grey slightly gravelly slightly sandy SILT.	Depth, m	3.50
Specimen Reference	Specimen Depth m	Sample Type	D
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023050568



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	91		
14	87		
10	84		
6.3	81		
5	80		
3.35	78		
2	75		
1.18	72		
0.6	67		
0.425	65		
0.3	62		
0.212	59		
0.15	53		
0.063	44		

Dry Mass of sample, g: 1036

Sample Proportions	% dry mass
Very coarse	0
Gravel	25
Sand	31
Fines <0.063mm	44

Grading Analysis		
D100	mm	
D60	mm	0.244
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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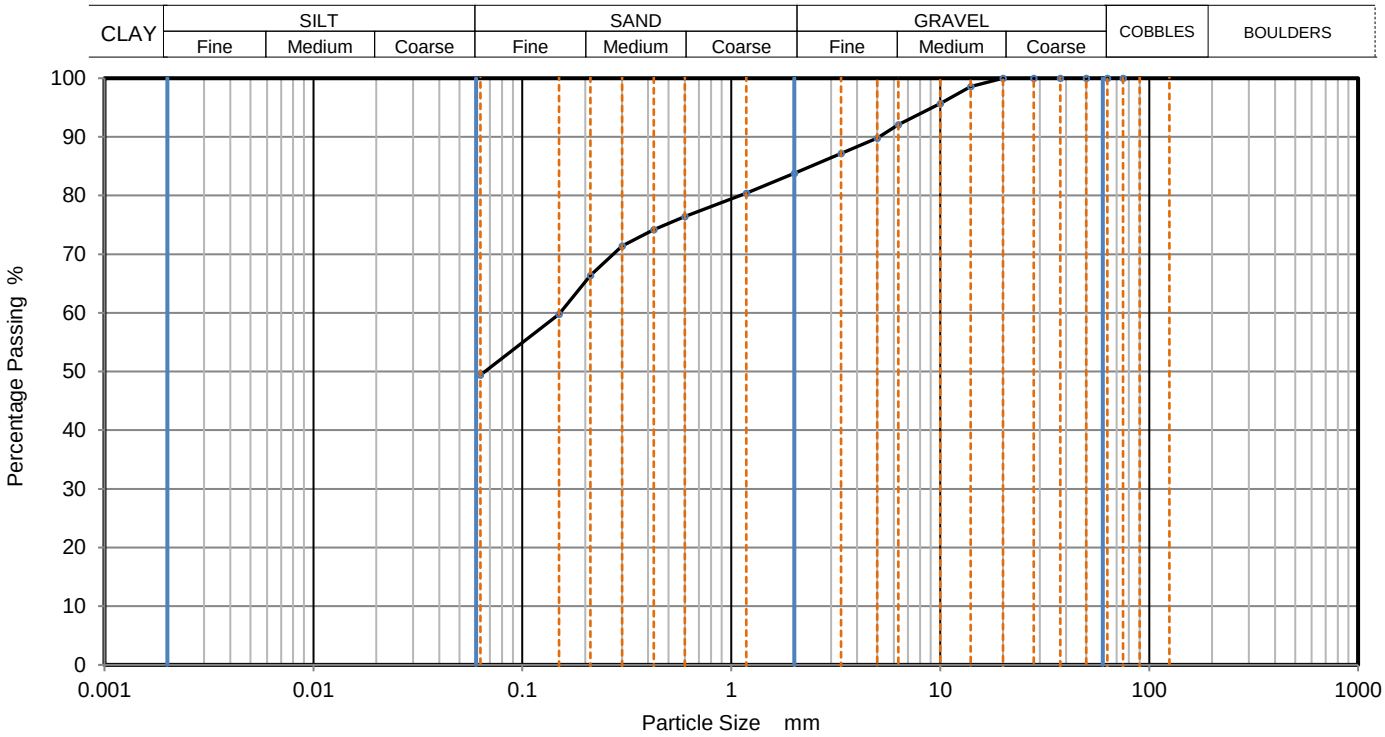
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power	Sample No.	13
Soil Description	Greyish-brown slightly gravelly sandy SILT.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023050570



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	96		
6.3	92		
5	90		
3.35	87		
2	84		
1.18	80		
0.6	76		
0.425	74		
0.3	71		
0.212	66		
0.15	60		
0.063	49		

Dry Mass of sample, g	941

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	34
Fines <0.063mm	49

Grading Analysis		
D100	mm	
D60	mm	0.151
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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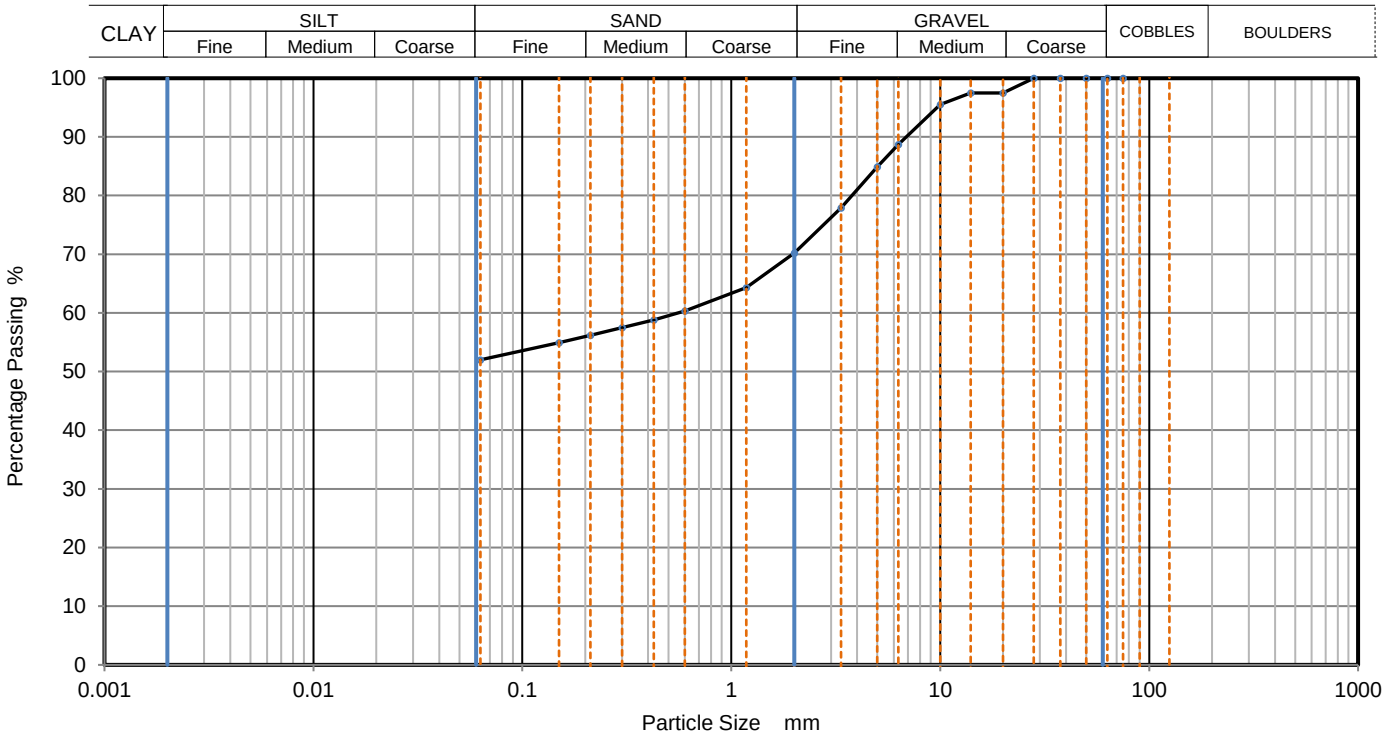
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	BH112
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description	Brown slightly sandy slightly gravelly SILT.			Depth, m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120230426177



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	98		
10	96		
6.3	89		
5	85		
3.35	78		
2	70		
1.18	64		
0.6	60		
0.425	59		
0.3	58		
0.212	56		
0.15	55		
0.063	52		

Dry Mass of sample, g	806

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	18
Fines <0.063mm	52

Grading Analysis		
D100	mm	
D60	mm	0.56
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	85.7
37.500	82.2
28.000	79.0
20.000	75.6
14.000	74.6
10.000	69.9
6.300	65.1
5.000	62.7
3.350	59.2
2.000	54.3
1.180	50.2
0.600	46.2
0.425	44.4
0.300	42.6
0.212	40.6
0.150	38.6
0.063	34.7

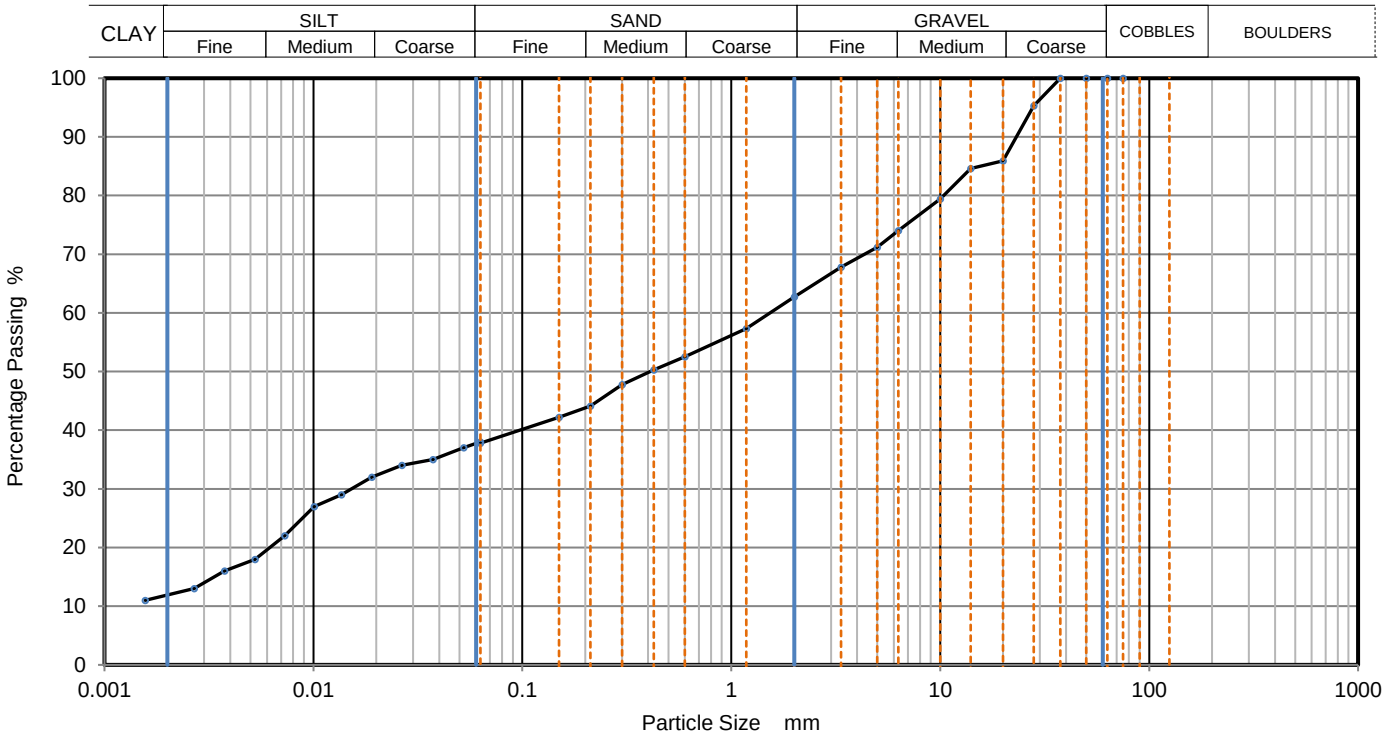
Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		34.7			19.6			45.7		0.0	0.0

Sample Description	Light brown slightly sandy gravelly clayey SILT.	Project No.	NMTL 3631
		BH/TP No.	BH113
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U6
Operator Js	Checked Nc / Approved Bc / Date sample tested 14/08/2023	Depth	2.00-2.45m

NM TL Ltd

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH113
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Light brown slightly sandy gravelly SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023050585



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	38
		0.0523	37
75	100	0.0373	35
63	100	0.0265	34
50	100	0.0190	32
37.5	100	0.0136	29
28	95	0.0101	27
20	86	0.0073	22
14	85	0.0053	18
10	79	0.0038	16
6.3	74	0.0027	13
5	71	0.0016	11
3.35	68		
2	63		
1.18	57		
0.6	53	Particle density	(assumed)
0.425	50	2.65	Mg/m3
0.3	48		
0.212	44		
0.15	42		
0.063	38		

Dry Mass of sample, g	902

Sample Proportions	% dry mass
Very coarse	0
Gravel	37
Sand	25
Silt	26
Clay	12

Grading Analysis		
D100	mm	
D60	mm	1.54
D30	mm	0.0151
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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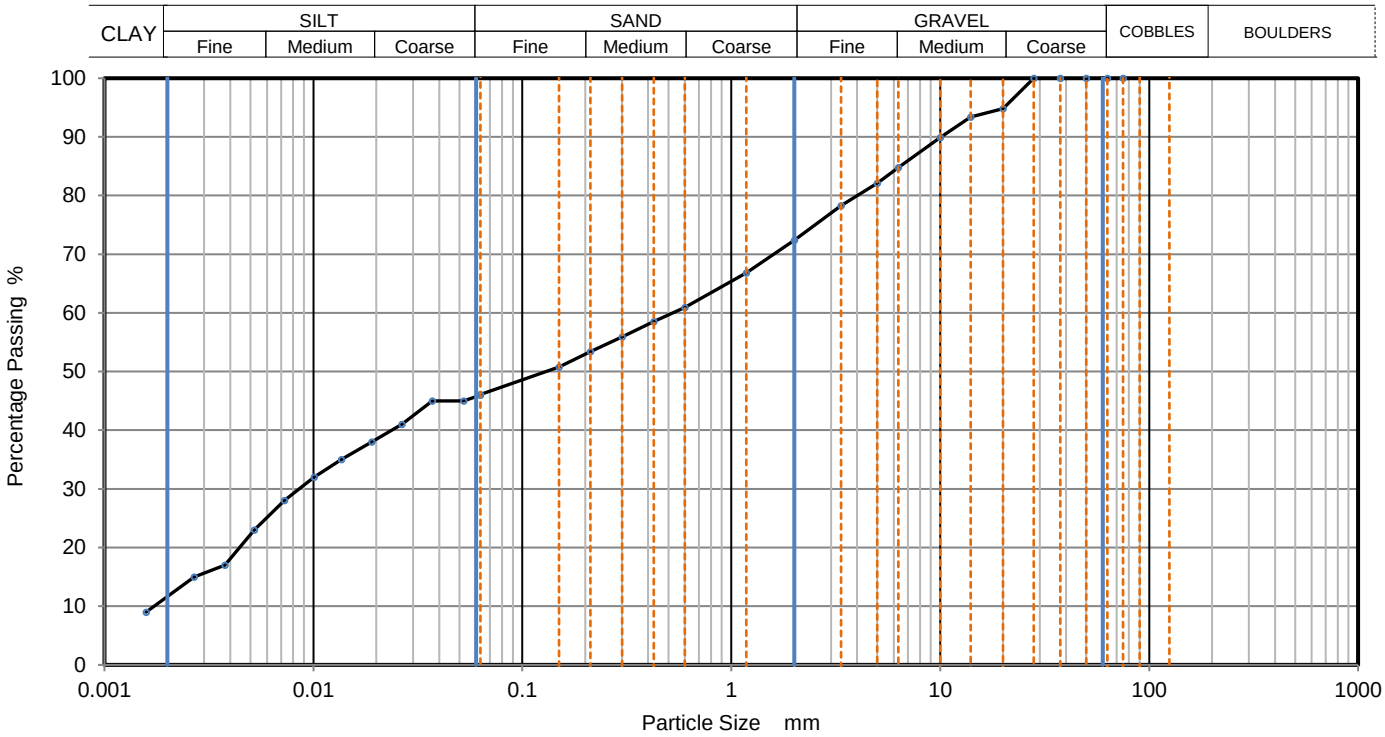
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH113
Site Name	Derrygreenagh Power	Sample No.	13
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023050588



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	46
		0.0524	45
75	100	0.0370	45
63	100	0.0265	41
50	100	0.0190	38
37.5	100	0.0136	35
28	100	0.0101	32
20	95	0.0073	28
14	93	0.0052	23
10	90	0.0038	17
6.3	85	0.0027	15
5	82	0.0016	9
3.35	78		
2	72		
1.18	67		
0.6	61	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	56		
0.212	53		
0.15	51		
0.063	46		

Dry Mass of sample, g: 867

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	26
Silt	34
Clay	12

Grading Analysis		
D100	mm	
D60	mm	0.527
D30	mm	0.00857
D10	mm	0.00169
Uniformity Coefficient		310
Curvature Coefficient		0.082

Remarks

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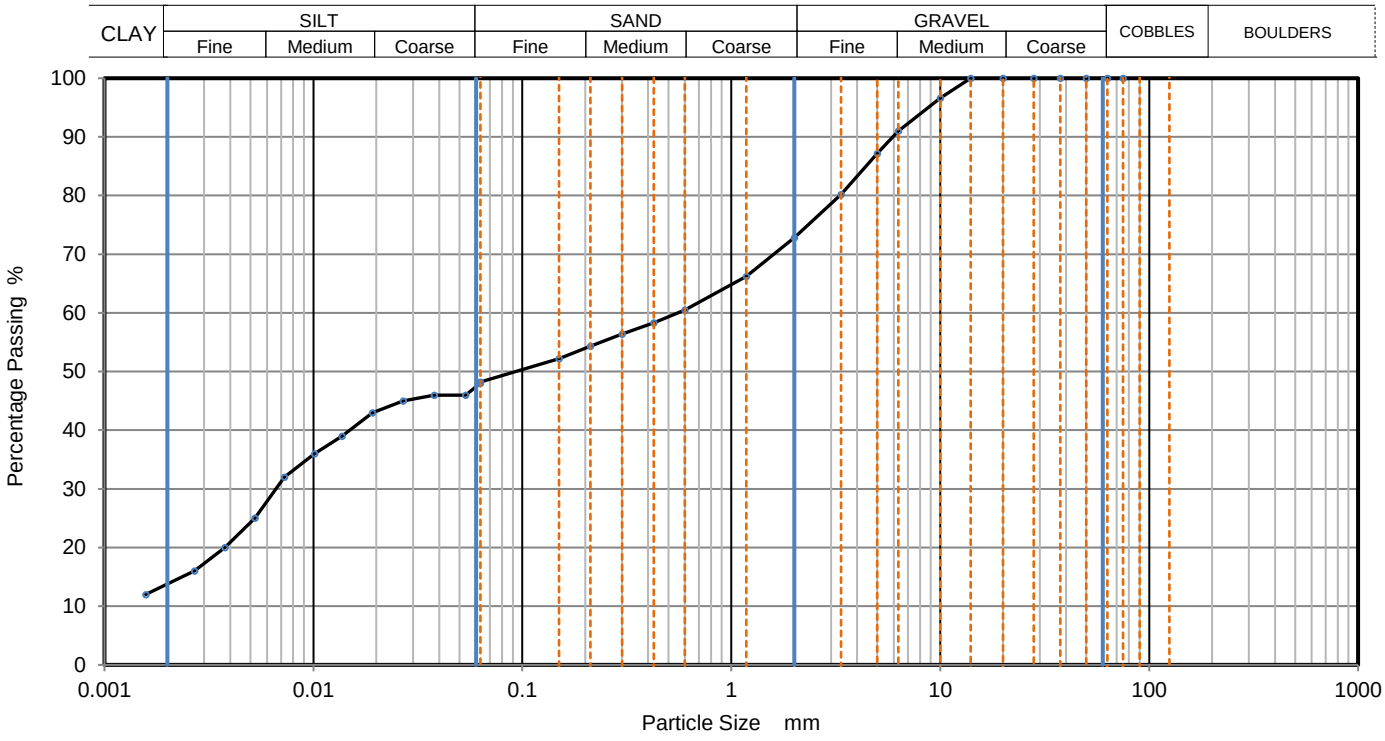
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH114
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202305087



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	48
		0.0534	46
75	100	0.0378	46
63	100	0.0269	45
50	100	0.0191	43
37.5	100	0.0137	39
28	100	0.0101	36
20	100	0.0073	32
14	100	0.0052	25
10	97	0.0038	20
6.3	91	0.0027	16
5	87	0.0016	12
3.35	80		
2	73		
1.18	66		
0.6	61	Particle density (assumed)	
0.425	58	2.65 Mg/m3	
0.3	56		
0.212	54		
0.15	52		
0.063	48		

Dry Mass of sample, g	843

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	25
Silt	34
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.554
D30	mm	0.00658
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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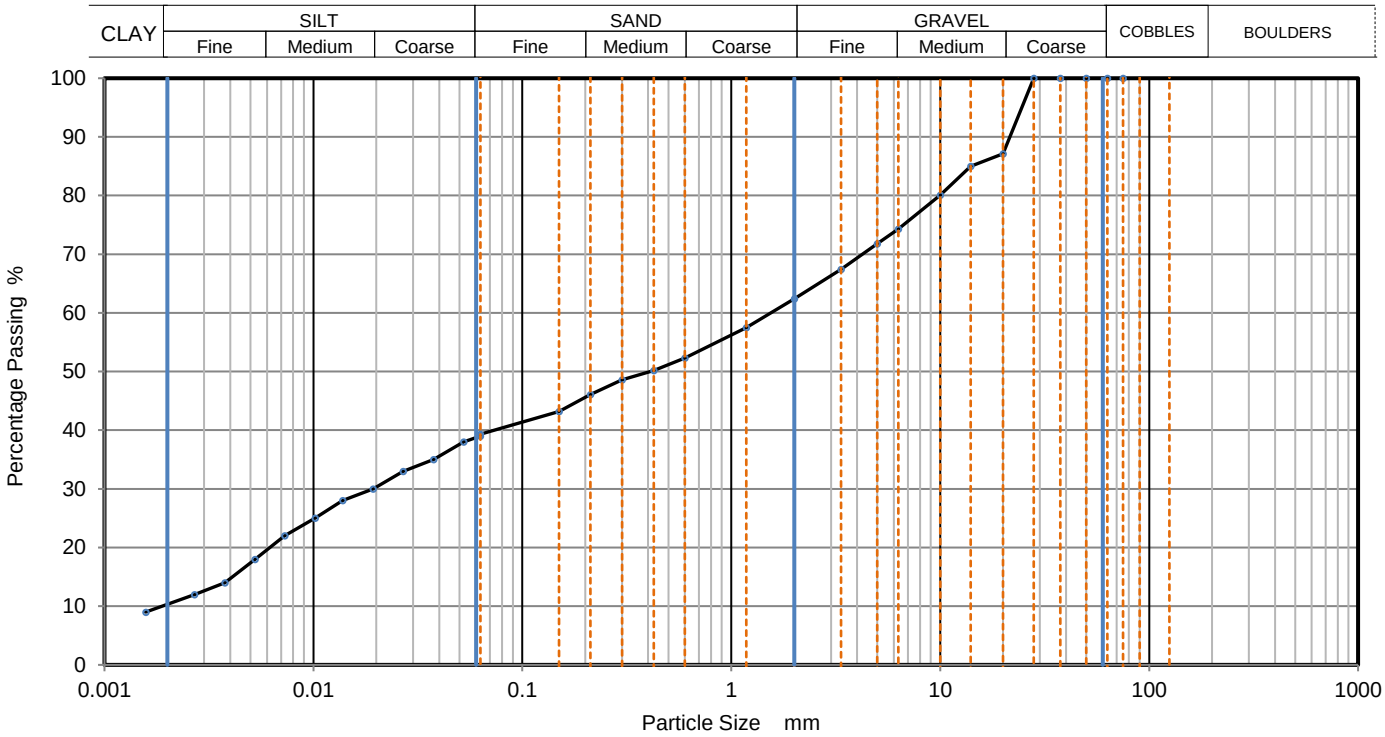
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH115
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Light brown slightly sandy gravelly SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230426314



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	39
		0.0524	38
75	100	0.0375	35
63	100	0.0269	33
50	100	0.0193	30
37.5	100	0.0138	28
28	100	0.0102	25
20	87	0.0073	22
14	85	0.0052	18
10	80	0.0038	14
6.3	74	0.0027	12
5	72	0.0016	9
3.35	67		
2	62		
1.18	58		
0.6	52	Particle density	(assumed)
0.425	50	2.65	Mg/m3
0.3	49		
0.212	46		
0.15	43		
0.063	39		

Dry Mass of sample, g: 761

Sample Proportions	% dry mass
Very coarse	0
Gravel	38
Sand	23
Silt	29
Clay	10

Grading Analysis		
D100	mm	
D60	mm	1.55
D30	mm	0.0189
D10	mm	0.00187
Uniformity Coefficient		830
Curvature Coefficient		0.12

Remarks

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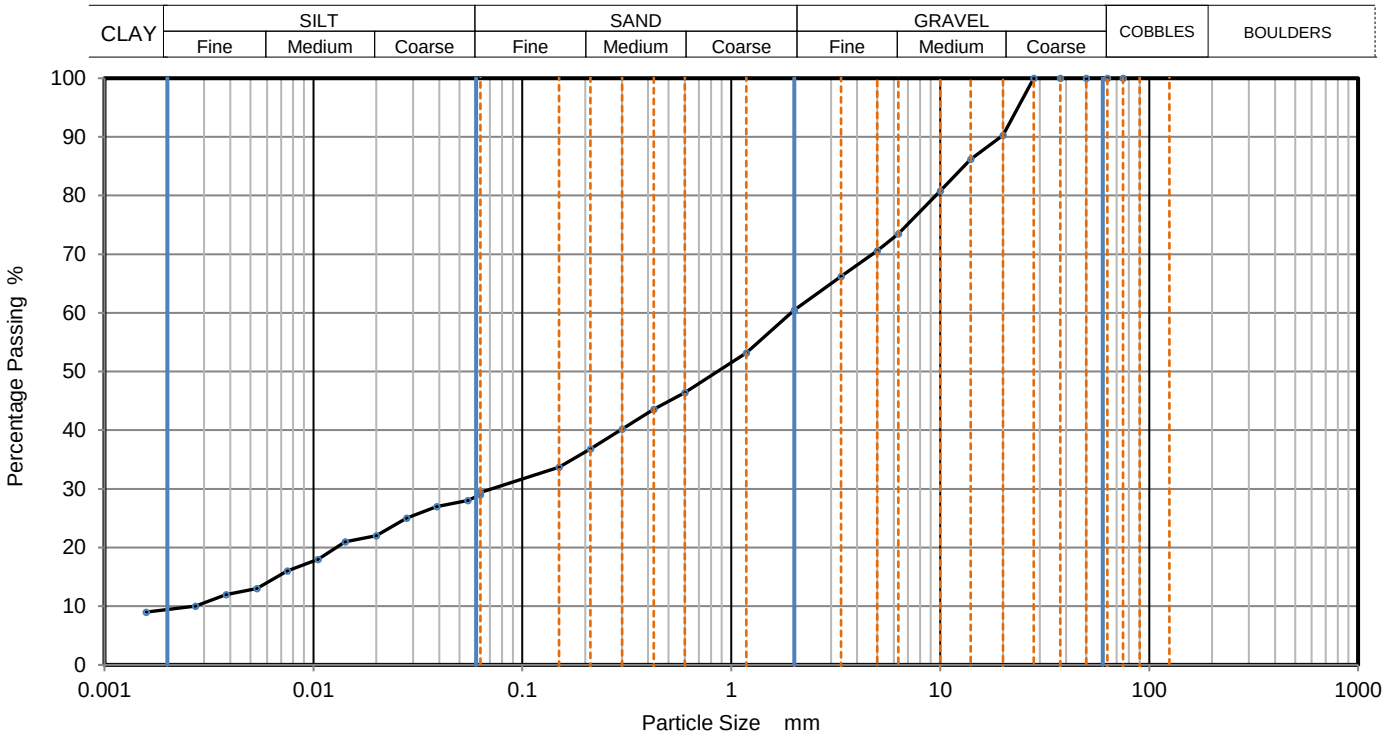
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH116
Site Name	Derrygreenagh Power	Sample No.	9
Soil Description	Brownish-grey very silty very sandy GRAVEL.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023052363



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	29
		0.0548	28
75	100	0.0390	27
63	100	0.0279	25
50	100	0.0200	22
37.5	100	0.0142	21
28	100	0.0105	18
20	90	0.0075	16
14	86	0.0054	13
10	81	0.0038	12
6.3	74	0.0027	10
5	71	0.0016	9
3.35	66		
2	61		
1.18	53		
0.6	46	Particle density	(assumed)
0.425	44	2.65	Mg/m3
0.3	40		
0.212	37		
0.15	34		
0.063	29		

Dry Mass of sample, g	783

Sample Proportions	% dry mass
Very coarse	0
Gravel	40
Sand	31
Silt	20
Clay	9

Grading Analysis		
D100	mm	
D60	mm	1.93
D30	mm	0.071
D10	mm	0.0028
Uniformity Coefficient		690
Curvature Coefficient		0.93

Remarks

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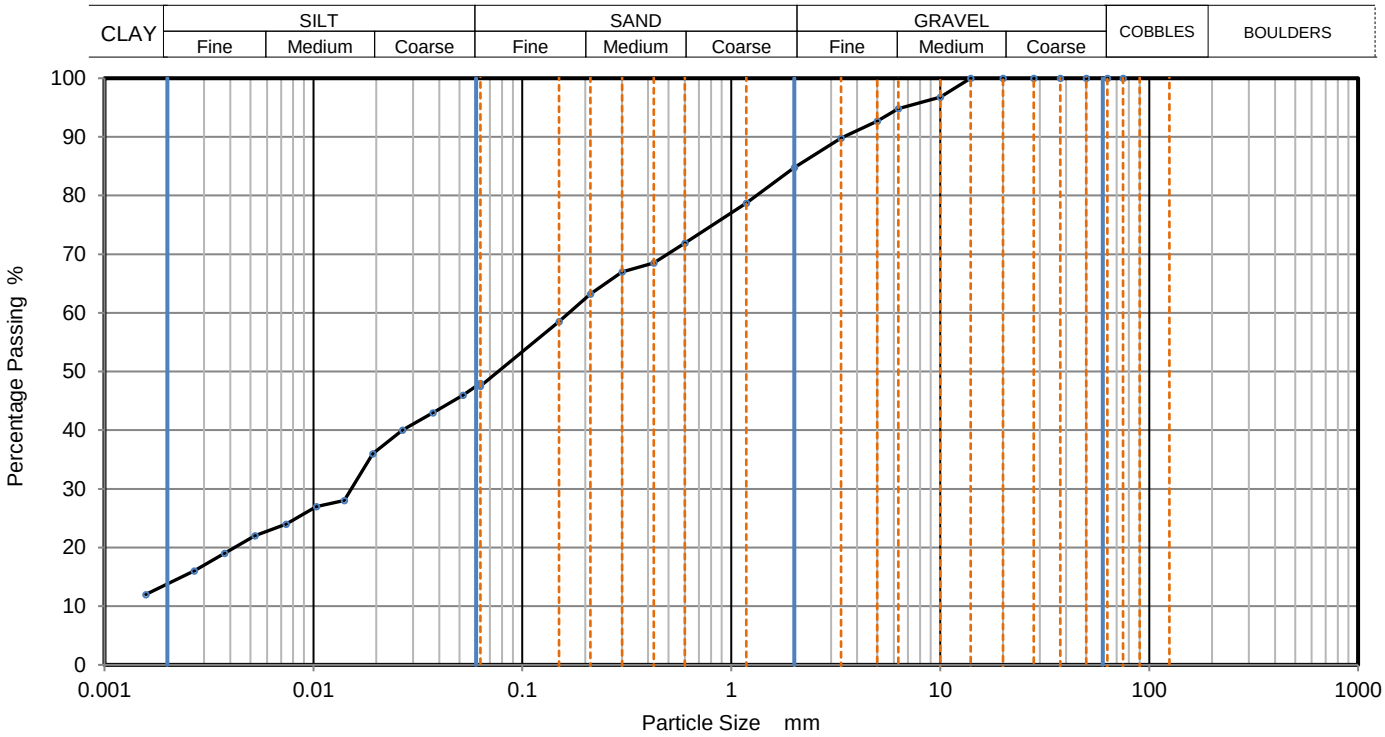
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BH117
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Brownish-grey slightly gravelly sandy SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023052381



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	48
		0.0520	46
75	100	0.0373	43
63	100	0.0267	40
50	100	0.0193	36
37.5	100	0.0140	28
28	100	0.0103	27
20	100	0.0074	24
14	100	0.0053	22
10	97	0.0038	19
6.3	95	0.0027	16
5	93	0.0016	12
3.35	90		
2	85		
1.18	79		
0.6	72	Particle density (assumed)	
0.425	69	2.65 Mg/m3	
0.3	67		
0.212	63		
0.15	59		
0.063	48		

Dry Mass of sample, g	1043

Sample Proportions	% dry mass
Very coarse	0
Gravel	15
Sand	37
Silt	34
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.167
D30	mm	0.0152
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:38	1 QC From No:R2

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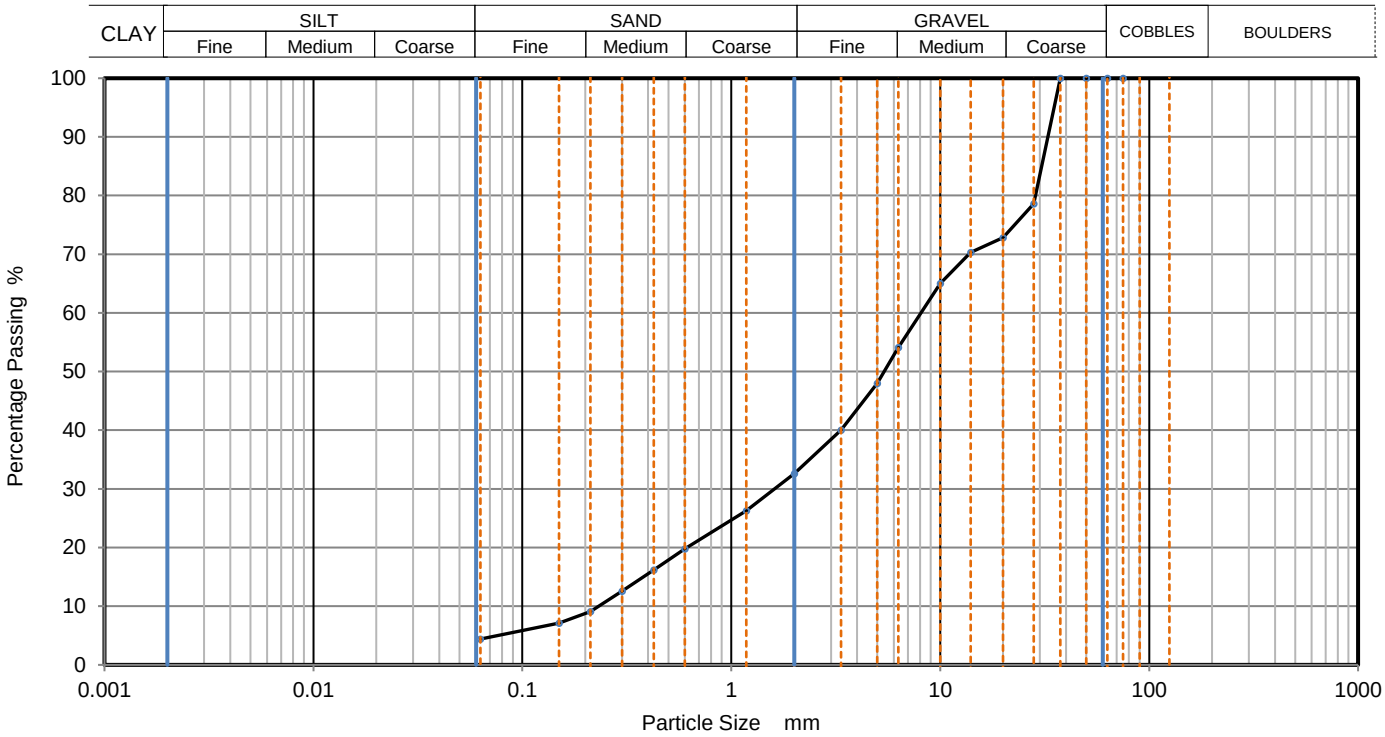
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	BHCC01
Site Name	Derrygreenagh Power			Sample No.	12
Soil Description	Dark grey slightly silty very sandy GRAVEL.			Depth, m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12023070311



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	79		
20	73		
14	70		
10	65		
6.3	54		
5	48		
3.35	40		
2	33		
1.18	26		
0.6	20		
0.425	16		
0.3	13		
0.212	9		
0.15	7		
0.063	4		

Dry Mass of sample, g	907

Sample Proportions	% dry mass
Very coarse	0
Gravel	67
Sand	28
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	8.09
D30	mm	1.61
D10	mm	0.231
Uniformity Coefficient		35
Curvature Coefficient		1.4

Remarks

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Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:38	1 QC From No:R2

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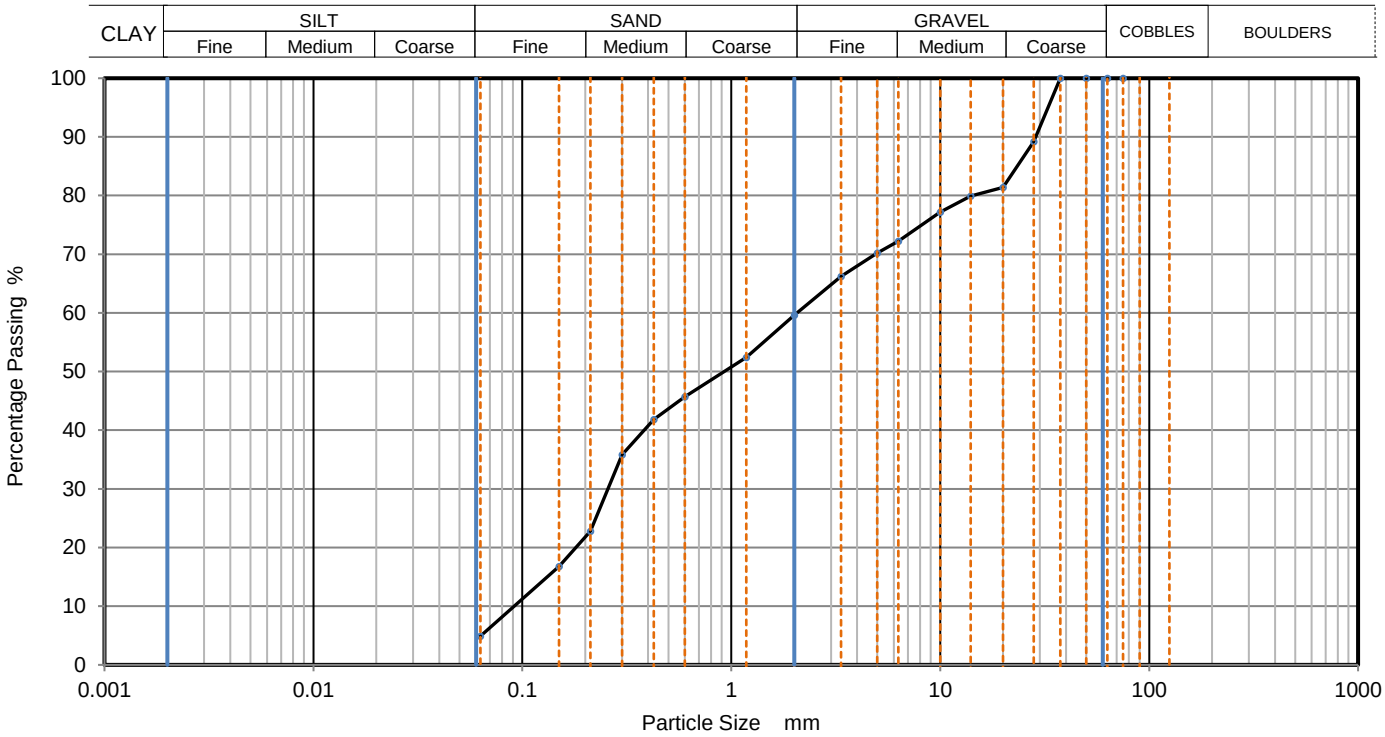
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHCC01
Site Name	Derrygreenagh Power	Sample No.	15
Soil Description	Dark grey silty very gravelly medium SAND.	Depth, m	5.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023070315



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	89		
20	81		
14	80		
10	77		
6.3	72		
5	70		
3.35	66		
2	60		
1.18	52		
0.6	46		
0.425	42		
0.3	36		
0.212	23		
0.15	17		
0.063	5		

Dry Mass of sample, g: 944

Sample Proportions	% dry mass
Very coarse	0
Gravel	40
Sand	55
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	2.07
D30	mm	0.257
D10	mm	0.0913
Uniformity Coefficient		23
Curvature Coefficient		0.35

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
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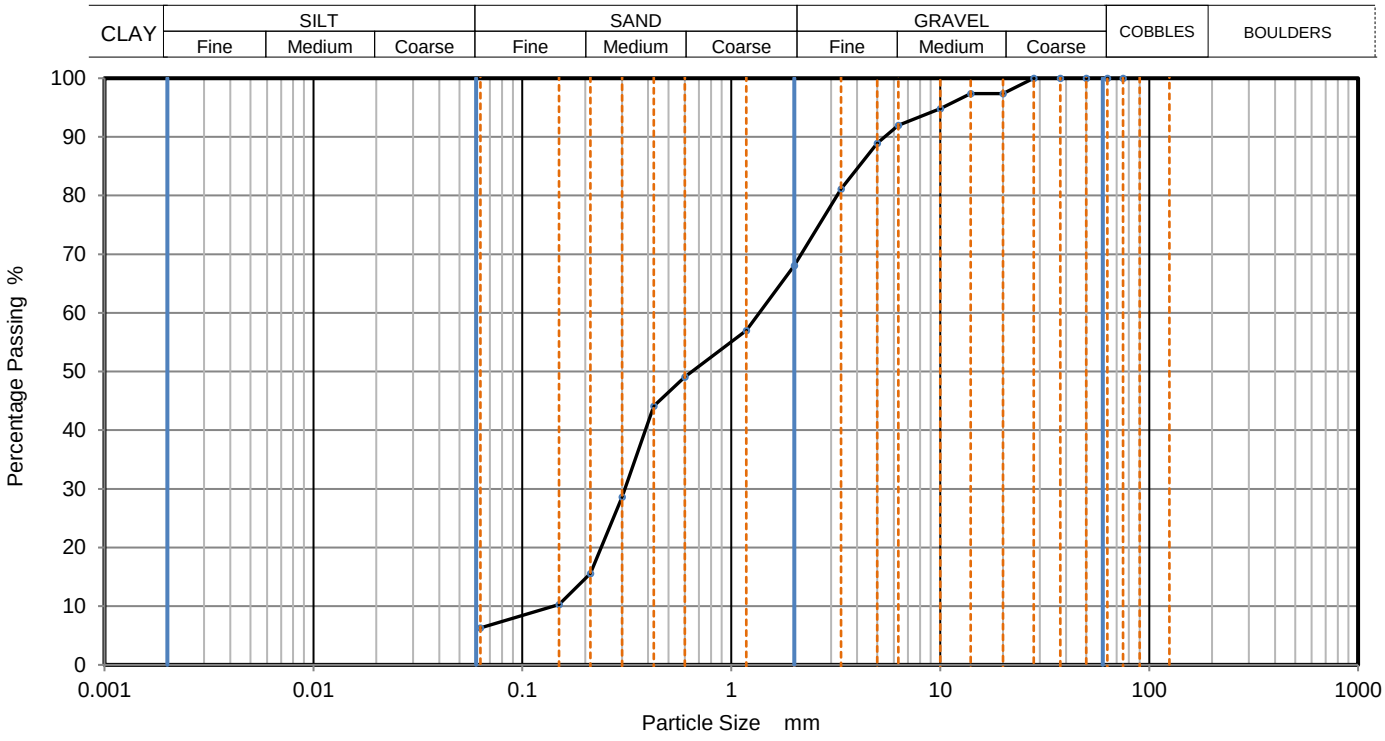
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHCC01
Site Name	Derrygreenagh Power	Sample No.	24
Soil Description	Dark grey silty very gravelly medium SAND.	Depth, m	9.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023070324



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	97		
10	95		
6.3	92		
5	89		
3.35	81		
2	68		
1.18	57		
0.6	49		
0.425	44		
0.3	29		
0.212	16		
0.15	10		
0.063	6		

Dry Mass of sample, g	928

Sample Proportions	% dry mass
Very coarse	0
Gravel	32
Sand	62
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	1.36
D30	mm	0.31
D10	mm	0.139
Uniformity Coefficient		9.7
Curvature Coefficient		0.51

Remarks

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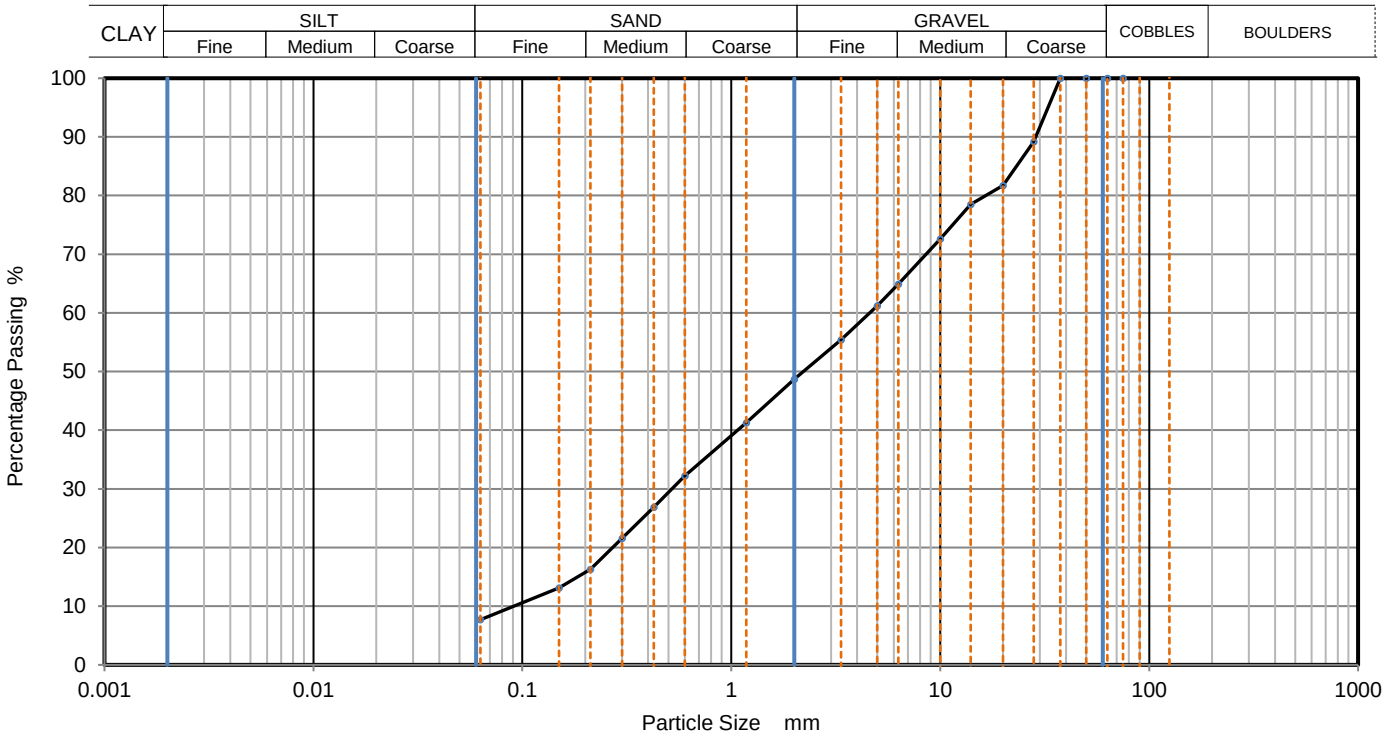
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHCC02
Site Name	Derrygreenagh Power	Sample No.	12
Soil Description	Dark bluish-grey silty very sandy GRAVEL.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023070338



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	89		
20	82		
14	79		
10	73		
6.3	65		
5	61		
3.35	55		
2	49		
1.18	41		
0.6	32		
0.425	27		
0.3	22		
0.212	16		
0.15	13		
0.063	8		

Dry Mass of sample, g: 1270

Sample Proportions	% dry mass
Very coarse	0
Gravel	51
Sand	41
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	4.6
D30	mm	0.52
D10	mm	0.0912
Uniformity Coefficient		50
Curvature Coefficient		0.64

Remarks

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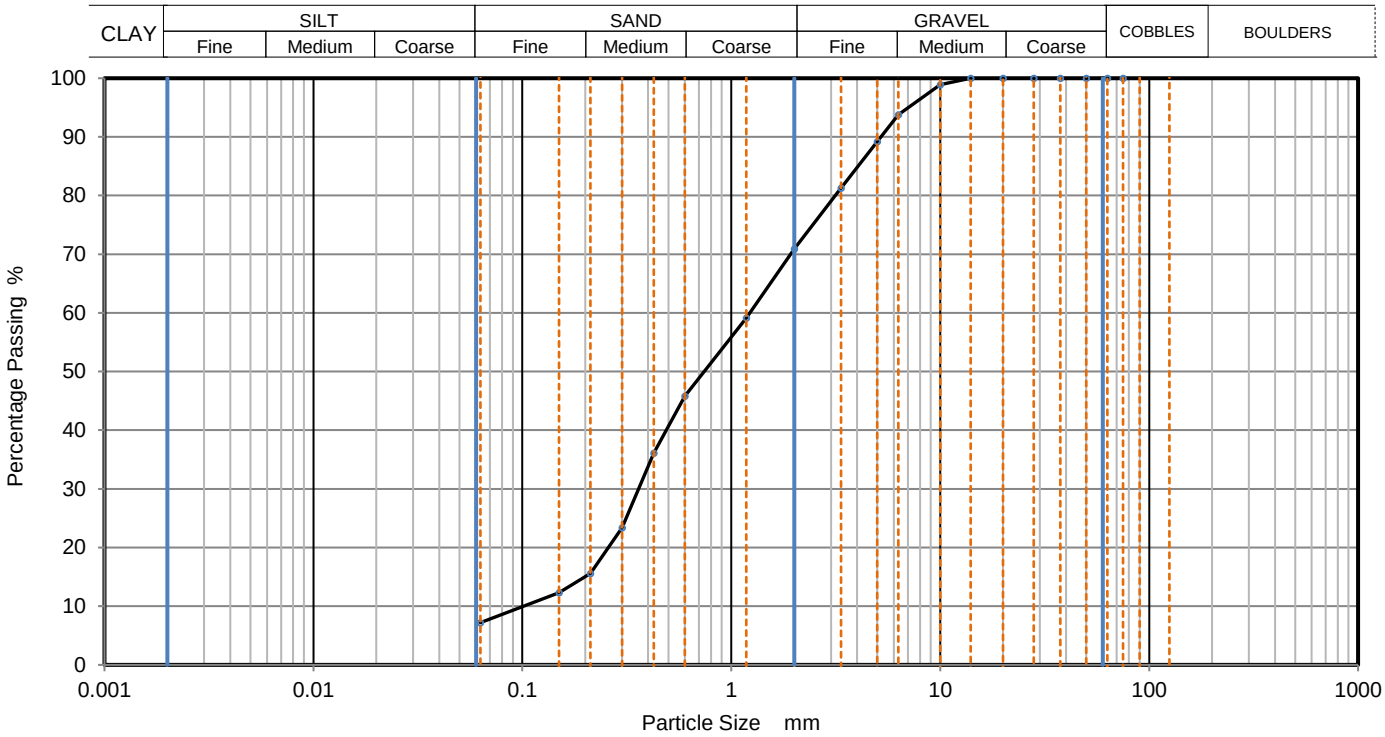
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHCC02
Site Name	Derrygreenagh Power	Sample No.	21
Soil Description	Dark grey silty very gravelly medium and coarse SAND.	Depth, m	8.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023070347



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	94		
5	89		
3.35	81		
2	71		
1.18	59		
0.6	46		
0.425	36		
0.3	23		
0.212	16		
0.15	12		
0.063	7		

Dry Mass of sample, g	823

Sample Proportions	% dry mass
Very coarse	0
Gravel	29
Sand	64
Fines <0.063mm	7

Grading Analysis		
D100	mm	
D60	mm	1.23
D30	mm	0.36
D10	mm	0.101
Uniformity Coefficient		12
Curvature Coefficient		1

Remarks

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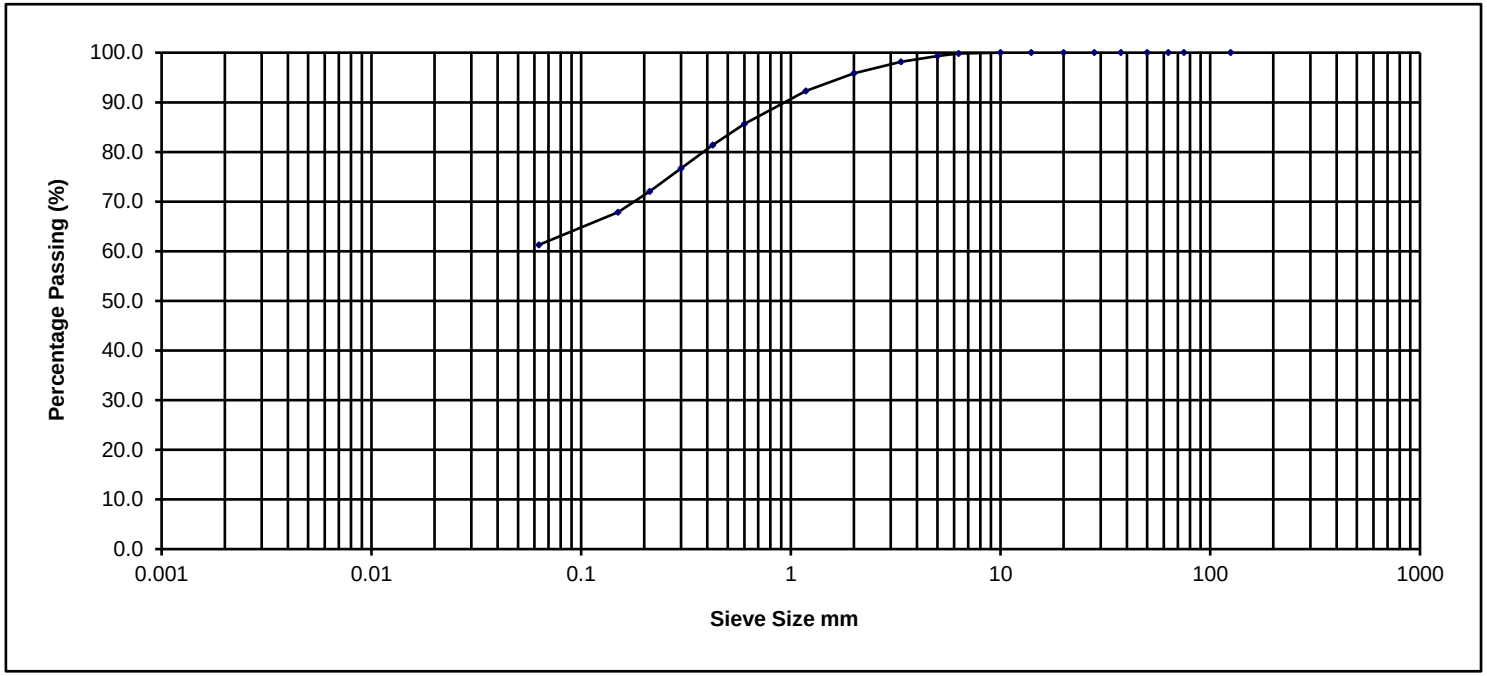
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	99.8
5.000	99.3
3.350	98.1
2.000	95.8
1.180	92.3
0.600	85.6
0.425	81.4
0.300	76.7
0.212	72.0
0.150	67.9
0.063	61.3



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		61.3			34.5			4.2		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT.	Project No.	NMTL 3631
	sands and gravel are root and fibre particles	BH/TP No.	BHPW301
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U6
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/08/2023	Depth	2.00-2.45

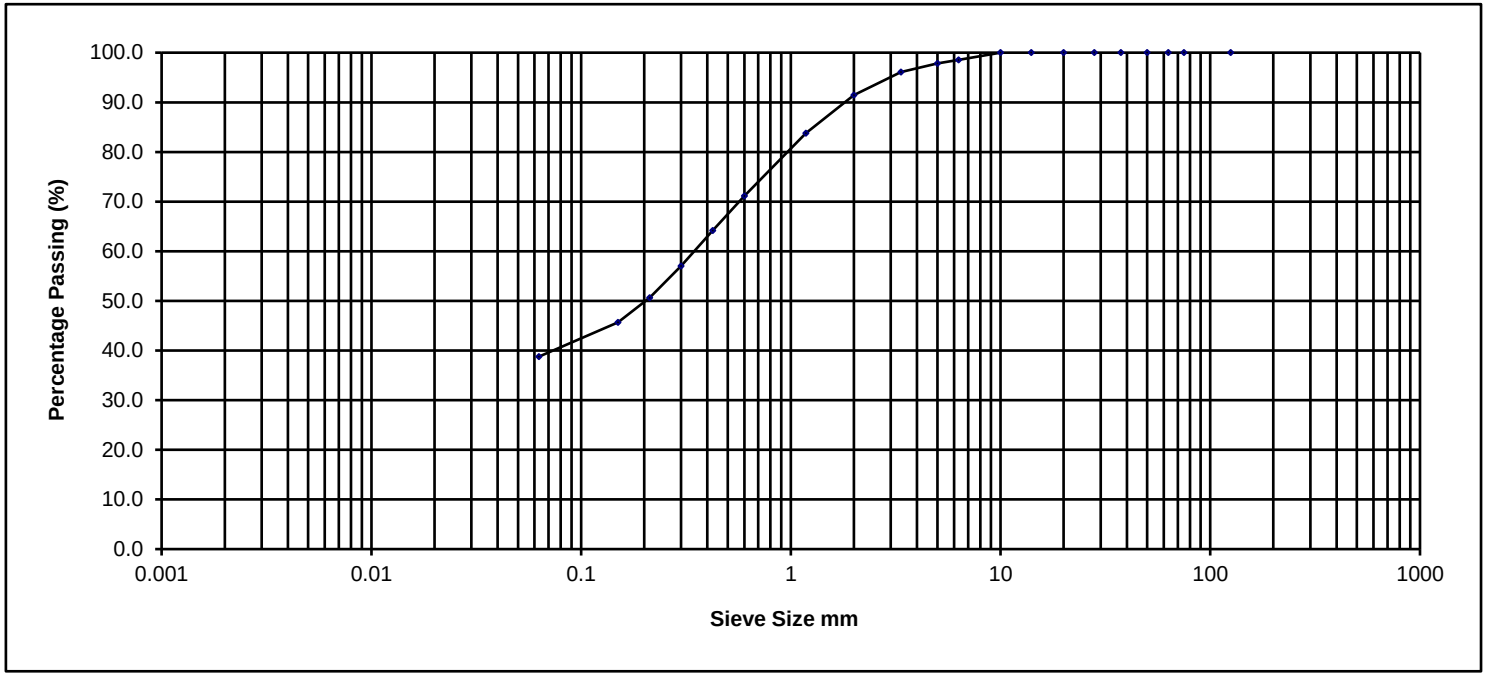
NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	98.5
5.000	97.9
3.350	96.1
2.000	91.4
1.180	83.7
0.600	71.2
0.425	64.2
0.300	57.0
0.212	50.6
0.150	45.7
0.063	38.8



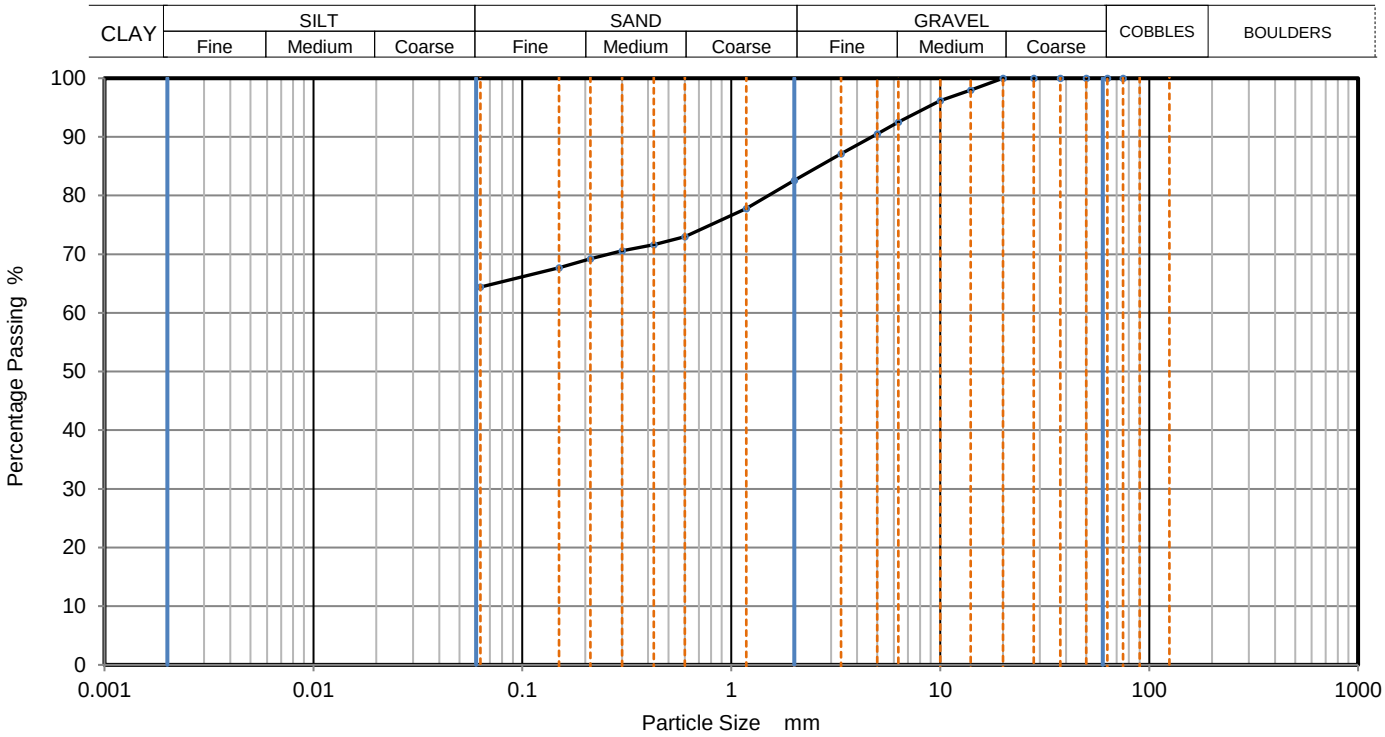
Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		38.8			52.7			8.6		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT.	Project No.	NMTL 3631
	sands and gravel are root and fibre particles	BH/TP No.	BHPW301
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U11
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/08/2023	Depth	4..00-4.45m

NM TL Ltd

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	BHPW301
Site Name	Derrygreenagh Power			Sample No.	23
Soil Description	Cream slightly gravelly slightly sandy SILT.			Depth, m	8.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120230426348



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	96		
6.3	93		
5	91		
3.35	87		
2	83		
1.18	78		
0.6	73		
0.425	72		
0.3	71		
0.212	69		
0.15	68		
0.063	64		

Dry Mass of sample, g	584

Sample Proportions	% dry mass
Very coarse	0
Gravel	17
Sand	18
Fines <0.063mm	64

Grading Analysis		
D100	mm	
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
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				QC From No:R2

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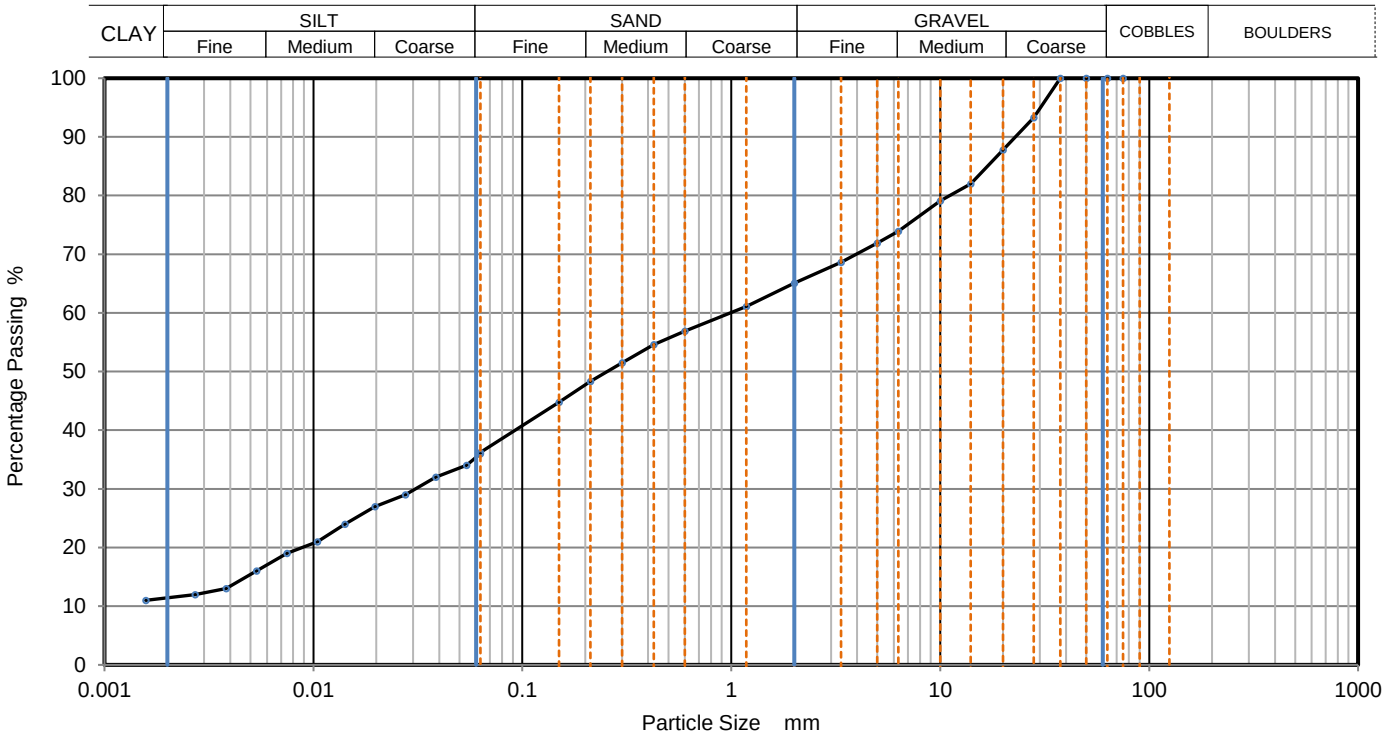
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS01
Site Name	Derrygreenagh Power	Sample No.	11
Soil Description	Grey and black slightly sandy gravelly SILT and PEAT.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060710



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	36
		0.0541	34
75	100	0.0385	32
63	100	0.0276	29
50	100	0.0197	27
37.5	100	0.0141	24
28	93	0.0104	21
20	88	0.0075	19
14	82	0.0053	16
10	79	0.0038	13
6.3	74	0.0027	12
5	72	0.0016	11
3.35	69		
2	65		
1.18	61		
0.6	57	Particle density	(assumed)
0.425	55	2.65	Mg/m3
0.3	52		
0.212	48		
0.15	45		
0.063	36		

Dry Mass of sample, g	707

Sample Proportions	% dry mass
Very coarse	0
Gravel	35
Sand	29
Silt	25
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.985
D30	mm	0.0294
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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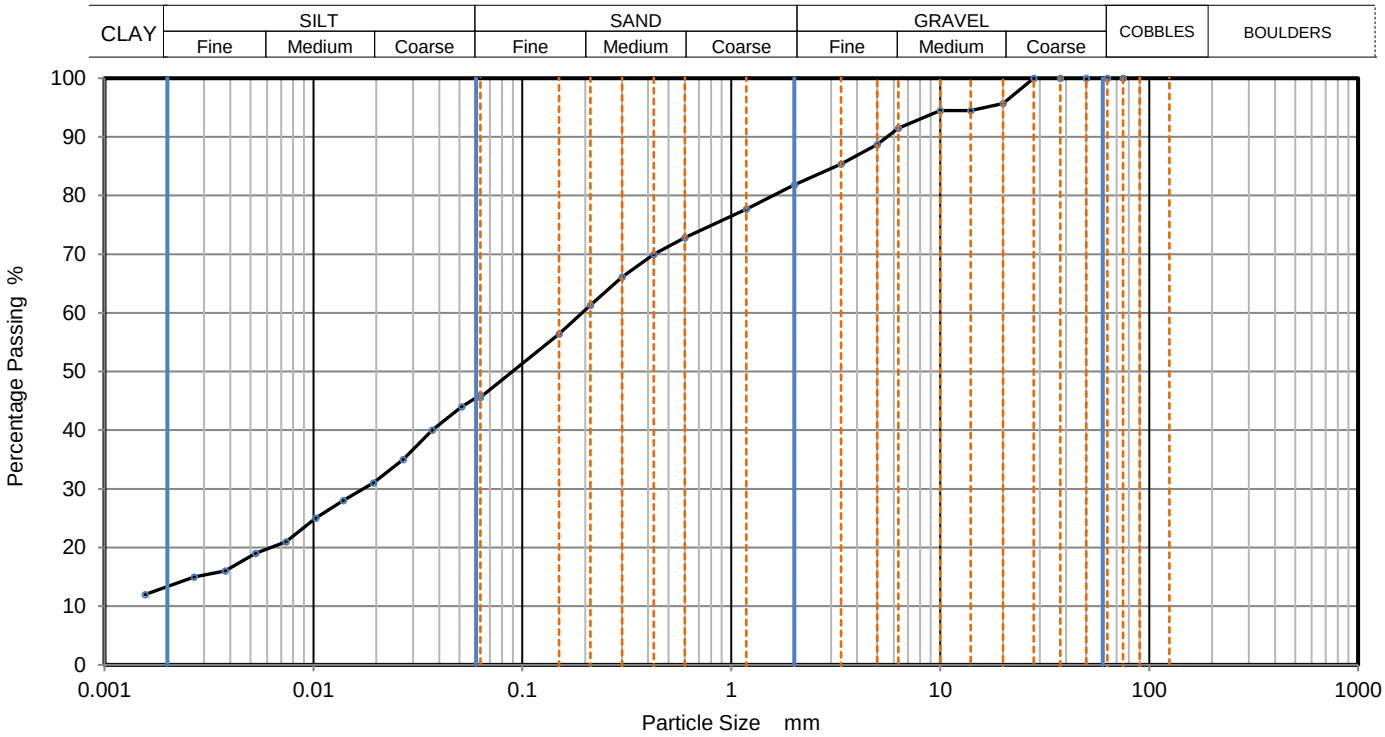
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS02
Site Name	Derrygreenagh Power	Sample No.	9
Soil Description	Light grey slightly gravelly sandy SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202305188



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	46
		0.0512	44
75	100	0.0370	40
63	100	0.0269	35
50	100	0.0194	31
37.5	100	0.0139	28
28	100	0.0103	25
20	96	0.0074	21
14	95	0.0053	19
10	95	0.0038	16
6.3	92	0.0027	15
5	89	0.0016	12
3.35	85		
2	82		
1.18	78		
0.6	73	Particle density (assumed)	
0.425	70	2.65 Mg/m3	
0.3	66		
0.212	61		
0.15	56		
0.063	46		

Dry Mass of sample, g	1165

Sample Proportions	% dry mass
Very coarse	0
Gravel	18
Sand	36
Silt	32
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.193
D30	mm	0.0174
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
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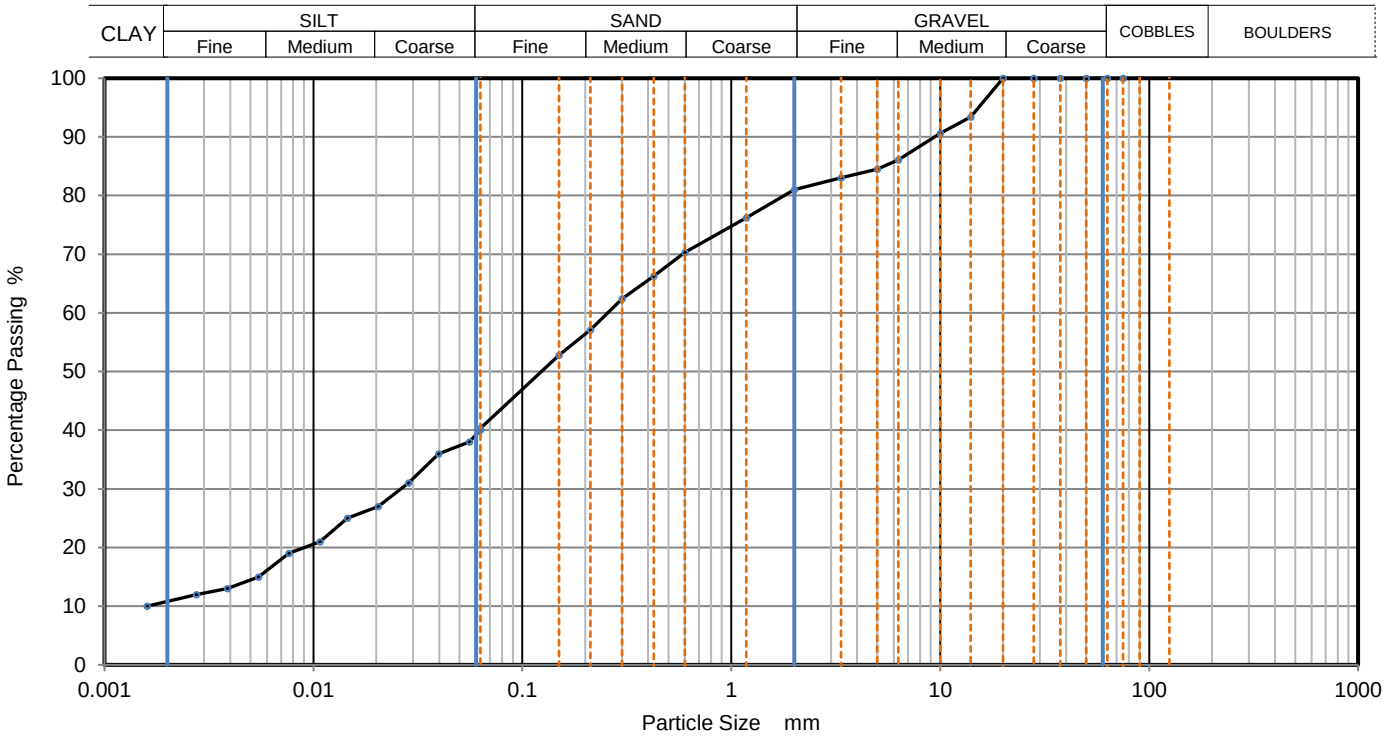
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS03
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Grey and black slightly gravelly sandy PEAT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230523123



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	40
		0.0558	38
75	100	0.0397	36
63	100	0.0286	31
50	100	0.0205	27
37.5	100	0.0145	25
28	100	0.0107	21
20	100	0.0076	19
14	93	0.0055	15
10	91	0.0039	13
6.3	86	0.0028	12
5	85	0.0016	10
3.35	83		
2	81		
1.18	76		
0.6	70	Particle density	(assumed)
0.425	66	2.65	Mg/m3
0.3	62		
0.212	57		
0.15	53		
0.063	40		

Dry Mass of sample, g	252

Sample Proportions	% dry mass
Very coarse	0
Gravel	19
Sand	41
Silt	30
Clay	10

Grading Analysis		
D100	mm	
D60	mm	0.256
D30	mm	0.0269
D10	mm	0.00179
Uniformity Coefficient		140
Curvature Coefficient		1.6

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:38	1 QC From No:R2

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Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	100.0
5.000	96.6
3.350	96.2
2.000	92.4
1.180	89.5
0.600	86.6
0.425	84.7
0.300	82.5
0.212	79.7
0.150	77.3
0.063	66.9

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		66.9			25.5			7.6		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT.	Project No.	NMTL 3631
	sands and gravel are root and fibre particles	BH/TP No.	BHSS05
Project	Derrygreenagh Power IDL PROJECT ID:2023OY104	Sample No.	U3
Operator Js	Checked Nc / Approved Bc / Date sample tested 08/08/2023	Depth	1.00-1.45m

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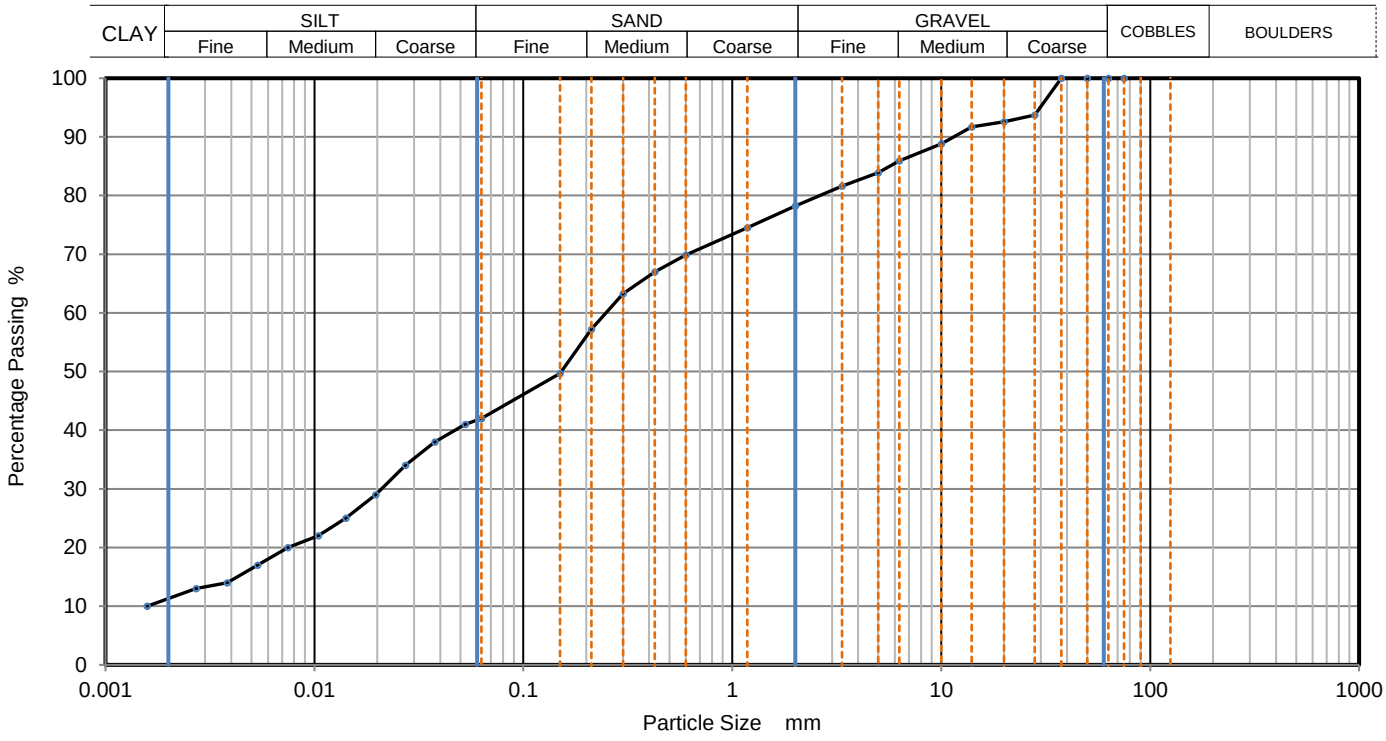
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS05
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Dark grey slightly gravelly sandy SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230505104



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	42
		0.0527	41
75	100	0.0378	38
63	100	0.0272	34
50	100	0.0196	29
37.5	100	0.0141	25
28	94	0.0104	22
20	93	0.0075	20
14	92	0.0053	17
10	89	0.0038	14
6.3	86	0.0027	13
5	84	0.0016	10
3.35	82		
2	78		
1.18	75		
0.6	70	Particle density	(assumed)
0.425	67	2.65	Mg/m3
0.3	63		
0.212	57		
0.15	50		
0.063	42		

Dry Mass of sample, g	1039

Sample Proportions	% dry mass
Very coarse	0
Gravel	22
Sand	36
Silt	31
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.248
D30	mm	0.0206
D10	mm	0.00165
Uniformity Coefficient		150
Curvature Coefficient		1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
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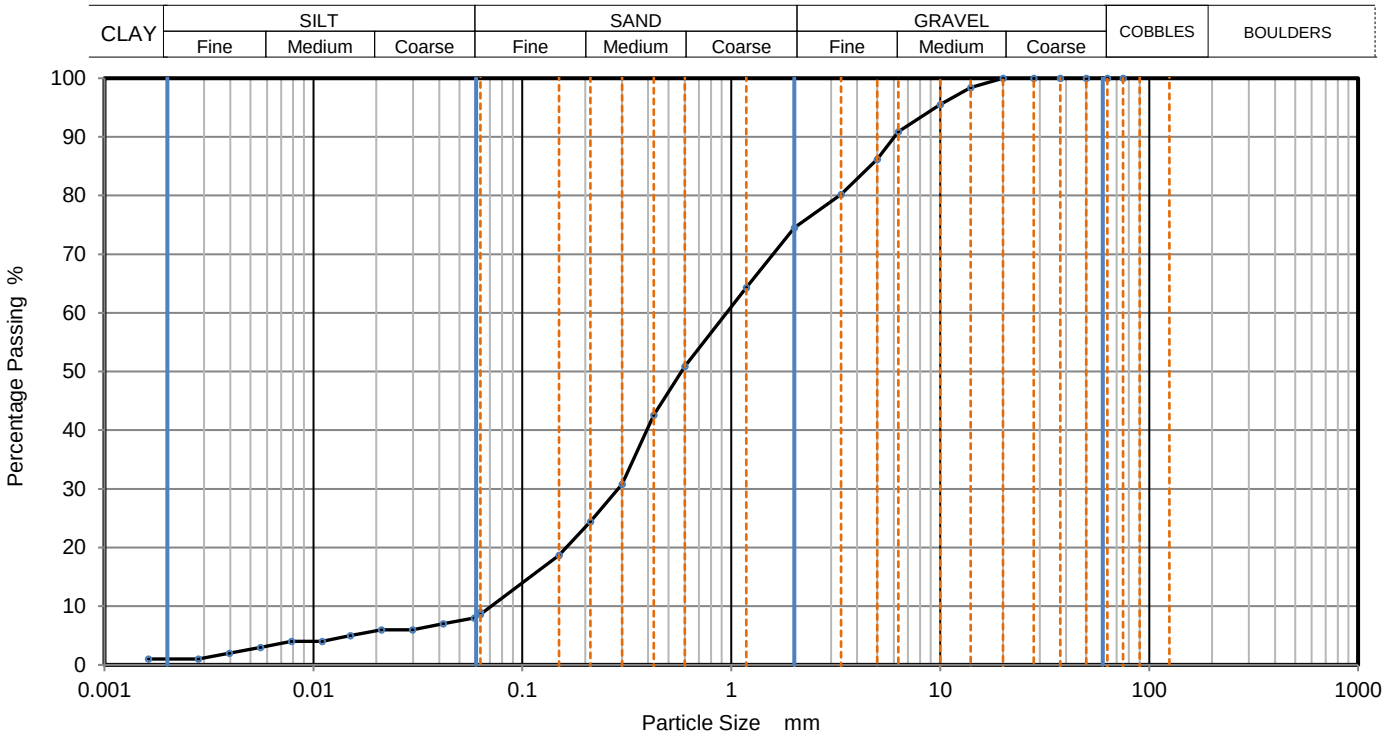
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS06
Site Name	Derrygreenagh Power	Sample No.	9
Soil Description	Brownish-black slightly gravelly sandy peaty ORGANIC SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023070358



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	9
		0.0588	8
75	100	0.0418	7
63	100	0.0297	6
50	100	0.0211	6
37.5	100	0.0150	5
28	100	0.0110	4
20	100	0.0078	4
14	98	0.0056	3
10	96	0.0040	2
6.3	91	0.0028	1
5	86	0.0016	1
3.35	80		
2	75		
1.18	64		
0.6	51	Particle density	(assumed)
0.425	43	2.65	Mg/m3
0.3	31		
0.212	24		
0.15	19		
0.063	9		

Dry Mass of sample, g	346

Sample Proportions	% dry mass
Very coarse	0
Gravel	26
Sand	66
Silt	7
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.95
D30	mm	0.288
D10	mm	0.0711
Uniformity Coefficient		13
Curvature Coefficient		1.2

Remarks

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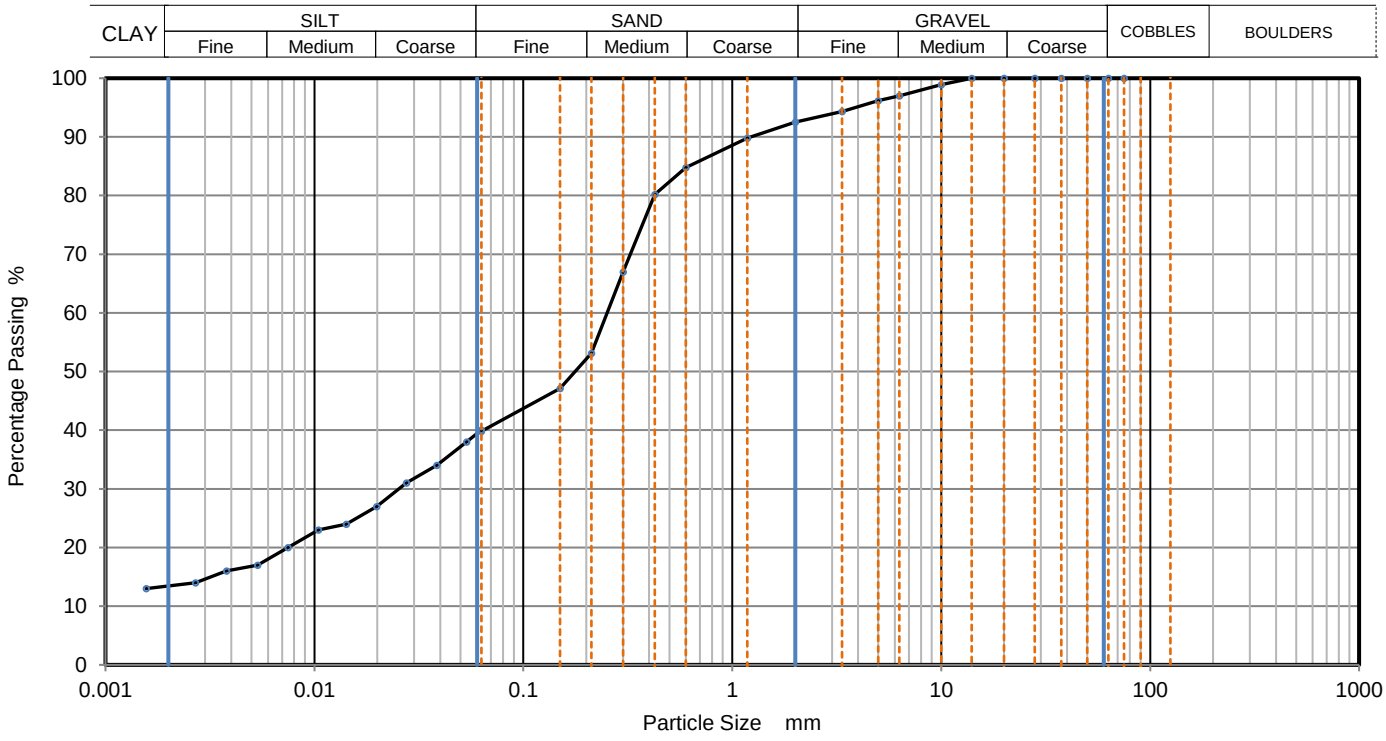
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown slightly gravelly sandy SILT. Sand is medium.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081434



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	40
		0.0534	38
75	100	0.0385	34
63	100	0.0276	31
50	100	0.0199	27
37.5	100	0.0142	24
28	100	0.0104	23
20	100	0.0075	20
14	100	0.0053	17
10	99	0.0038	16
6.3	97	0.0027	14
5	96	0.0016	13
3.35	94		
2	93		
1.18	90		
0.6	85	Particle density (assumed)	
0.425	80	2.65 Mg/m3	
0.3	67		
0.212	53		
0.15	47		
0.063	40		

Dry Mass of sample, g	504

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	53
Silt	27
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.252
D30	mm	0.025
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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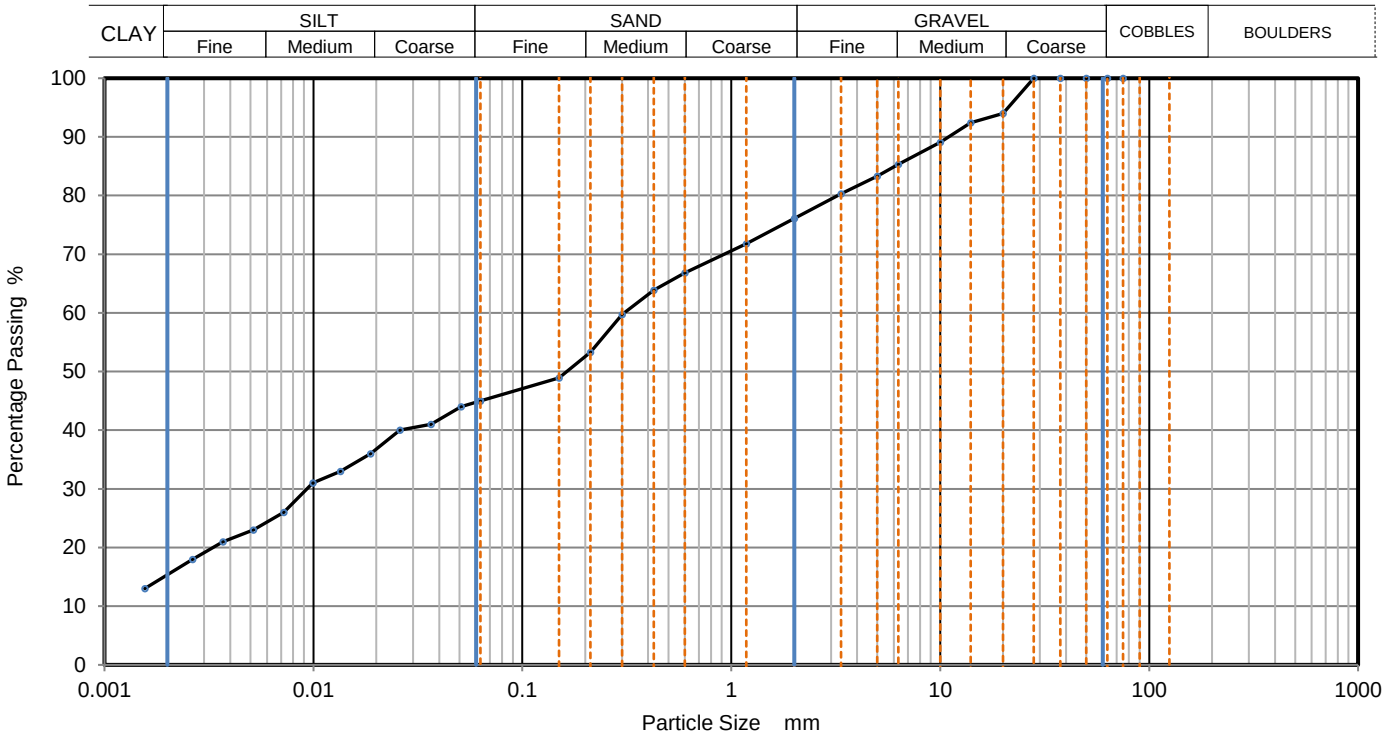
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Light brown slightly gravelly slightly sandy SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081441



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0509	44
75	100	0.0365	41
63	100	0.0260	40
50	100	0.0188	36
37.5	100	0.0134	33
28	100	0.0099	31
20	94	0.0072	26
14	92	0.0052	23
10	89	0.0037	21
6.3	85	0.0026	18
5	83	0.0016	13
3.35	80		
2	76		
1.18	72		
0.6	67	Particle density	(assumed)
0.425	64	2.65	Mg/m3
0.3	60		
0.212	53		
0.15	49		
0.063	45		

Dry Mass of sample, g	1061

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	31
Silt	30
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.308
D30	mm	0.00943
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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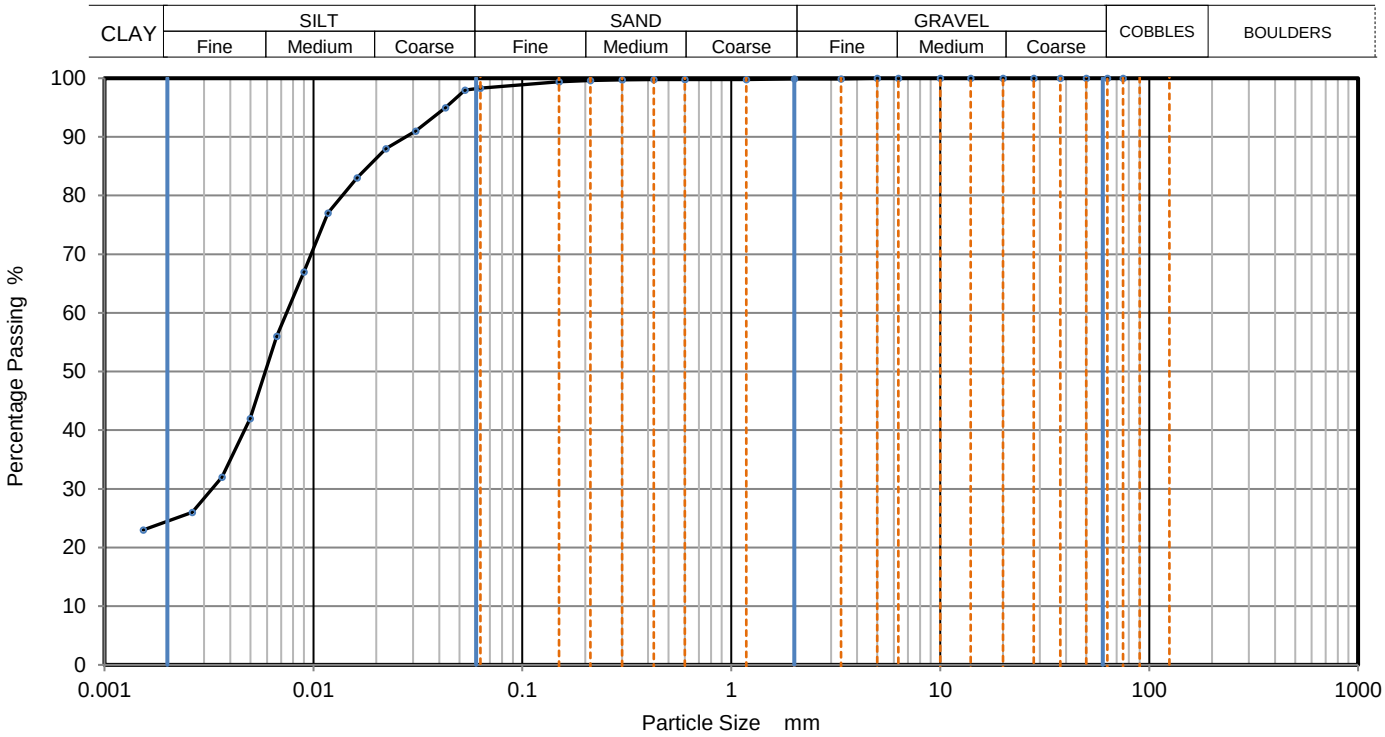
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power	Sample No.	16
Soil Description	Greyish-brown slighlty sandy SILT.	Depth, m	5.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081450



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0531	98
		0.0428	95
75	100	0.0309	91
63	100	0.0223	88
50	100	0.0162	83
37.5	100	0.0118	77
28	100	0.0090	67
20	100	0.0067	56
14	100	0.0050	42
10	100	0.0036	32
6.3	100	0.0026	26
5	100	0.0015	23
3.35	100		
2	100		
1.18	100		
0.6	100	Particle density	(assumed)
0.425	100	2.65	Mg/m3
0.3	100		
0.212	100		
0.15	99		
0.063	98		

Dry Mass of sample, g	760

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	2
Silt	74
Clay	25

Grading Analysis		
D100	mm	
D60	mm	0.00744
D30	mm	0.0033
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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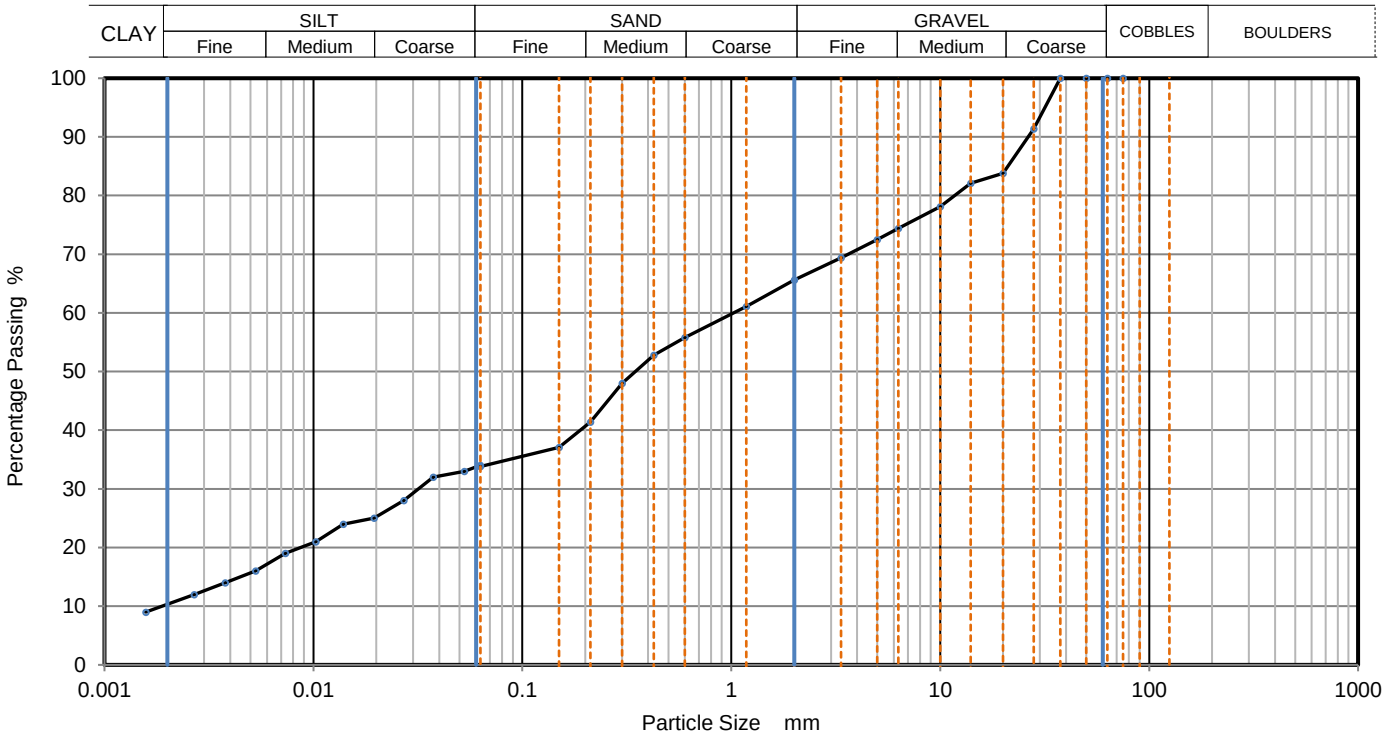
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS102
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Dark brown very silty SAND and GRAVEL.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081455



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	34
		0.0527	33
75	100	0.0375	32
63	100	0.0271	28
50	100	0.0195	25
37.5	100	0.0139	24
28	91	0.0103	21
20	84	0.0073	19
14	82	0.0053	16
10	78	0.0038	14
6.3	74	0.0027	12
5	73	0.0016	9
3.35	69		
2	66		
1.18	61		
0.6	56	Particle density	(assumed)
0.425	53	2.65	Mg/m3
0.3	48		
0.212	41		
0.15	37		
0.063	34		

Dry Mass of sample, g	780

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	32
Silt	23
Clay	11

Grading Analysis		
D100	mm	
D60	mm	1.03
D30	mm	0.0323
D10	mm	0.00184
Uniformity Coefficient		560
Curvature Coefficient		0.55

Remarks

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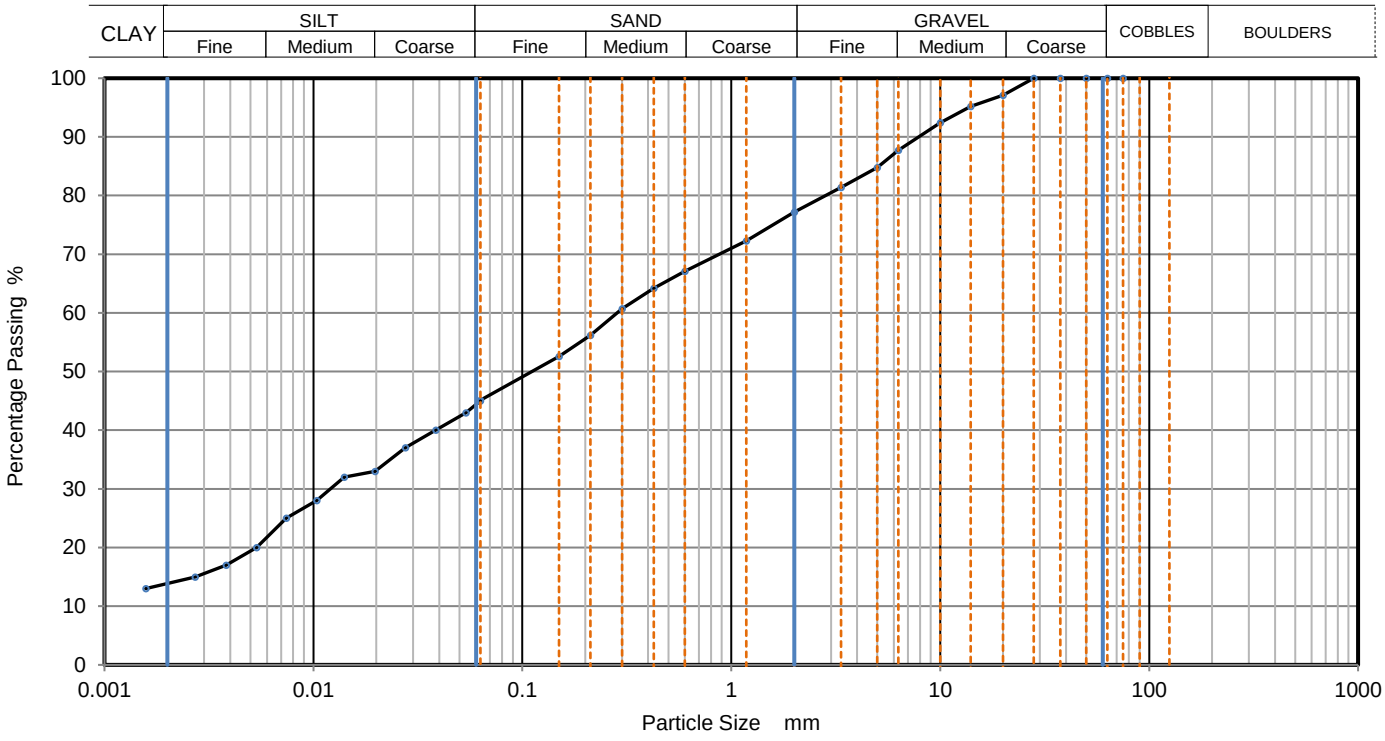
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS102
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Light grey slightly gravelly slightly sandy SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081461



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0538	43
75	100	0.0385	40
63	100	0.0276	37
50	100	0.0197	33
37.5	100	0.0140	32
28	100	0.0104	28
20	97	0.0074	25
14	95	0.0053	20
10	92	0.0038	17
6.3	88	0.0027	15
5	85	0.0016	13
3.35	81		
2	77		
1.18	72		
0.6	67	Particle density (assumed)	
0.425	64	2.65 Mg/m3	
0.3	61		
0.212	56		
0.15	53		
0.063	45		

Dry Mass of sample, g	854

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	32
Silt	31
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.283
D30	mm	0.012
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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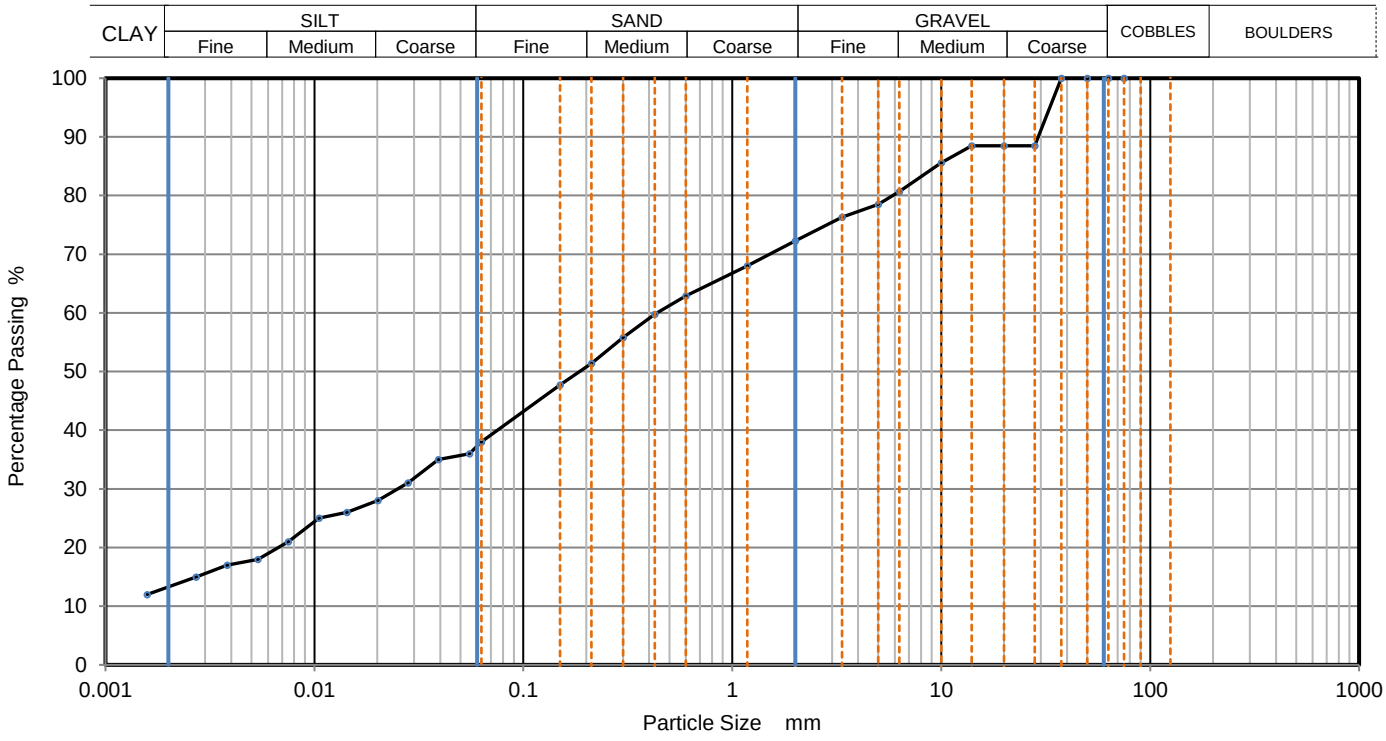
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greensih-grey slightly gravelly sandy SILT.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081465



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	38
		0.0552	36
75	100	0.0392	35
63	100	0.0281	31
50	100	0.0201	28
37.5	100	0.0143	26
28	89	0.0105	25
20	89	0.0075	21
14	89	0.0054	18
10	86	0.0038	17
6.3	81	0.0027	15
5	79	0.0016	12
3.35	76		
2	72		
1.18	68		
0.6	63	Particle density (assumed)	
0.425	60	2.65 Mg/m3	
0.3	56		
0.212	51		
0.15	48		
0.063	38		

Dry Mass of sample, g	997

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	34
Silt	25
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.433
D30	mm	0.0244
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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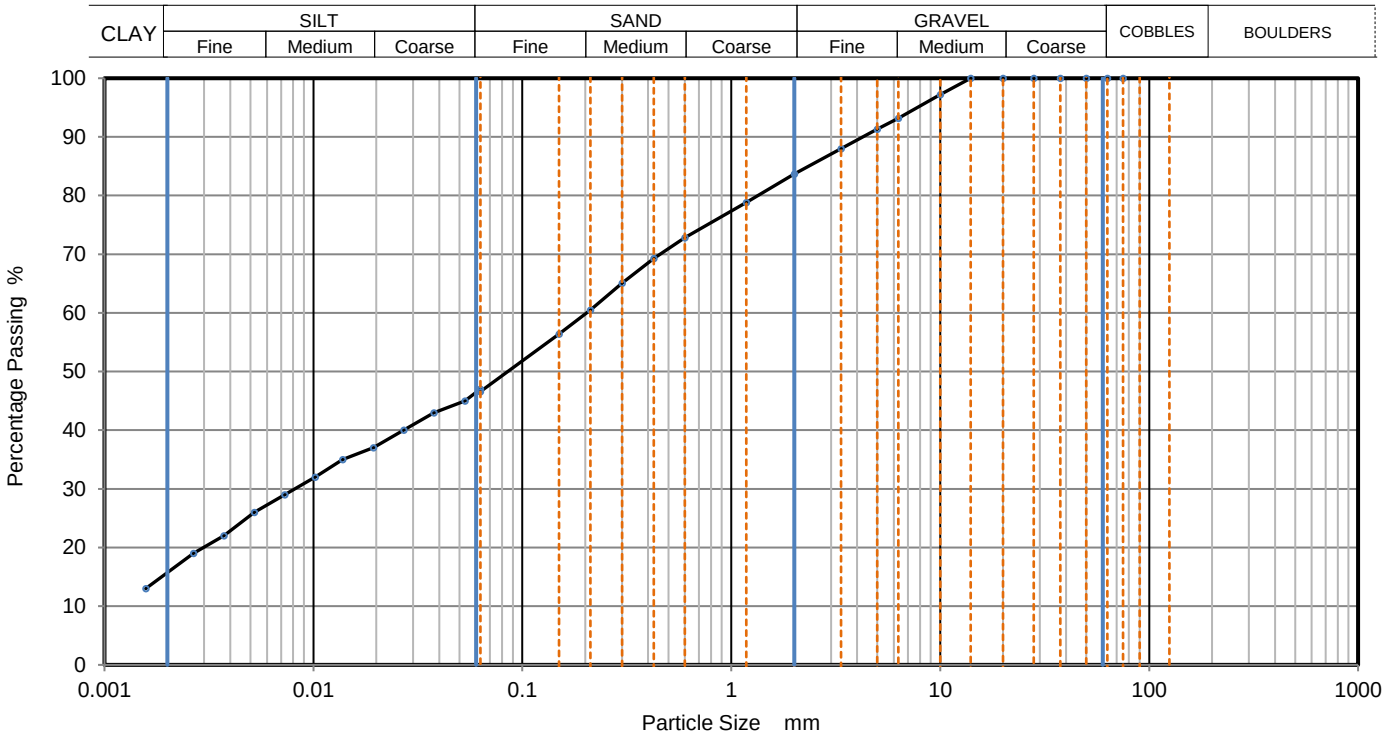
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greensih-grey slightly gravelly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081468



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	47
		0.0531	45
75	100	0.0378	43
63	100	0.0271	40
50	100	0.0194	37
37.5	100	0.0138	35
28	100	0.0102	32
20	100	0.0073	29
14	100	0.0052	26
10	97	0.0037	22
6.3	93	0.0027	19
5	91	0.0016	13
3.35	88		
2	84		
1.18	79		
0.6	73	Particle density	(assumed)
0.425	69	2.65	Mg/m3
0.3	65		
0.212	61		
0.15	56		
0.063	47		

Dry Mass of sample, g	840

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	37
Silt	31
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.203
D30	mm	0.00816
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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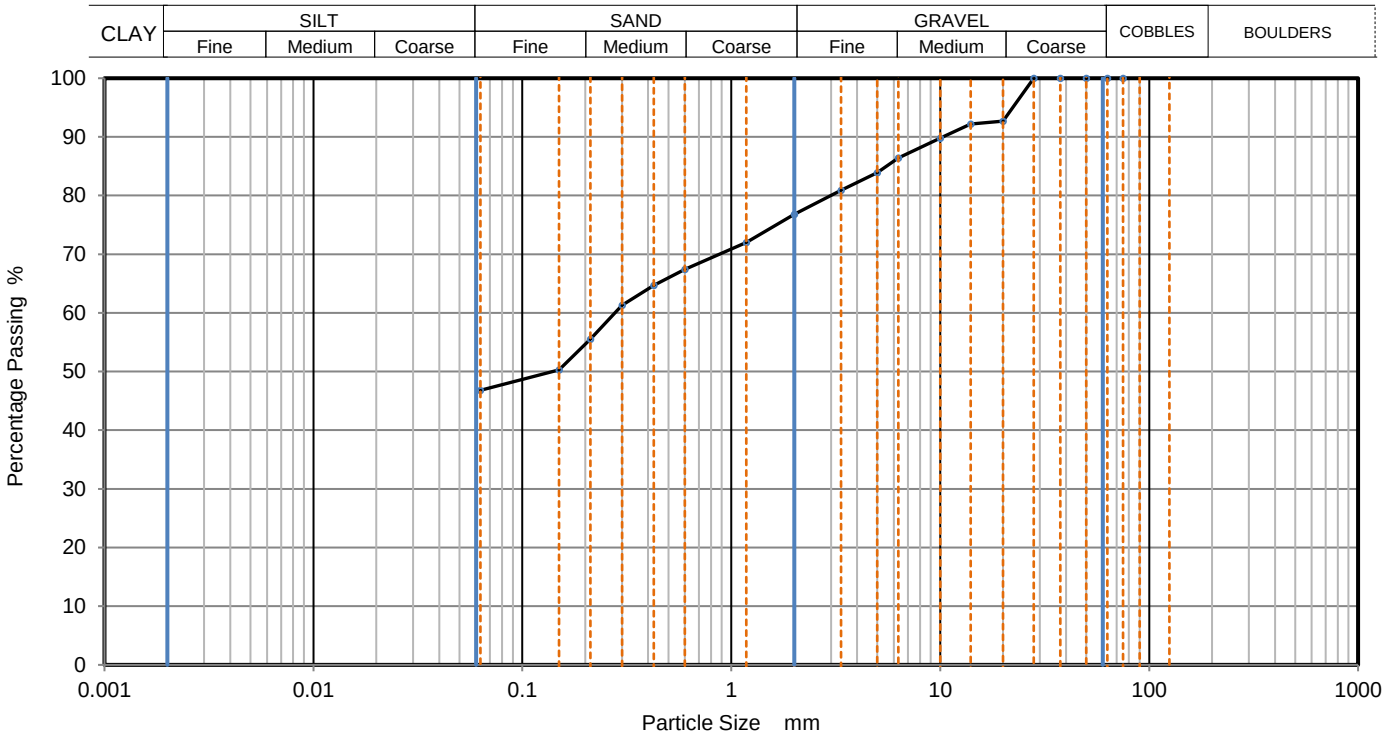
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power	Sample No.	13
Soil Description	Light greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	4.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023081478



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	92		
10	90		
6.3	86		
5	84		
3.35	81		
2	77		
1.18	72		
0.6	67		
0.425	65		
0.3	61		
0.212	56		
0.15	50		
0.063	47		

Dry Mass of sample, g: 943

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	30
Fines <0.063mm	47

Grading Analysis		
D100	mm	
D60	mm	0.277
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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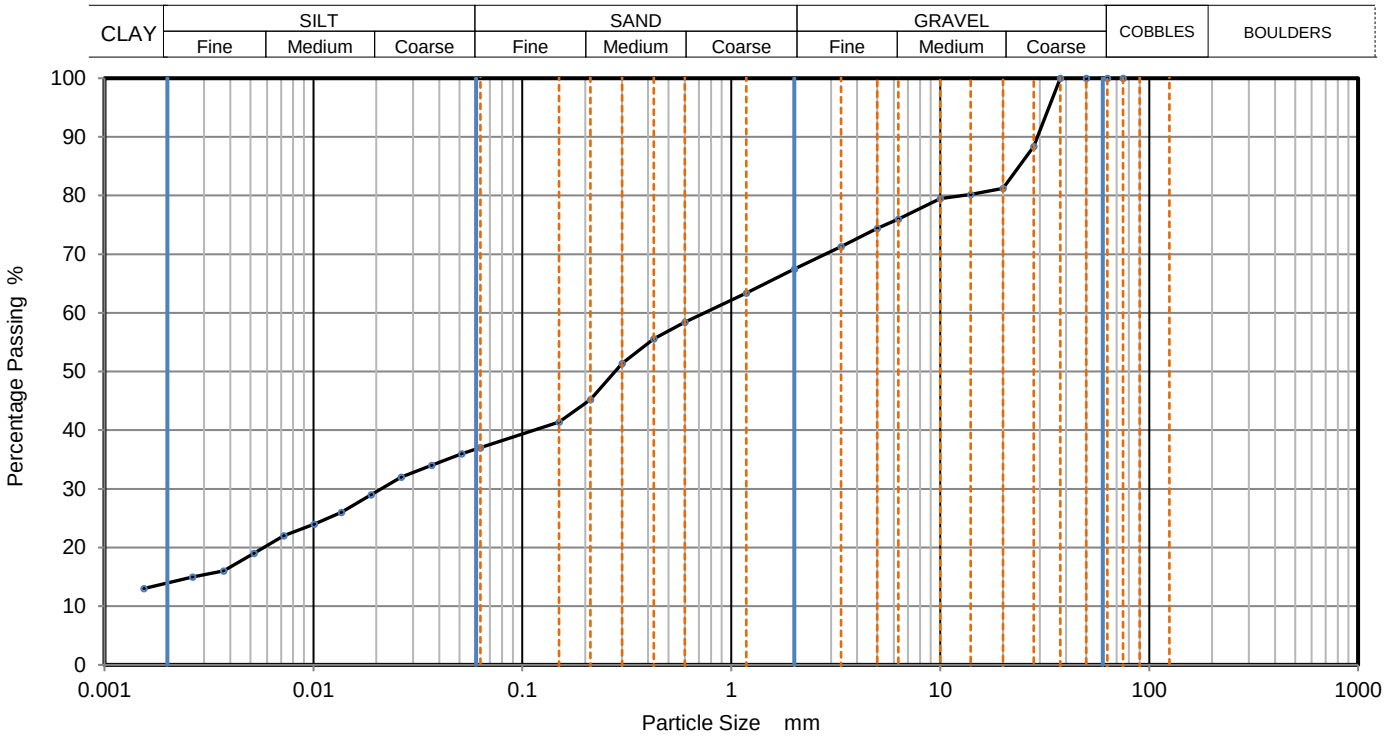
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS104
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greenish-brown slightly sandy slightly gravelly SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081483



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	37
		0.0512	36
75	100	0.0368	34
63	100	0.0264	32
50	100	0.0189	29
37.5	100	0.0136	26
28	88	0.0101	24
20	81	0.0072	22
14	80	0.0052	19
10	80	0.0037	16
6.3	76	0.0026	15
5	74	0.0015	13
3.35	71		
2	68		
1.18	63		
0.6	58	Particle density (assumed)	
0.425	56	2.65 Mg/m3	
0.3	51		
0.212	45		
0.15	41		
0.063	37		

Dry Mass of sample, g	1001

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	31
Silt	23
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.745
D30	mm	0.0208
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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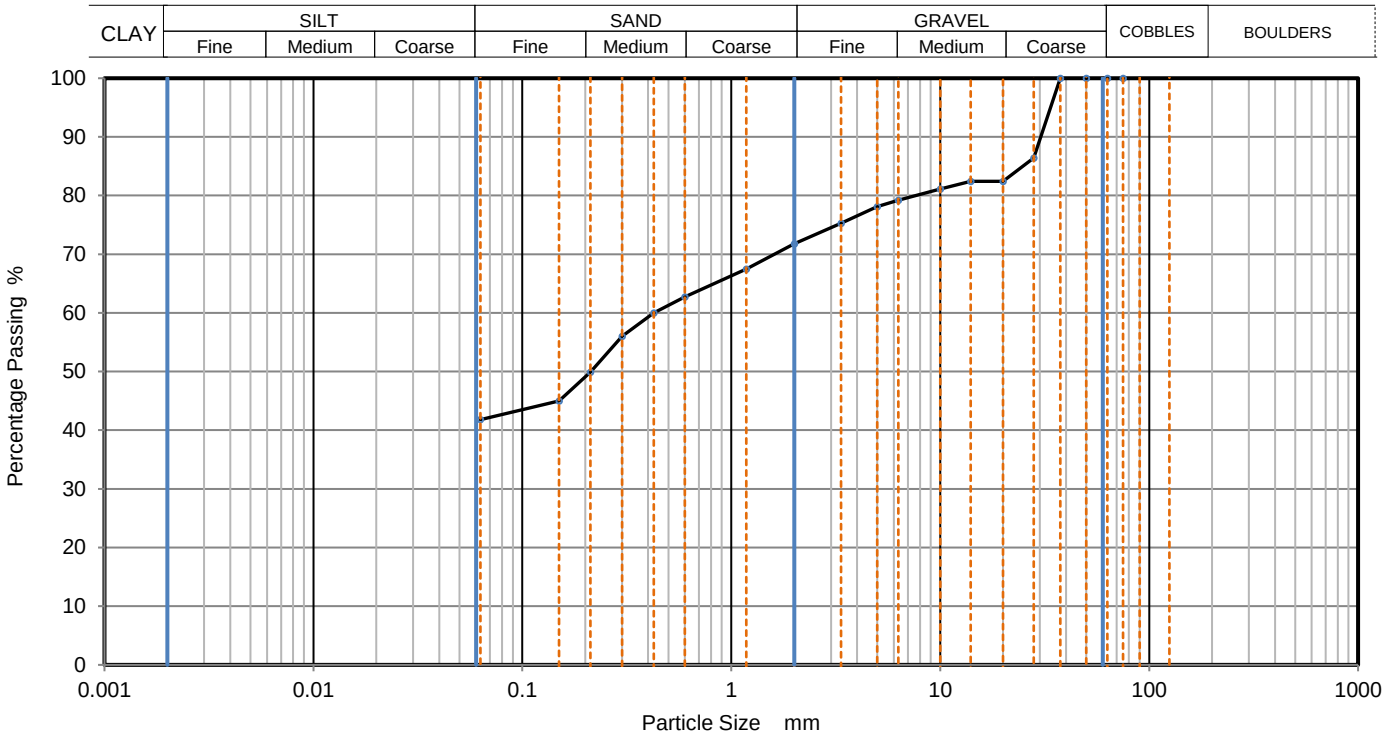
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS104
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Light greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023081486



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	86		
20	82		
14	82		
10	81		
6.3	79		
5	78		
3.35	75		
2	72		
1.18	68		
0.6	63		
0.425	60		
0.3	56		
0.212	50		
0.15	45		
0.063	42		

Dry Mass of sample, g	1042

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	30
Fines <0.063mm	42

Grading Analysis		
D100	mm	
D60	mm	0.427
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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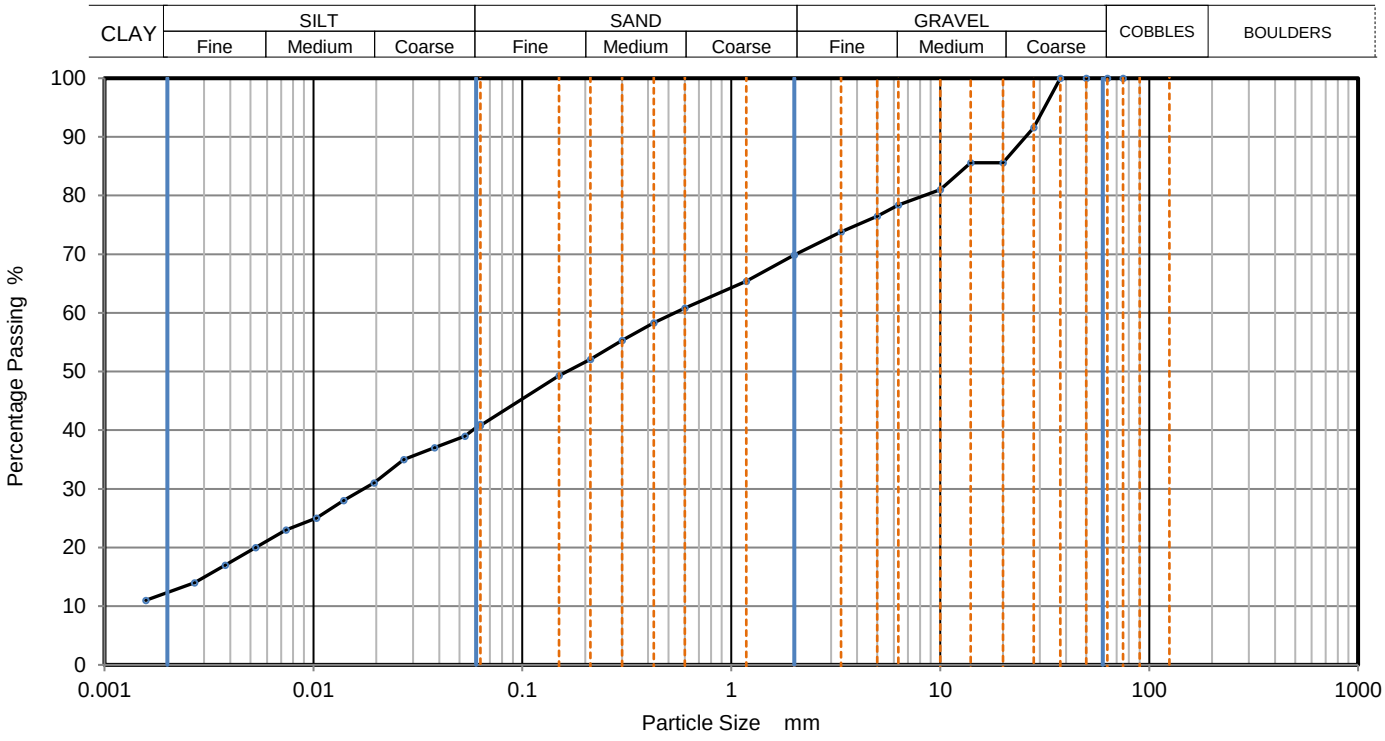
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS104
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Light grey slightly sandy slightly gravelly SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081490



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0531	39
75	100	0.0380	37
63	100	0.0271	35
50	100	0.0195	31
37.5	100	0.0140	28
28	92	0.0103	25
20	86	0.0074	23
14	86	0.0053	20
10	81	0.0038	17
6.3	78	0.0027	14
5	77	0.0016	11
3.35	74		
2	70		
1.18	65		
0.6	61	Particle density (assumed)	
0.425	58	2.65 Mg/m3	
0.3	55		
0.212	52		
0.15	49		
0.063	41		

Dry Mass of sample, g	997

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	29
Silt	28
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.538
D30	mm	0.0174
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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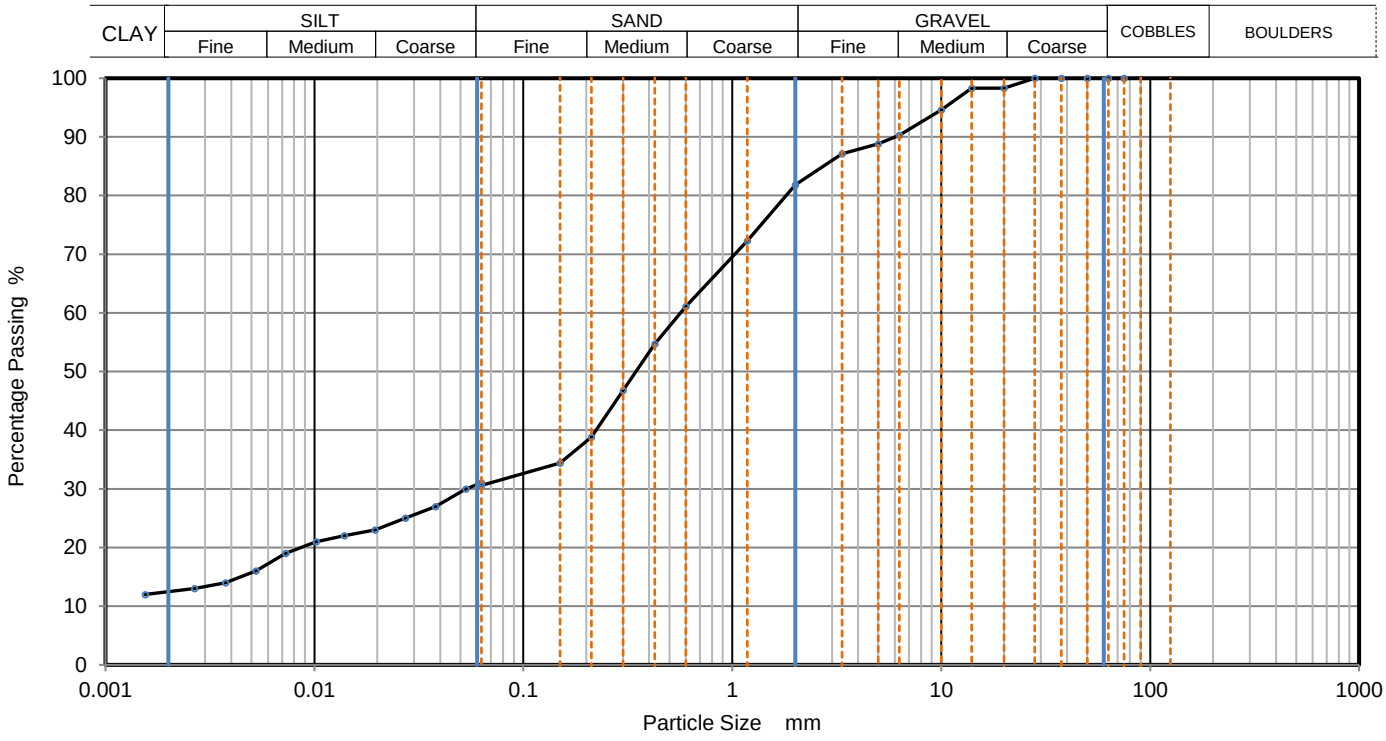
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS105
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brown and greensih-grey gravelly very silty medium and coarse SAND.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081495



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	31
		0.0531	30
75	100	0.0380	27
63	100	0.0272	25
50	100	0.0195	23
37.5	100	0.0139	22
28	100	0.0102	21
20	98	0.0073	19
14	98	0.0053	16
10	95	0.0038	14
6.3	90	0.0027	13
5	89	0.0015	12
3.35	87		
2	82		
1.18	72		
0.6	61	Particle density	(assumed)
0.425	55	2.65	Mg/m3
0.3	47		
0.212	39		
0.15	34		
0.063	31		

Dry Mass of sample, g: 683

Sample Proportions	% dry mass
Very coarse	0
Gravel	18
Sand	51
Silt	19
Clay	12

Grading Analysis		
D100	mm	
D60	mm	0.566
D30	mm	0.057
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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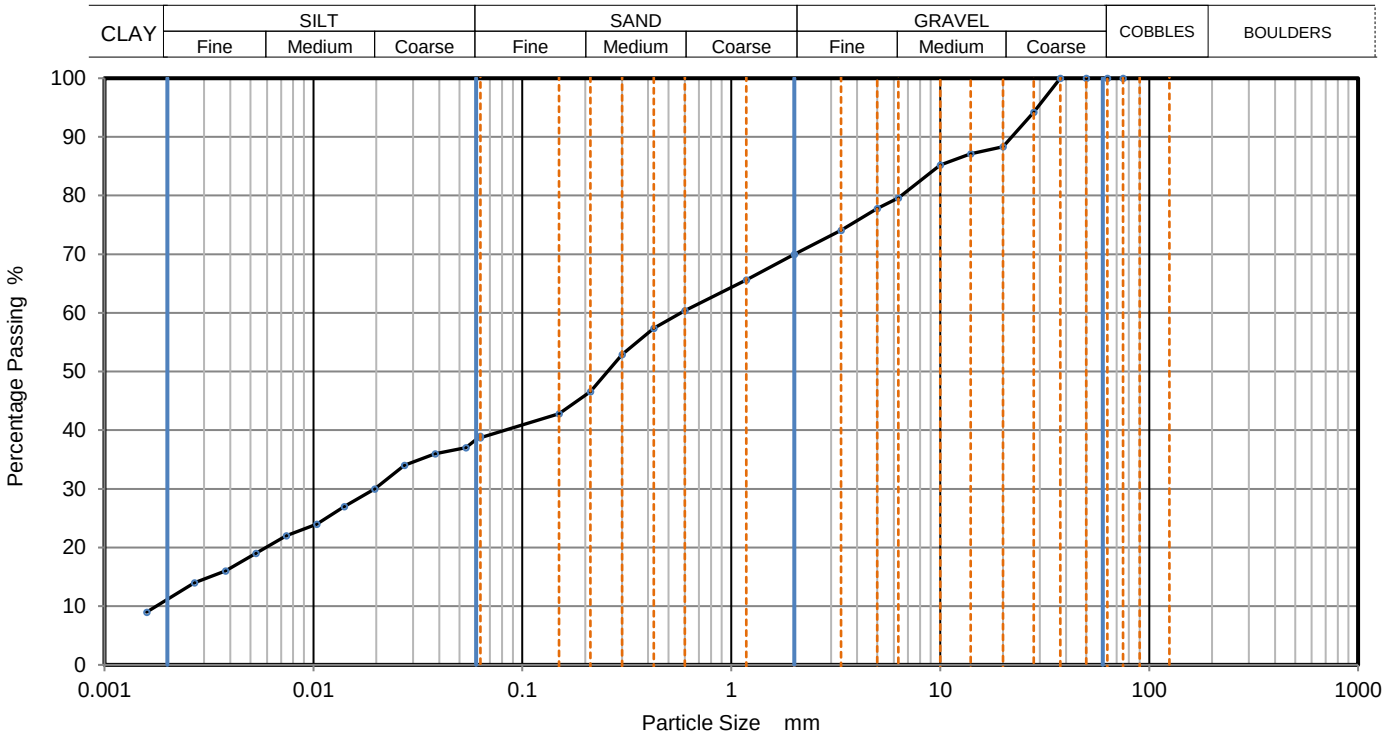
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS105
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081498



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	39
		0.0538	37
75	100	0.0383	36
63	100	0.0272	34
50	100	0.0196	30
37.5	100	0.0140	27
28	94	0.0104	24
20	88	0.0074	22
14	87	0.0053	19
10	85	0.0038	16
6.3	80	0.0027	14
5	78	0.0016	9
3.35	74		
2	70		
1.18	66		
0.6	60	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	53		
0.212	47		
0.15	43		
0.063	39		

Dry Mass of sample, g	941

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	31
Silt	28
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.575
D30	mm	0.0194
D10	mm	0.00181
Uniformity Coefficient		320
Curvature Coefficient		0.36

Remarks

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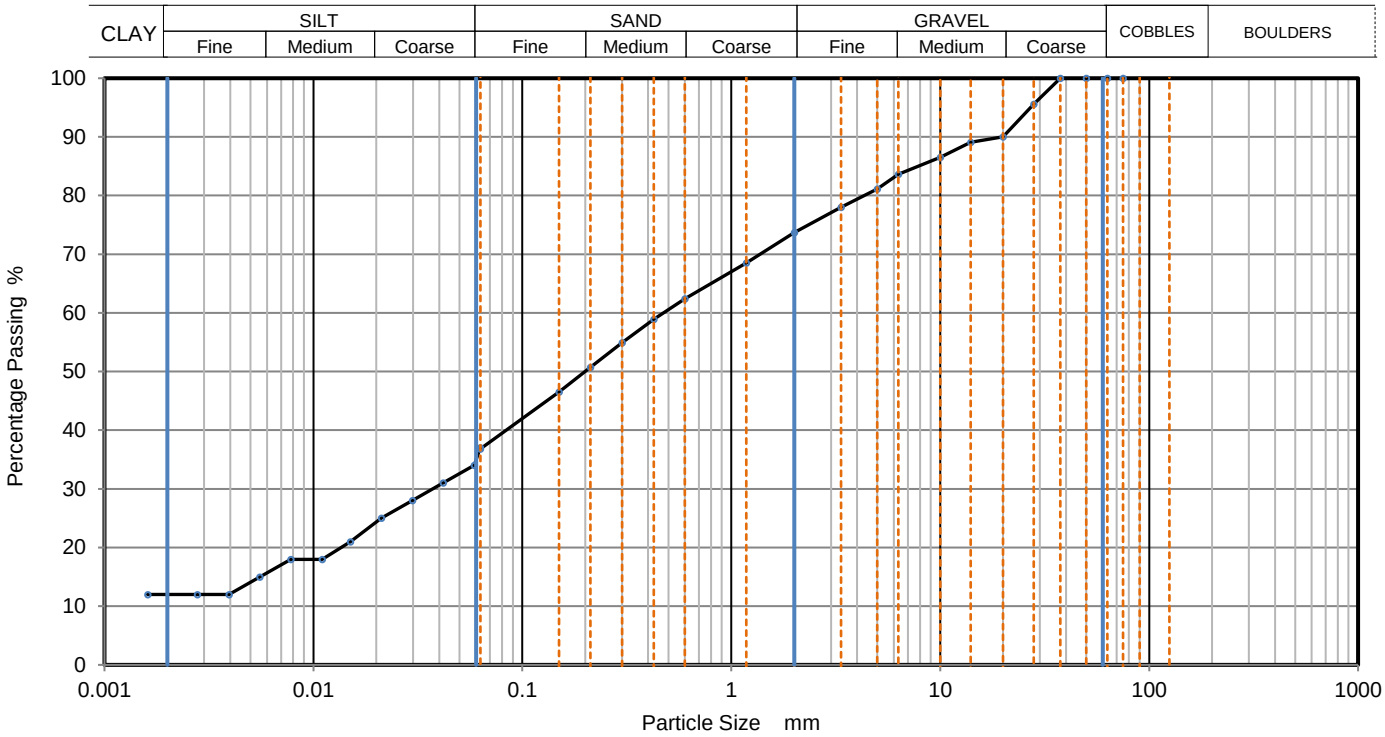
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greenish-grey slightly gravelly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230814105



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	37
		0.0588	34
75	100	0.0418	31
63	100	0.0297	28
50	100	0.0211	25
37.5	100	0.0150	21
28	96	0.0110	18
20	90	0.0078	18
14	89	0.0055	15
10	87	0.0039	12
6.3	84	0.0028	12
5	81	0.0016	12
3.35	78		
2	74		
1.18	69		
0.6	62	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	55		
0.212	51		
0.15	47		
0.063	37		

Dry Mass of sample, g	885

Sample Proportions	% dry mass
Very coarse	0
Gravel	26
Sand	37
Silt	25
Clay	12

Grading Analysis		
D100	mm	
D60	mm	0.472
D30	mm	0.0388
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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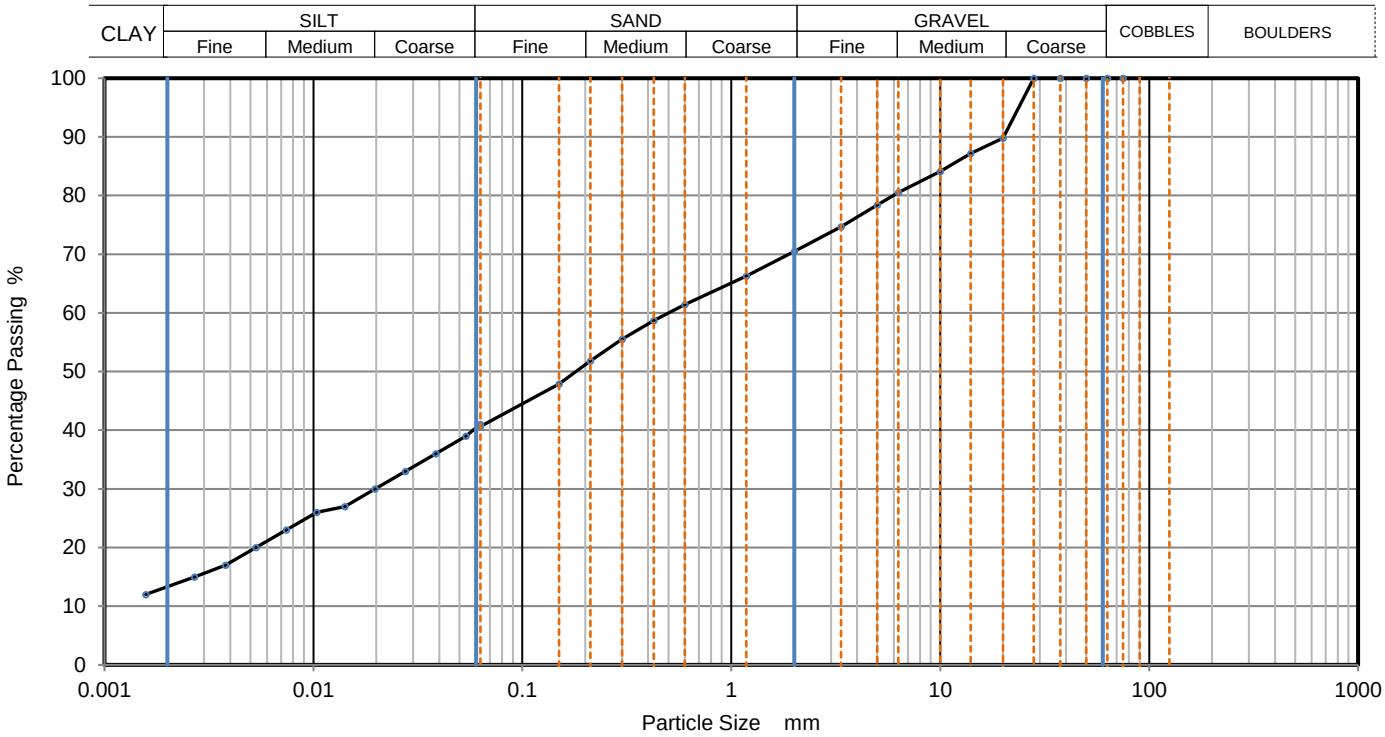
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Light grey slightly gravelly slightly sandy SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230814111



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0538	39
75	100	0.0385	36
63	100	0.0276	33
50	100	0.0197	30
37.5	100	0.0141	27
28	100	0.0104	26
20	90	0.0074	23
14	87	0.0053	20
10	84	0.0038	17
6.3	81	0.0027	15
5	78	0.0016	12
3.35	75		
2	71		
1.18	66		
0.6	61	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	56		
0.212	52		
0.15	48		
0.063	41		

Dry Mass of sample, g: 1067

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	30
Silt	27
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.502
D30	mm	0.0196
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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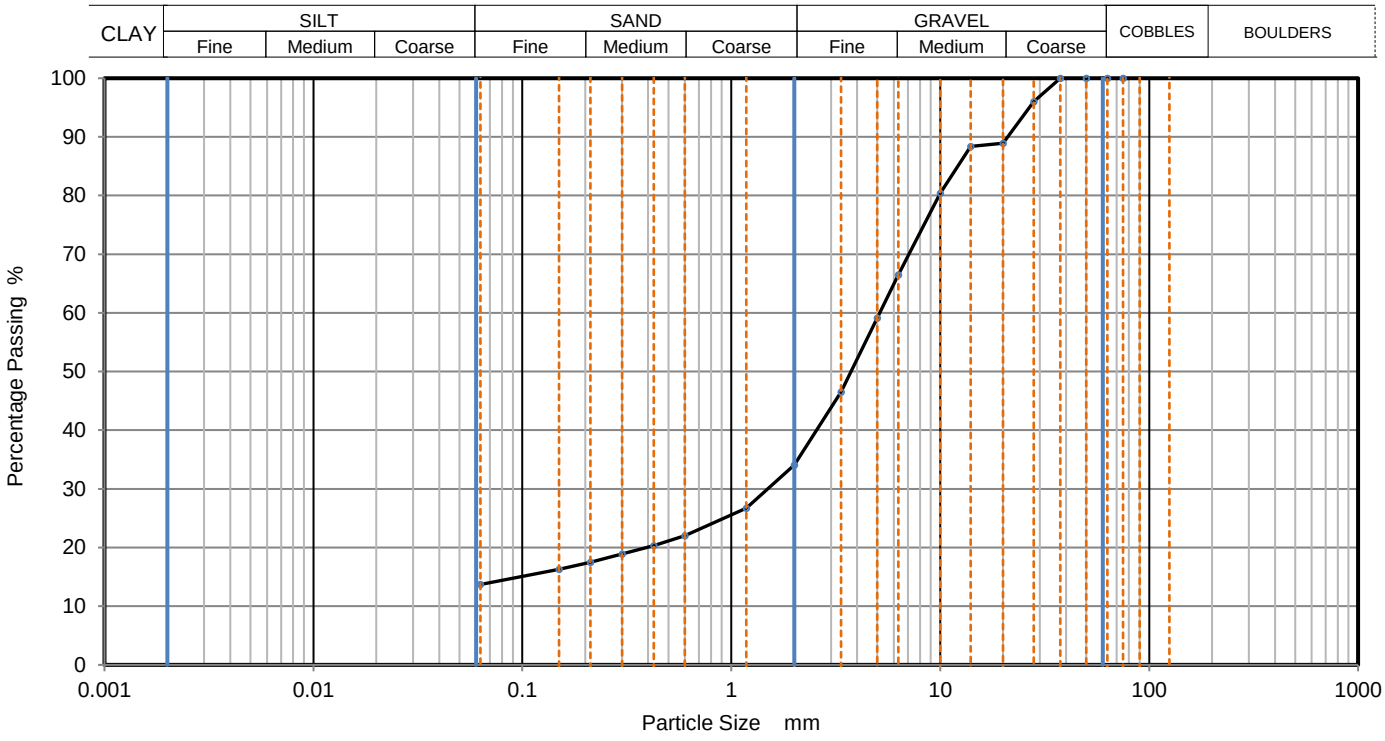
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description	Light grey silty very sandy fine GRAVEL.			Depth, m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120230814115



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	89		
14	88		
10	80		
6.3	67		
5	59		
3.35	47		
2	34		
1.18	27		
0.6	22		
0.425	20		
0.3	19		
0.212	18		
0.15	16		
0.063	14		

Dry Mass of sample, g	1242

Sample Proportions	% dry mass
Very coarse	0
Gravel	66
Sand	20
Fines <0.063mm	14

Grading Analysis		
D100	mm	
D60	mm	5.15
D30	mm	1.5
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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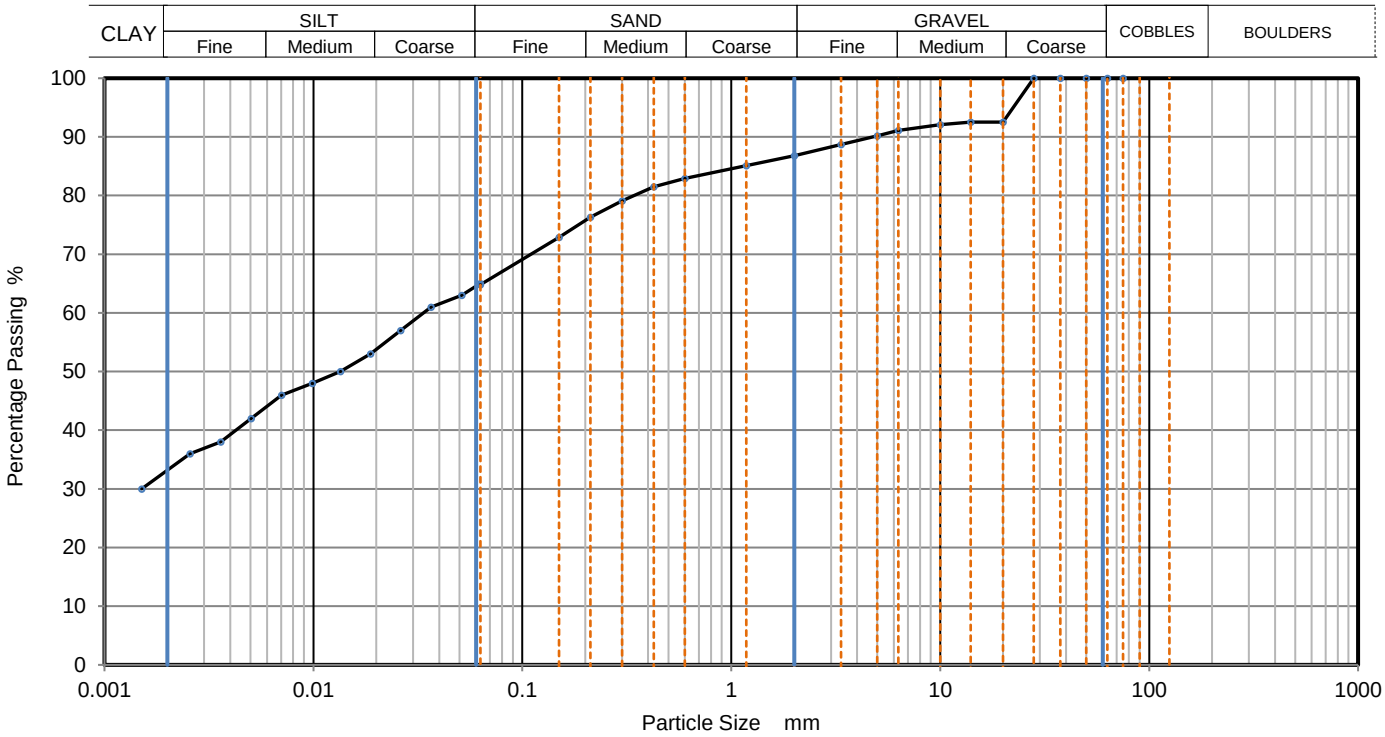
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS107
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Yellowish-brown slightly gravelly slightly sandy SILT.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230814118



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	65
		0.0512	63
75	100	0.0365	61
63	100	0.0262	57
50	100	0.0188	53
37.5	100	0.0134	50
28	100	0.0099	48
20	93	0.0070	46
14	93	0.0050	42
10	92	0.0036	38
6.3	91	0.0026	36
5	90	0.0015	30
3.35	89		
2	87		
1.18	85		
0.6	83	Particle density	(assumed)
0.425	82	2.65	Mg/m3
0.3	79		
0.212	76		
0.15	73		
0.063	65		

Dry Mass of sample, g	885

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	22
Silt	31
Clay	34

Grading Analysis		
D100	mm	
D60	mm	0.0335
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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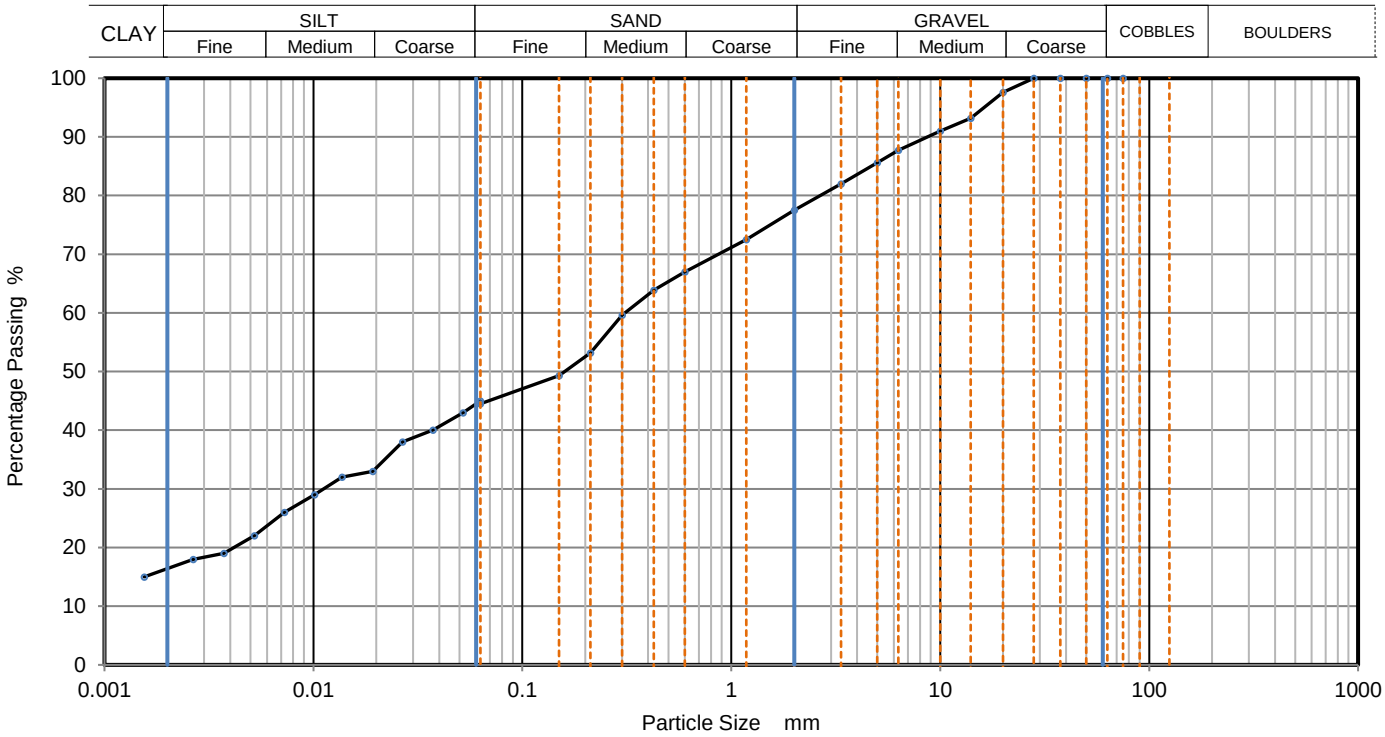
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS107
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230814121



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0520	43
75	100	0.0373	40
63	100	0.0267	38
50	100	0.0193	33
37.5	100	0.0137	32
28	100	0.0101	29
20	98	0.0073	26
14	93	0.0052	22
10	91	0.0037	19
6.3	88	0.0027	18
5	86	0.0015	15
3.35	82		
2	78		
1.18	73		
0.6	67	Particle density	(assumed)
0.425	64	2.65	Mg/m3
0.3	60		
0.212	53		
0.15	49		
0.063	45		

Dry Mass of sample, g: 973

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	33
Silt	28
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.309
D30	mm	0.011
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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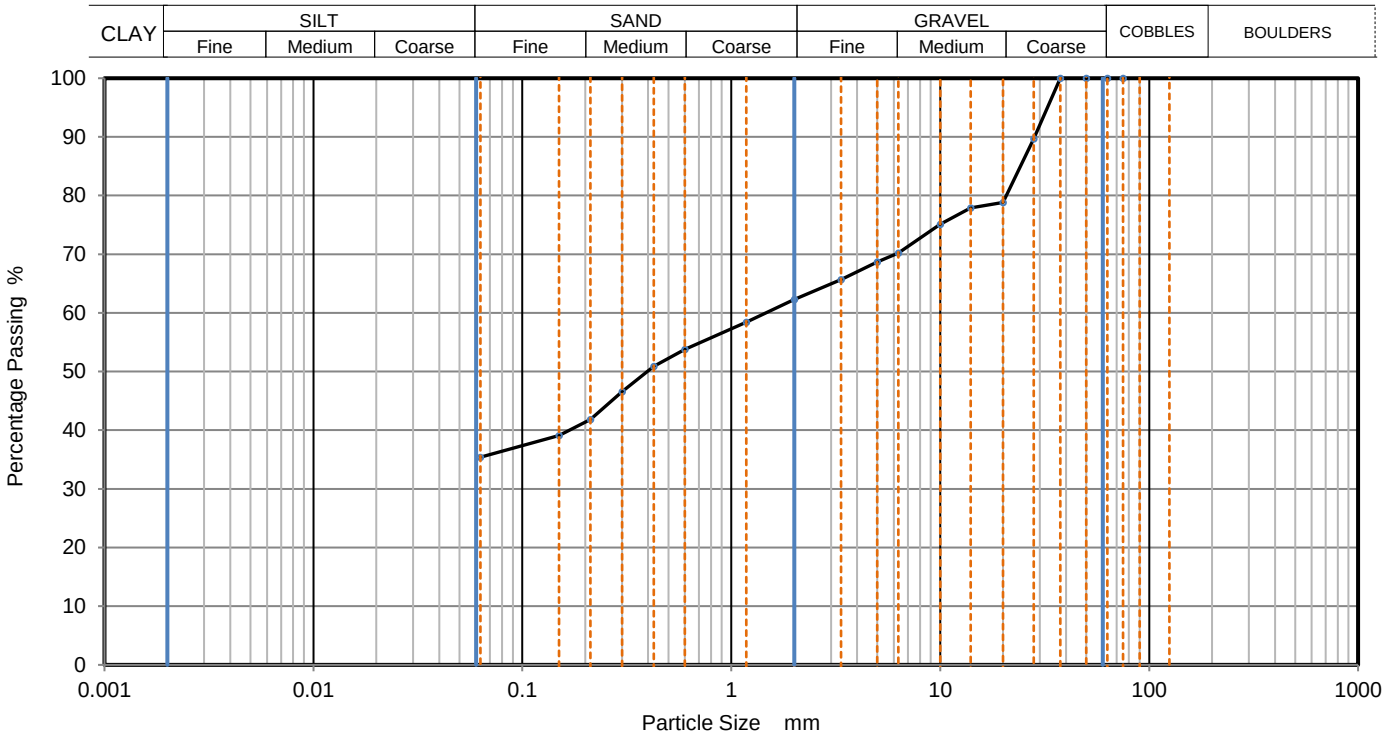
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS107
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Brownish-grey slightly sandy gravelly SILT. Gravel is coarse.	Depth, m	2.00
Specimen Reference	Specimen Depth: m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230814124



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	90		
20	79		
14	78		
10	75		
6.3	70		
5	69		
3.35	66		
2	62		
1.18	58		
0.6	54		
0.425	51		
0.3	47		
0.212	42		
0.15	39		
0.063	35		

Dry Mass of sample, g	1107

Sample Proportions	% dry mass
Very coarse	0
Gravel	38
Sand	27
Fines <0.063mm	35

Grading Analysis		
D100	mm	
D60	mm	1.46
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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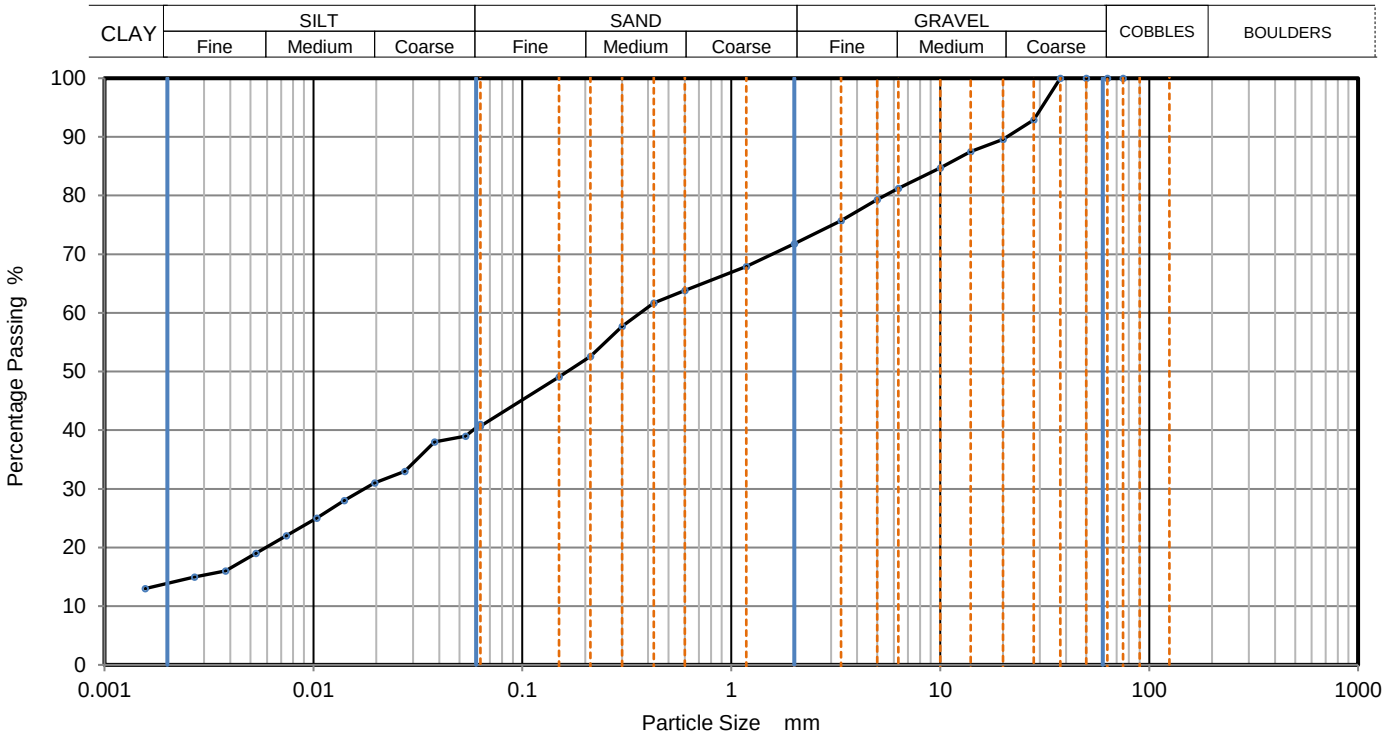
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS1M08
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brown slightly gravelly slightly sandy SILT.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081422



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0534	39
75	100	0.0380	38
63	100	0.0274	33
50	100	0.0196	31
37.5	100	0.0140	28
28	93	0.0104	25
20	90	0.0074	22
14	88	0.0053	19
10	85	0.0038	16
6.3	81	0.0027	15
5	79	0.0016	13
3.35	76		
2	72		
1.18	68		
0.6	64	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	58		
0.212	53		
0.15	49		
0.063	41		

Dry Mass of sample, g	717

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	31
Silt	27
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.367
D30	mm	0.0185
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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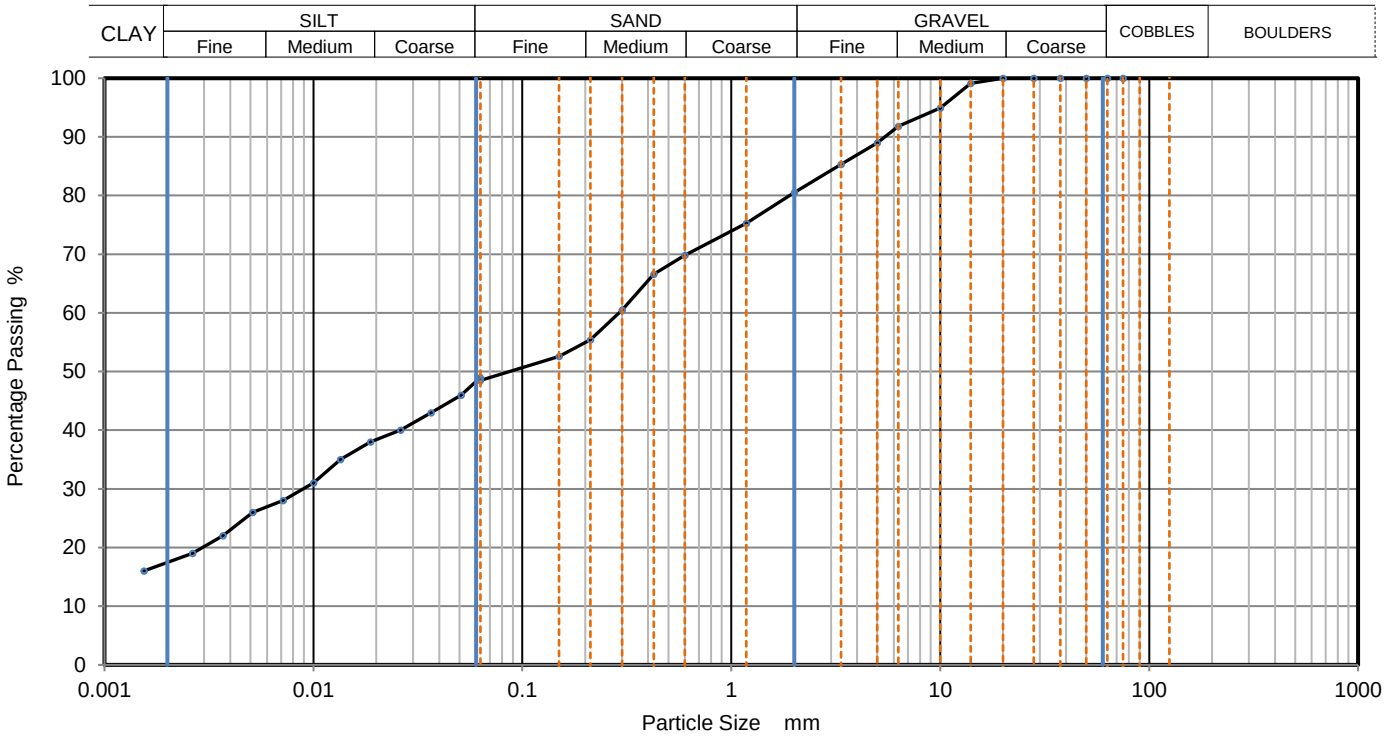
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS1M08
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Light brown slightly gravelly slightly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081425



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	49
		0.0509	46
75	100	0.0365	43
63	100	0.0262	40
50	100	0.0188	38
37.5	100	0.0134	35
28	100	0.0100	31
20	100	0.0072	28
14	99	0.0051	26
10	95	0.0037	22
6.3	92	0.0026	19
5	89	0.0015	16
3.35	85		
2	81		
1.18	75		
0.6	70	Particle density	(assumed)
0.425	67	2.65	Mg/m3
0.3	61		
0.212	55		
0.15	53		
0.063	49		

Dry Mass of sample, g: 758

Sample Proportions	% dry mass
Very coarse	0
Gravel	20
Sand	32
Silt	31
Clay	18

Grading Analysis		
D100	mm	
D60	mm	0.29
D30	mm	0.00886
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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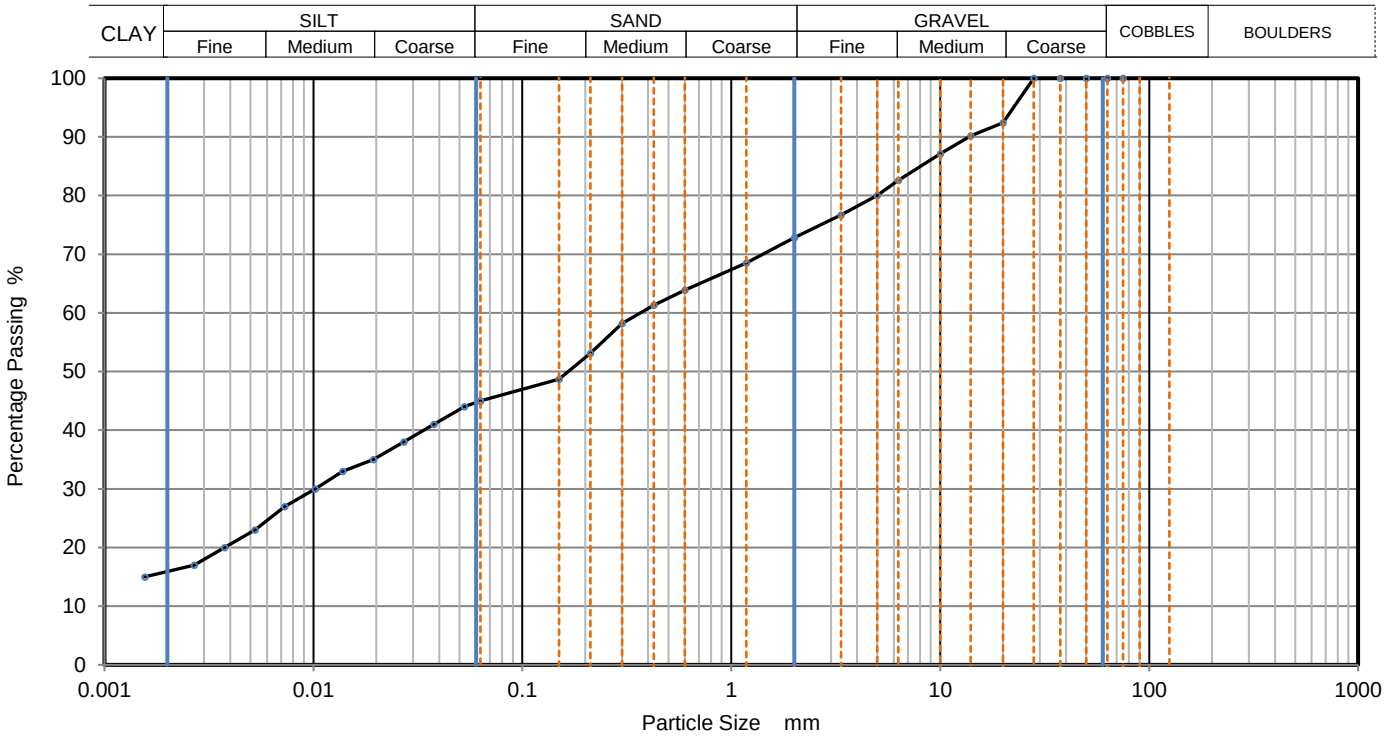
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHSS1M08
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081431



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0527	44
75	100	0.0378	41
63	100	0.0271	38
50	100	0.0194	35
37.5	100	0.0138	33
28	100	0.0102	30
20	92	0.0073	27
14	90	0.0053	23
10	87	0.0038	20
6.3	83	0.0027	17
5	80	0.0016	15
3.35	77		
2	73		
1.18	69		
0.6	64	Particle density (assumed)	
0.425	61	2.65 Mg/m3	
0.3	58		
0.212	53		
0.15	49		
0.063	45		

Dry Mass of sample, g	983

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	28
Silt	29
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.367
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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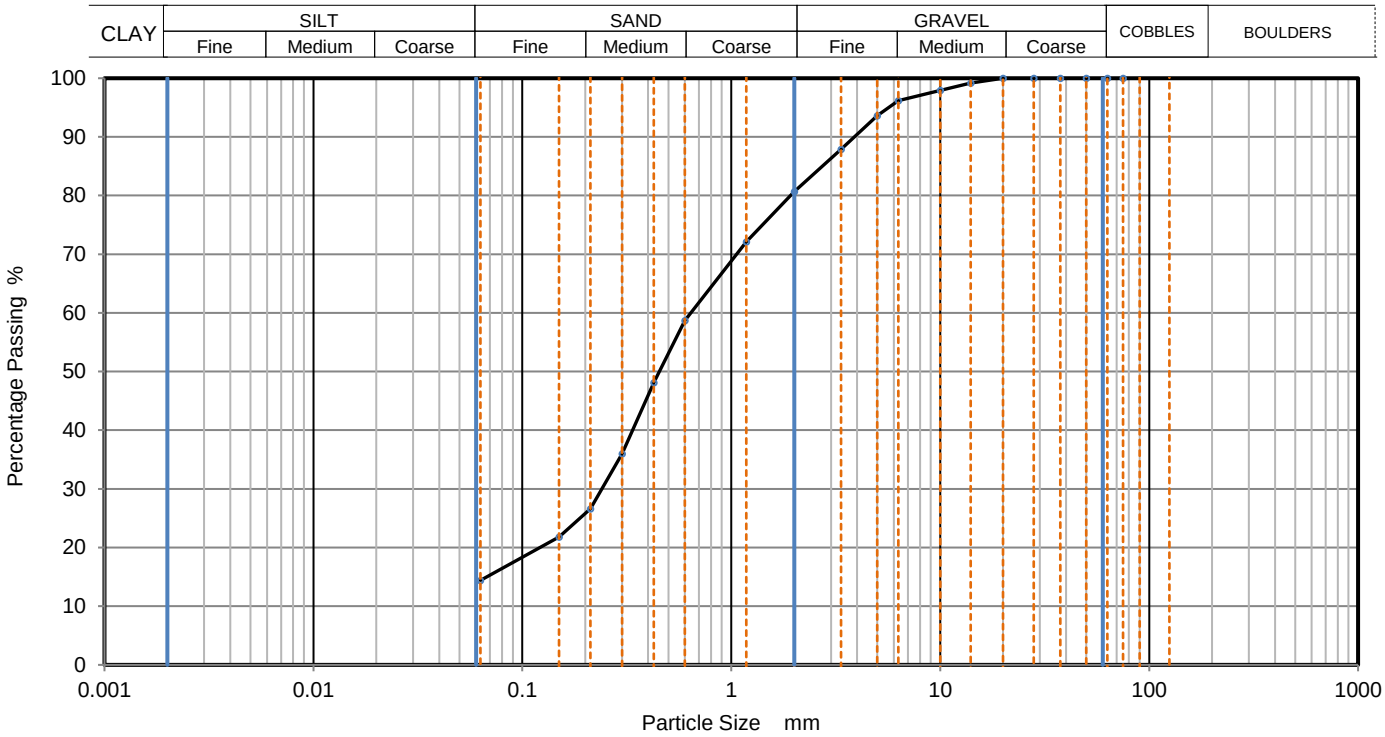
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	BHT01
Site Name	Derrygreenagh Power			Sample No.	9
Soil Description	Blackish-grey silty gravelly medium SAND.			Depth, m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12023070377



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	98		
6.3	96		
5	94		
3.35	88		
2	81		
1.18	72		
0.6	59		
0.425	48		
0.3	36		
0.212	27		
0.15	22		
0.063	14		

Dry Mass of sample, g	458

Sample Proportions	% dry mass
Very coarse	0
Gravel	19
Sand	66
Fines <0.063mm	14

Grading Analysis		
D100	mm	
D60	mm	0.642
D30	mm	0.24
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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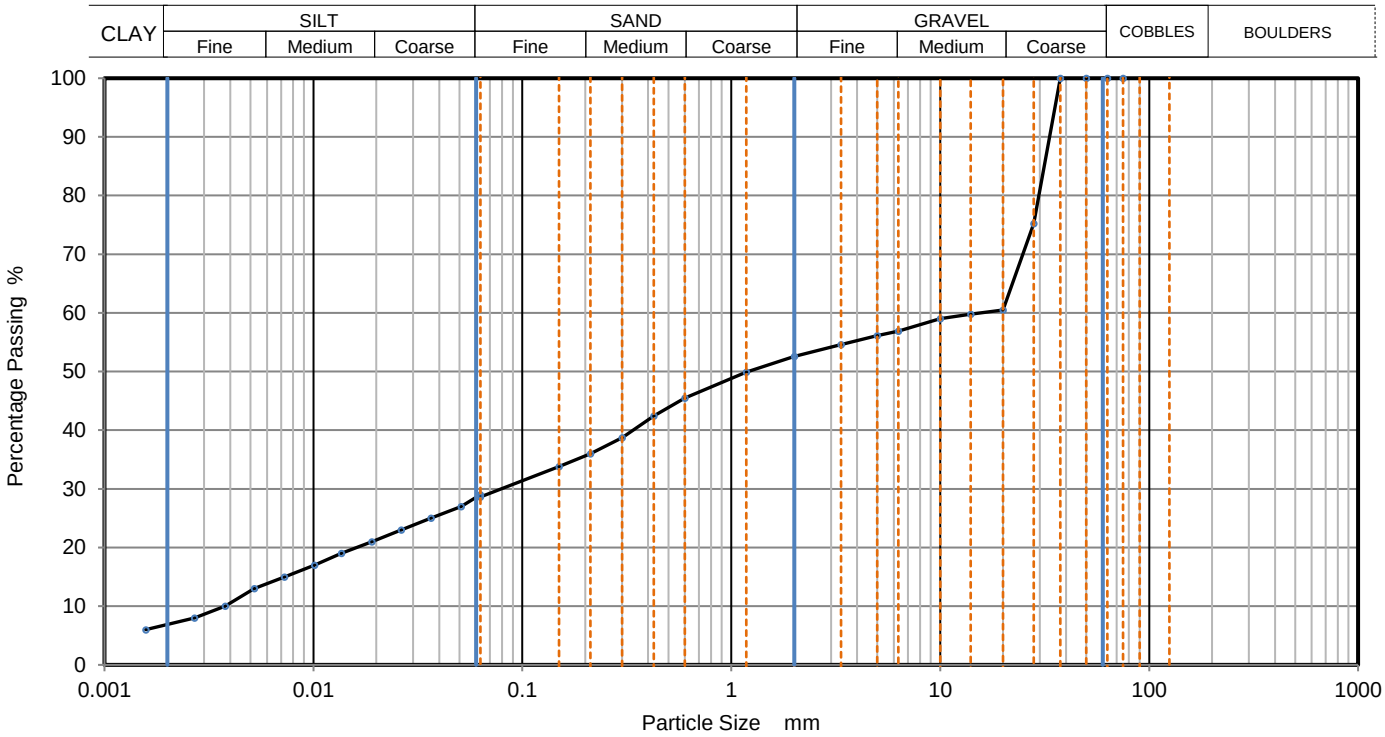
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT01
Site Name	Derrygreenagh Power	Sample No.	15
Soil Description	Dark grey very sandy very silty coarse GRAVEL.	Depth, m	5.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023070384



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	29
		0.0509	27
75	100	0.0365	25
63	100	0.0264	23
50	100	0.0190	21
37.5	100	0.0136	19
28	75	0.0101	17
20	61	0.0073	15
14	60	0.0052	13
10	59	0.0038	10
6.3	57	0.0027	8
5	56	0.0016	6
3.35	55		
2	53		
1.18	50		
0.6	46	Particle density	(assumed)
0.425	42	2.65	Mg/m3
0.3	39		
0.212	36		
0.15	34		
0.063	29		

Dry Mass of sample, g	979

Sample Proportions	% dry mass
Very coarse	0
Gravel	47
Sand	24
Silt	22
Clay	7

Grading Analysis		
D100	mm	
D60	mm	15.8
D30	mm	0.0792
D10	mm	0.00396
Uniformity Coefficient		4000
Curvature Coefficient		0.1

Remarks

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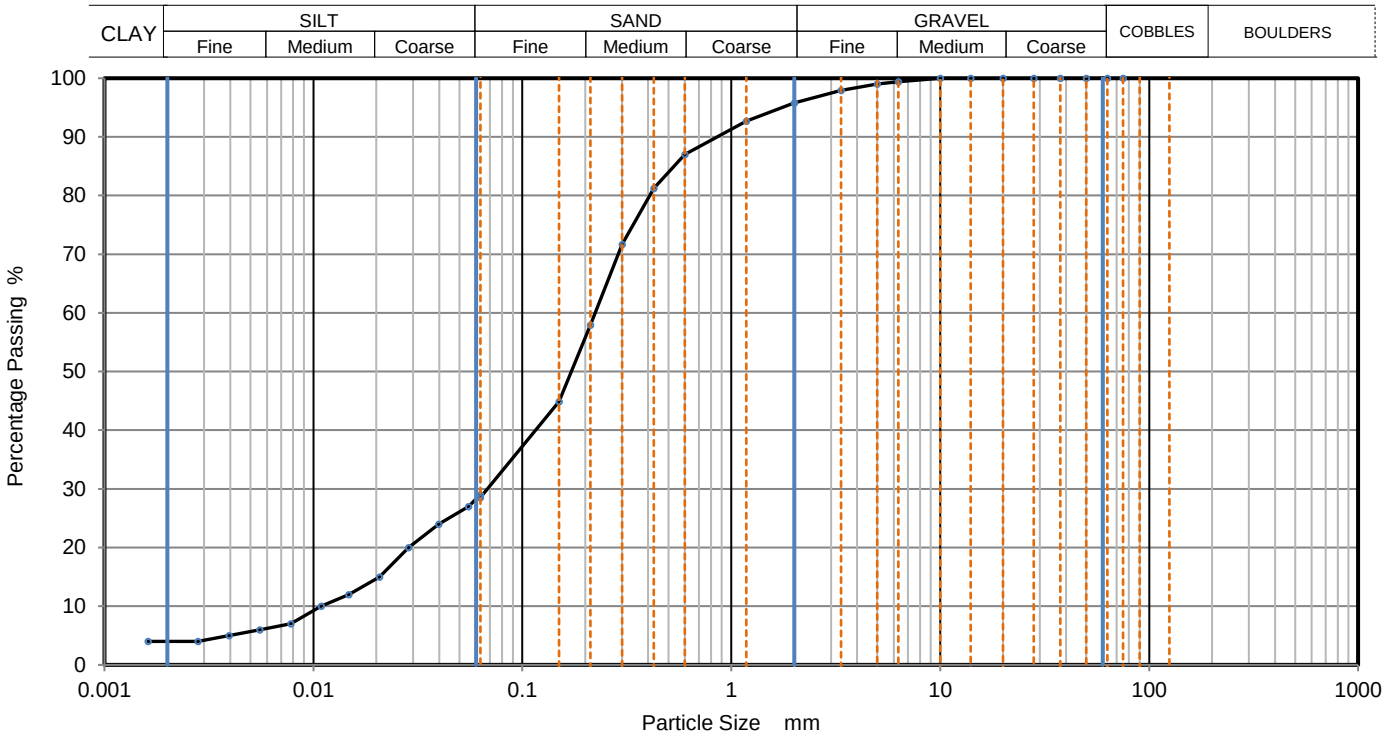
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT02
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Blackish-grey slightly gravelly very silty fine and medium SAND.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230703102



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	29
		0.0552	27
75	100	0.0397	24
63	100	0.0286	20
50	100	0.0207	15
37.5	100	0.0148	12
28	100	0.0109	10
20	100	0.0078	7
14	100	0.0055	6
10	100	0.0039	5
6.3	99	0.0028	4
5	99	0.0016	4
3.35	98		
2	96		
1.18	93		
0.6	87	Particle density	(assumed)
0.425	81	2.65	Mg/m3
0.3	72		
0.212	58		
0.15	45		
0.063	29		

Dry Mass of sample, g: 770

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	67
Silt	25
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.223
D30	mm	0.0681
D10	mm	0.011
Uniformity Coefficient		20
Curvature Coefficient		1.9

Remarks

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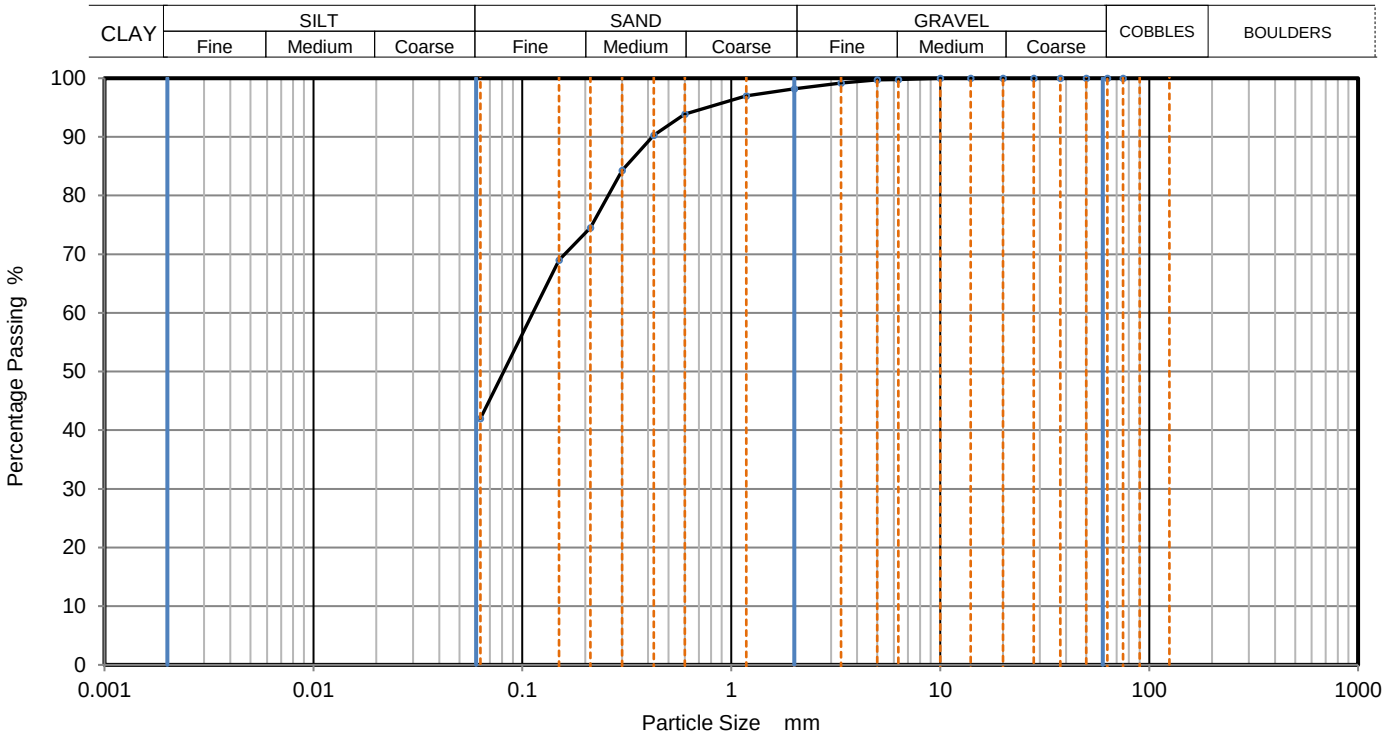
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT02
Site Name	Derrygreenagh Power	Sample No.	16
Soil Description	Dark grey slightly gravelly sandy SILT. Sand is fine.	Depth, m	5.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703108



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	98		
1.18	97		
0.6	94		
0.425	90		
0.3	84		
0.212	75		
0.15	69		
0.063	42		

Dry Mass of sample, g	919

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	56
Fines <0.063mm	42

Grading Analysis		
D100	mm	
D60	mm	0.112
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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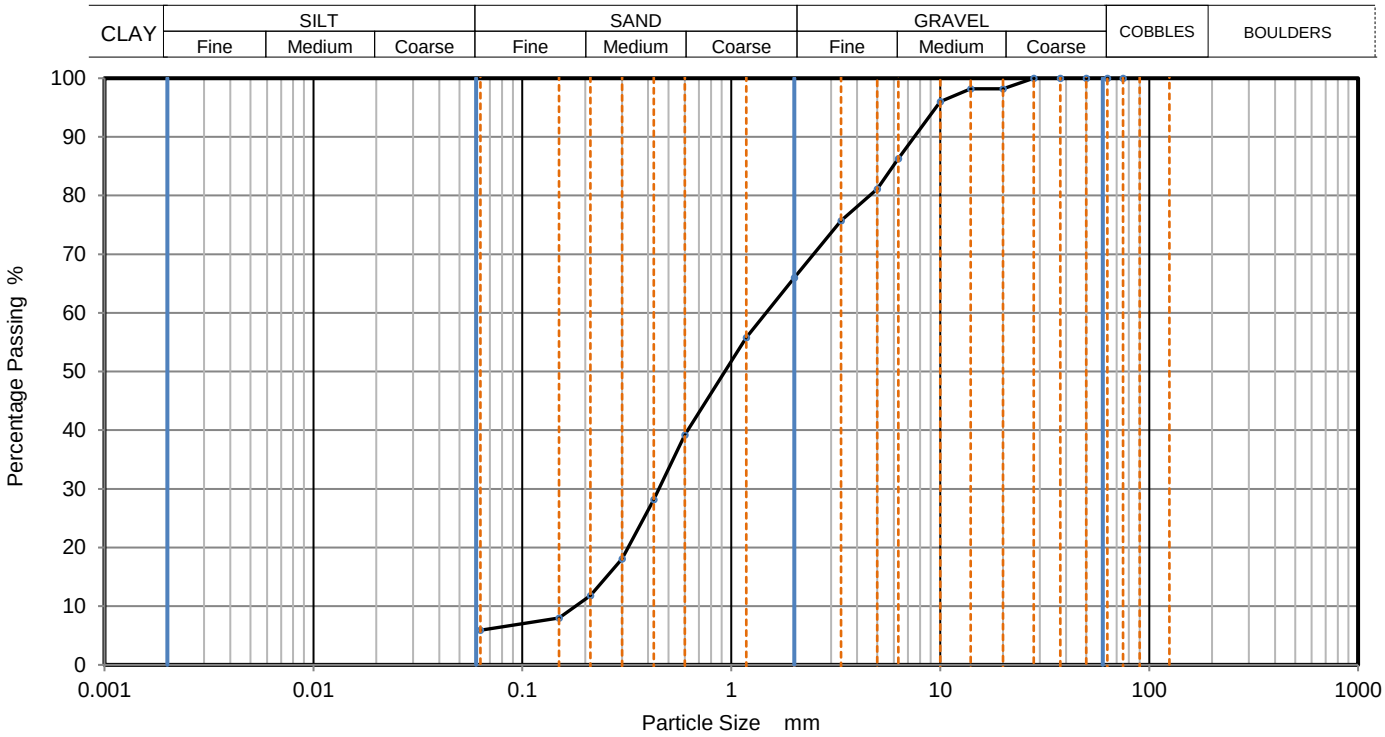
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT03
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Black-grey silty very gravelly medum and coarse SAND.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023062216



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	98		
10	96		
6.3	86		
5	81		
3.35	76		
2	66		
1.18	56		
0.6	39	Particle density	(assumed)
0.425	28	2.65	Mg/m3
0.3	18		
0.212	12		
0.15	8		
0.063	6		

Dry Mass of sample, g	947

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	60
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	1.47
D30	mm	0.45
D10	mm	0.18
Uniformity Coefficient		8.2
Curvature Coefficient		0.77

Remarks

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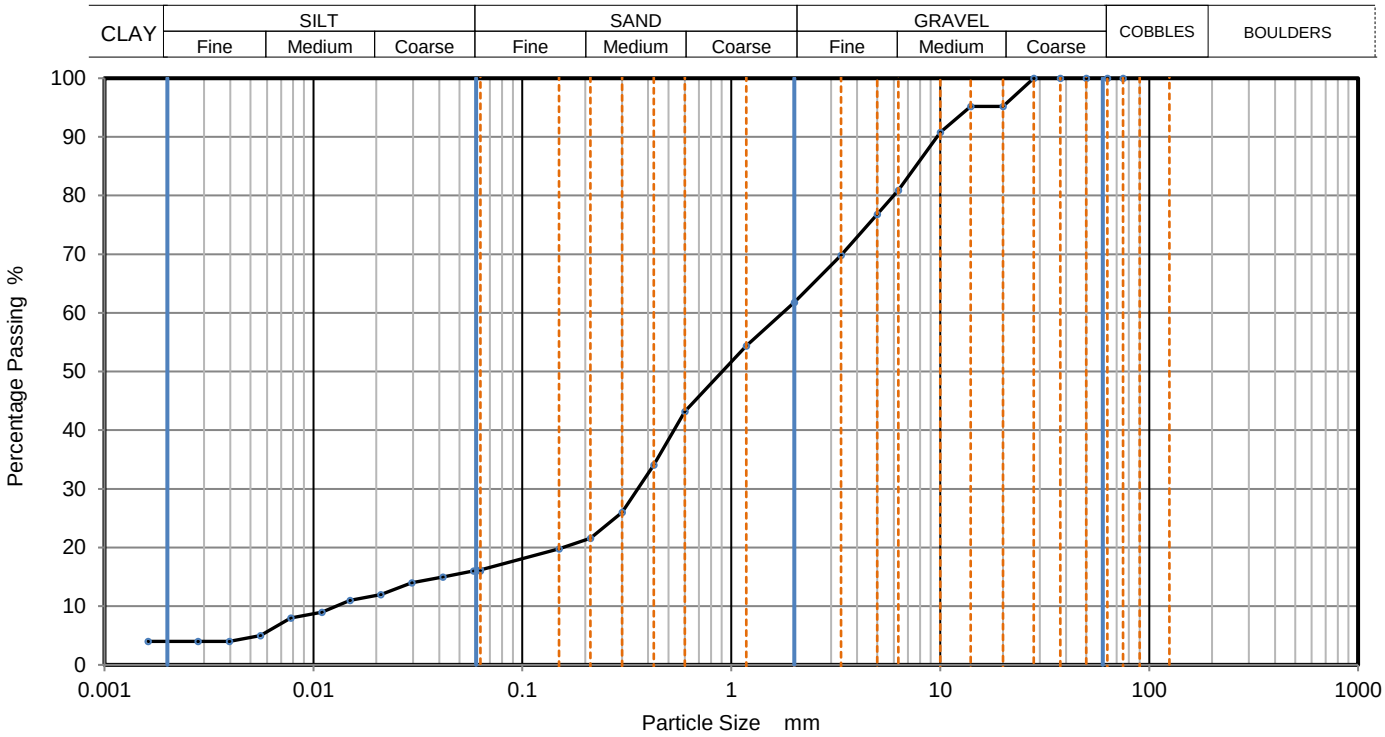
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT04
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Brownish-grey silty very gravelly medium and coarse SAND.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023062235



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	16
		0.0585	16
75	100	0.0416	15
63	100	0.0296	14
50	100	0.0210	12
37.5	100	0.0149	11
28	100	0.0110	9
20	95	0.0078	8
14	95	0.0056	5
10	91	0.0040	4
6.3	81	0.0028	4
5	77	0.0016	4
3.35	70		
2	62		
1.18	54		
0.6	43	Particle density	(assumed)
0.425	34	2.65	Mg/m3
0.3	26		
0.212	22		
0.15	20		
0.063	16		

Dry Mass of sample, g	932

Sample Proportions	% dry mass
Very coarse	0
Gravel	38
Sand	46
Silt	12
Clay	4

Grading Analysis		
D100	mm	
D60	mm	1.76
D30	mm	0.356
D10	mm	0.0124
Uniformity Coefficient		140
Curvature Coefficient		5.8

Remarks

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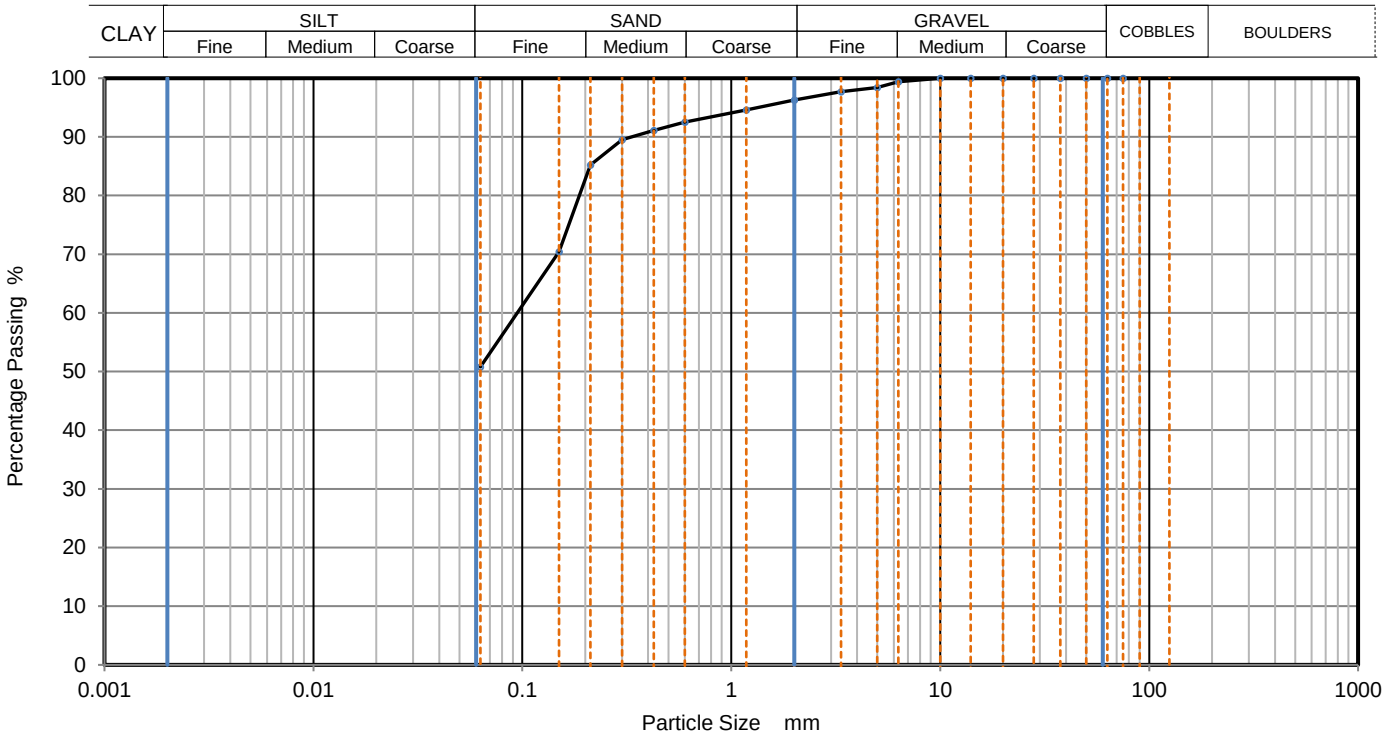
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT05
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Greyish-brown slightly gravelly sandy SILT. SAND is fine.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230607171



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	98		
3.35	98		
2	96		
1.18	95		
0.6	93		
0.425	91		
0.3	90		
0.212	85		
0.15	70		
0.063	51		

Dry Mass of sample, g	581

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	46
Fines <0.063mm	51

Grading Analysis		
D100	mm	
D60	mm	0.0946
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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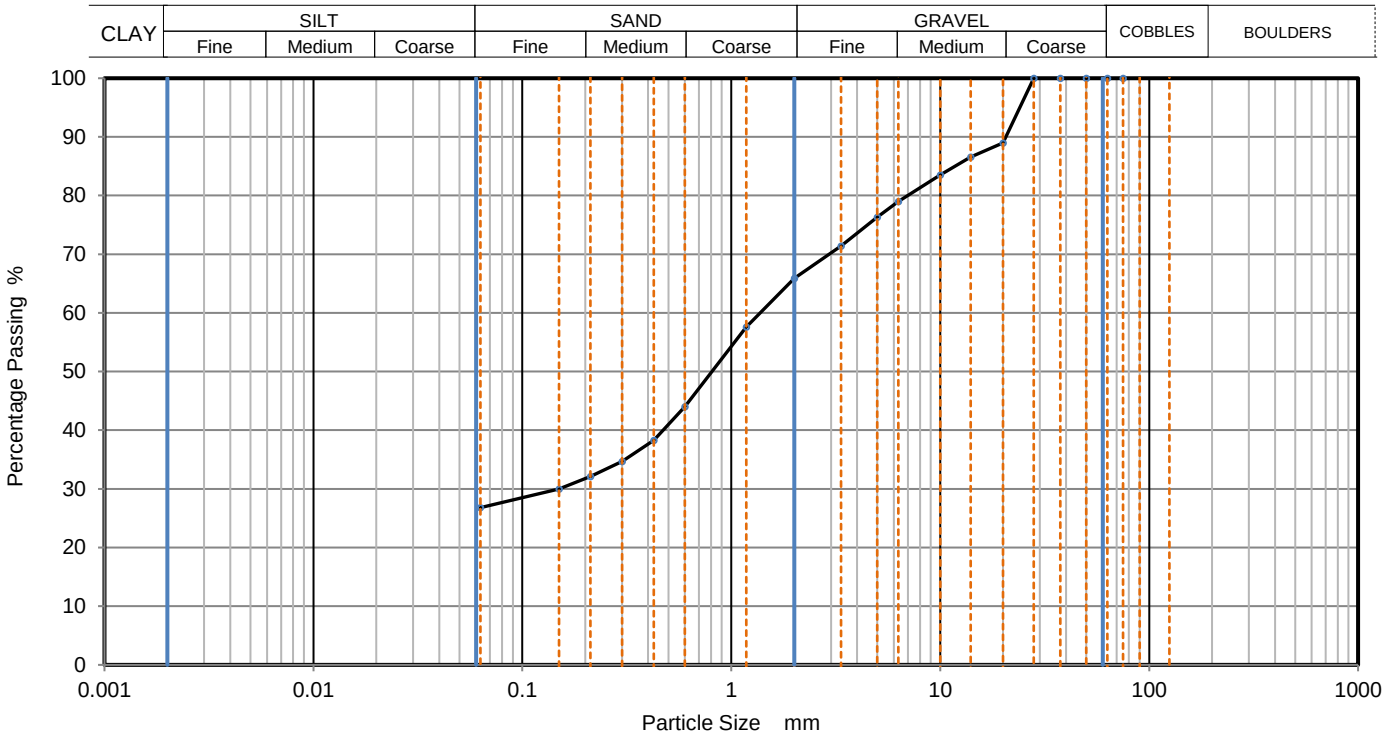
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT06
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Blackish-grey very silty coarse SAND and fine GRAVEL.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023062251



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	89		
14	87		
10	84		
6.3	79		
5	76		
3.35	71		
2	66		
1.18	58		
0.6	44		
0.425	38		
0.3	35		
0.212	32		
0.15	30		
0.063	27		

Dry Mass of sample, g: 850

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	39
Fines <0.063mm	27

Grading Analysis		
D100	mm	
D60	mm	1.38
D30	mm	0.151
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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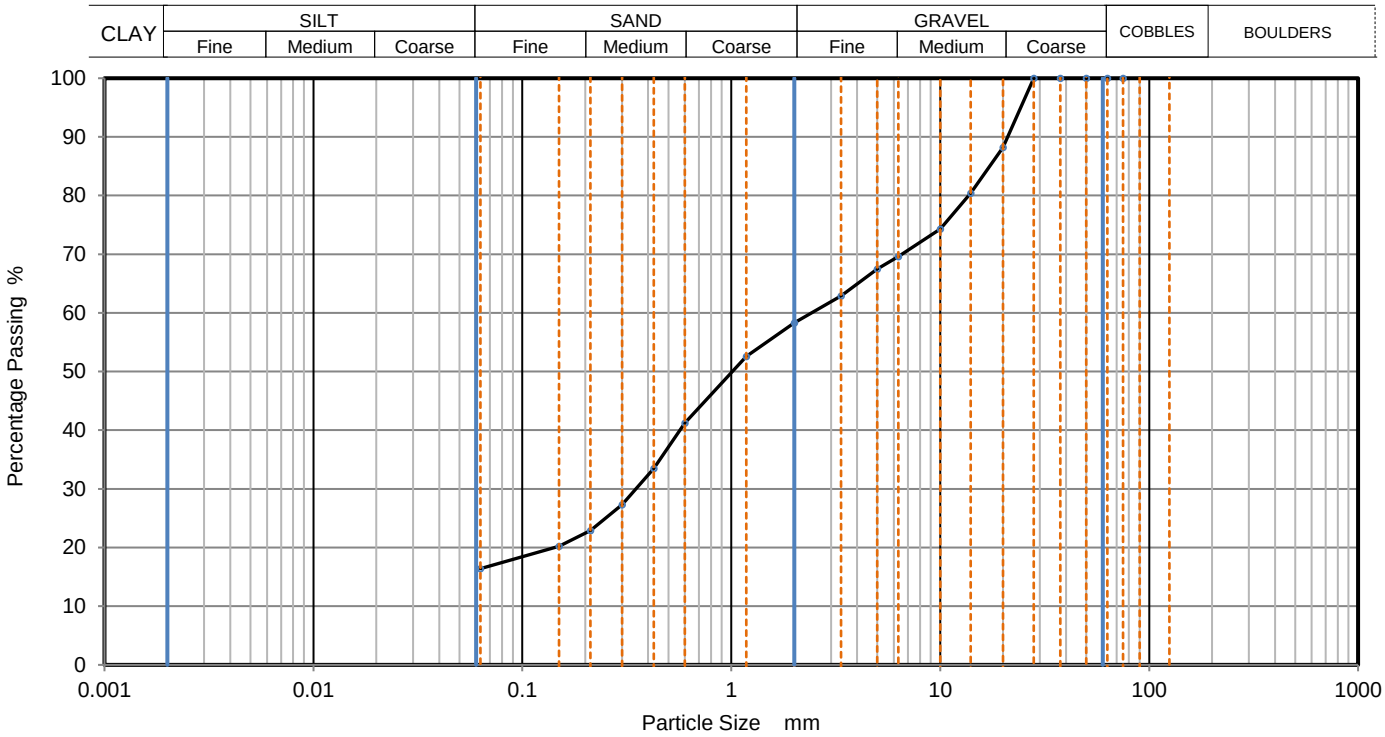
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT07
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Black and grey silty SAND and GRAVEL.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230607190



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	88		
14	80		
10	74		
6.3	70		
5	68		
3.35	63		
2	58		
1.18	53		
0.6	41		
0.425	34		
0.3	27		
0.212	23		
0.15	20		
0.063	16		

Dry Mass of sample, g	629

Sample Proportions	% dry mass
Very coarse	0
Gravel	42
Sand	42
Fines <0.063mm	16

Grading Analysis		
D100	mm	
D60	mm	2.43
D30	mm	0.349
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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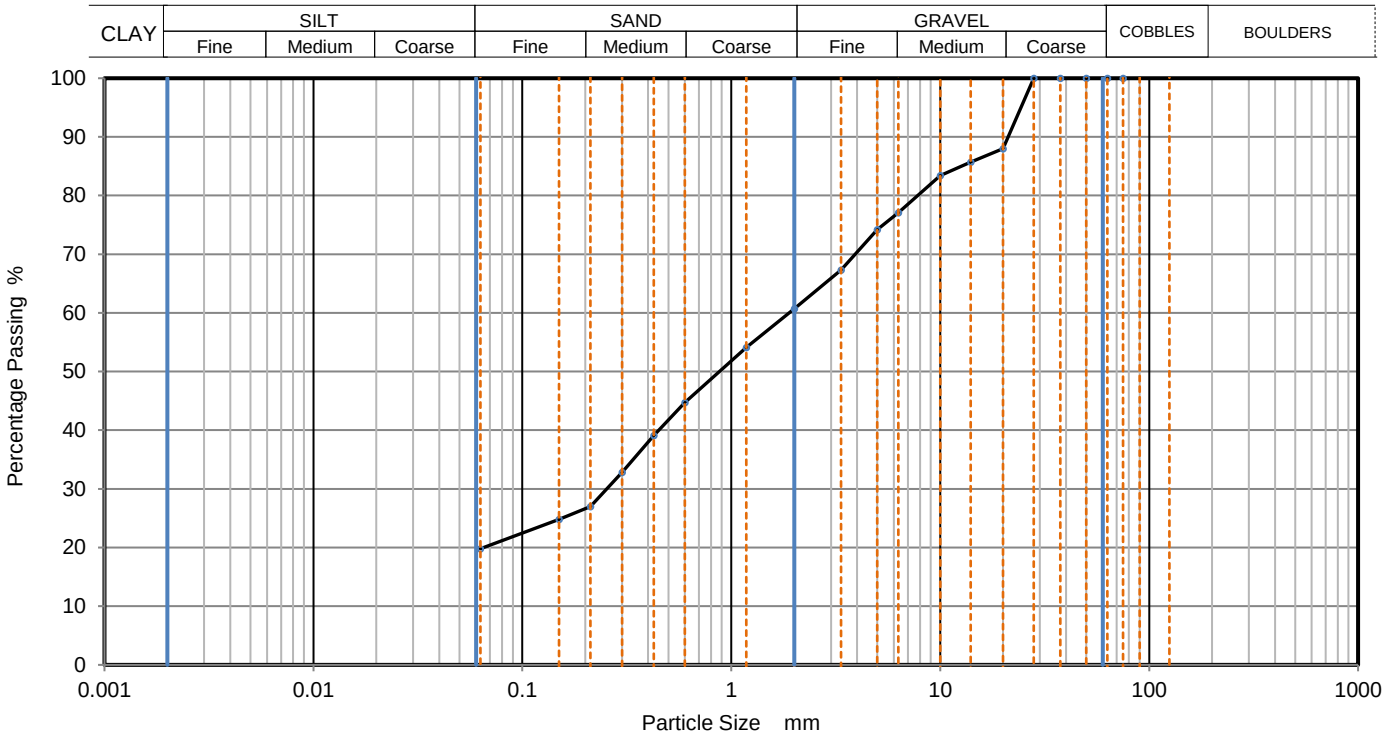
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT08
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-black very silty SAND and GRAVEL.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703120



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	88		
14	86		
10	83		
6.3	77		
5	74		
3.35	67		
2	61		
1.18	54		
0.6	45		
0.425	39		
0.3	33		
0.212	27		
0.15	25		
0.063	20		

Dry Mass of sample, g	477

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	41
Fines <0.063mm	20

Grading Analysis		
D100	mm	
D60	mm	1.89
D30	mm	0.254
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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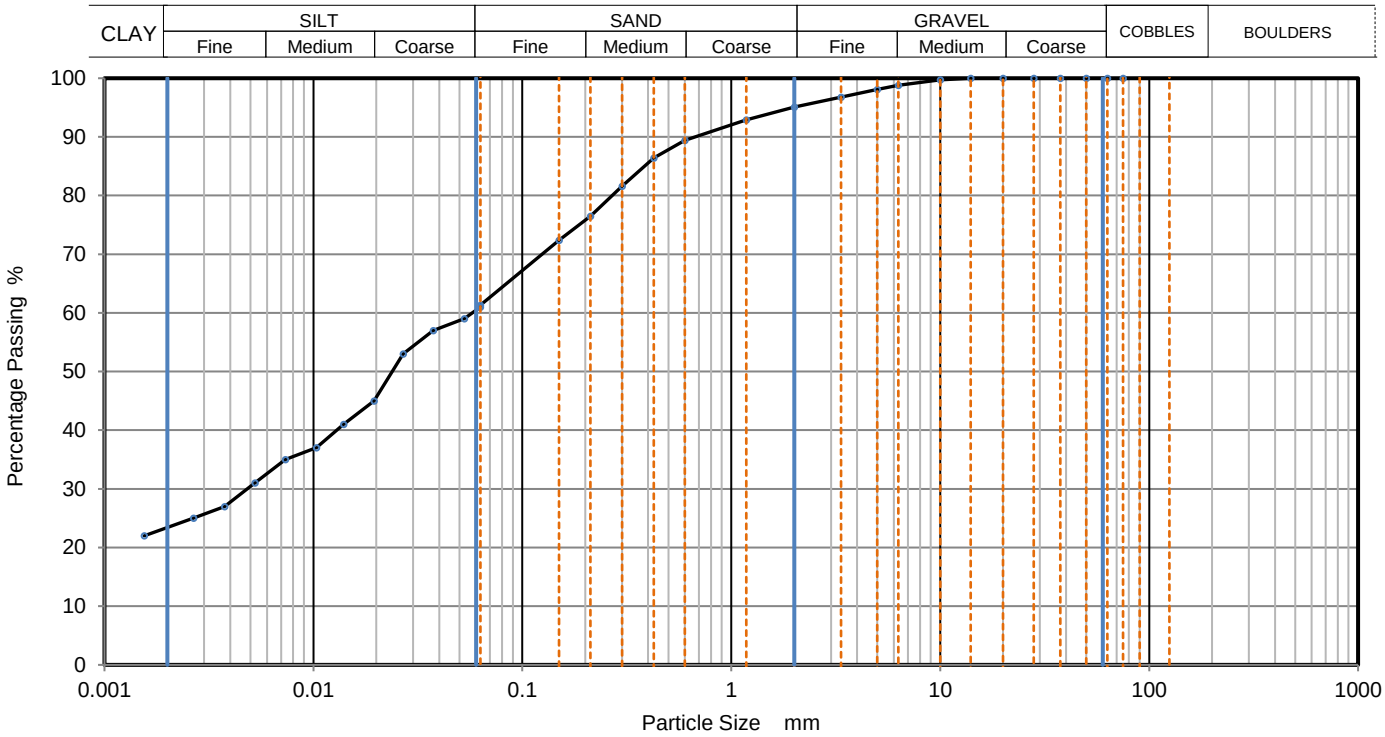
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT08
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greyish-brown slightly gravelly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230703123



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	61
		0.0527	59
75	100	0.0375	57
63	100	0.0269	53
50	100	0.0195	45
37.5	100	0.0140	41
28	100	0.0103	37
20	100	0.0073	35
14	100	0.0053	31
10	100	0.0038	27
6.3	99	0.0027	25
5	98	0.0015	22
3.35	97		
2	95		
1.18	93		
0.6	89	Particle density (assumed)	
0.425	86	2.65 Mg/m3	
0.3	82		
0.212	77		
0.15	72		
0.063	61		

Dry Mass of sample, g	794

Sample Proportions	% dry mass
Very coarse	0
Gravel	5
Sand	34
Silt	38
Clay	23

Grading Analysis		
D100	mm	
D60	mm	0.0562
D30	mm	0.00498
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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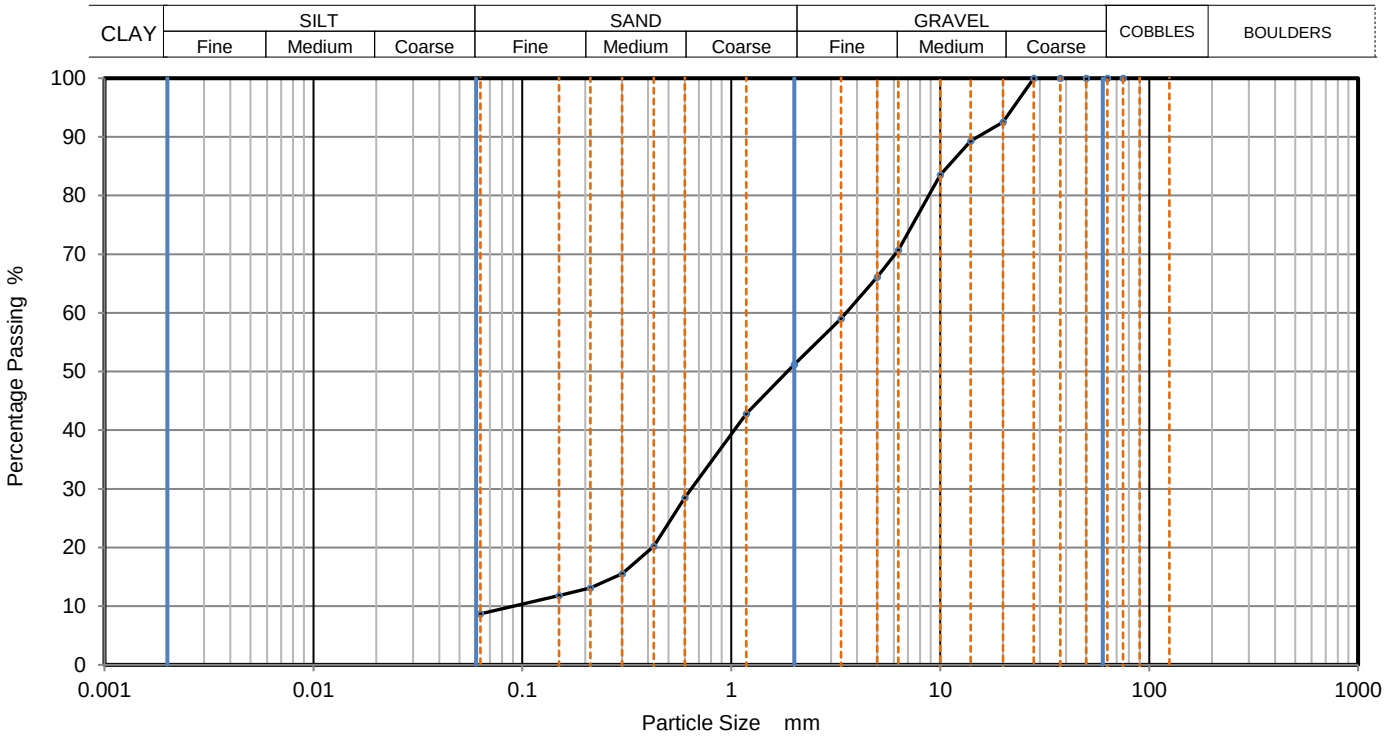
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT08
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Brownish-grey silty coarse SAND and fine-medium GRAVEL.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703126



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	89		
10	84		
6.3	71		
5	66		
3.35	59		
2	51		
1.18	43		
0.6	29		
0.425	20		
0.3	16		
0.212	13		
0.15	12		
0.063	9		

Dry Mass of sample, g: 976

Sample Proportions	% dry mass
Very coarse	0
Gravel	49
Sand	43
Fines <0.063mm	9

Grading Analysis		
D100	mm	
D60	mm	3.54
D30	mm	0.645
D10	mm	0.0915
Uniformity Coefficient		39
Curvature Coefficient		1.3

Remarks

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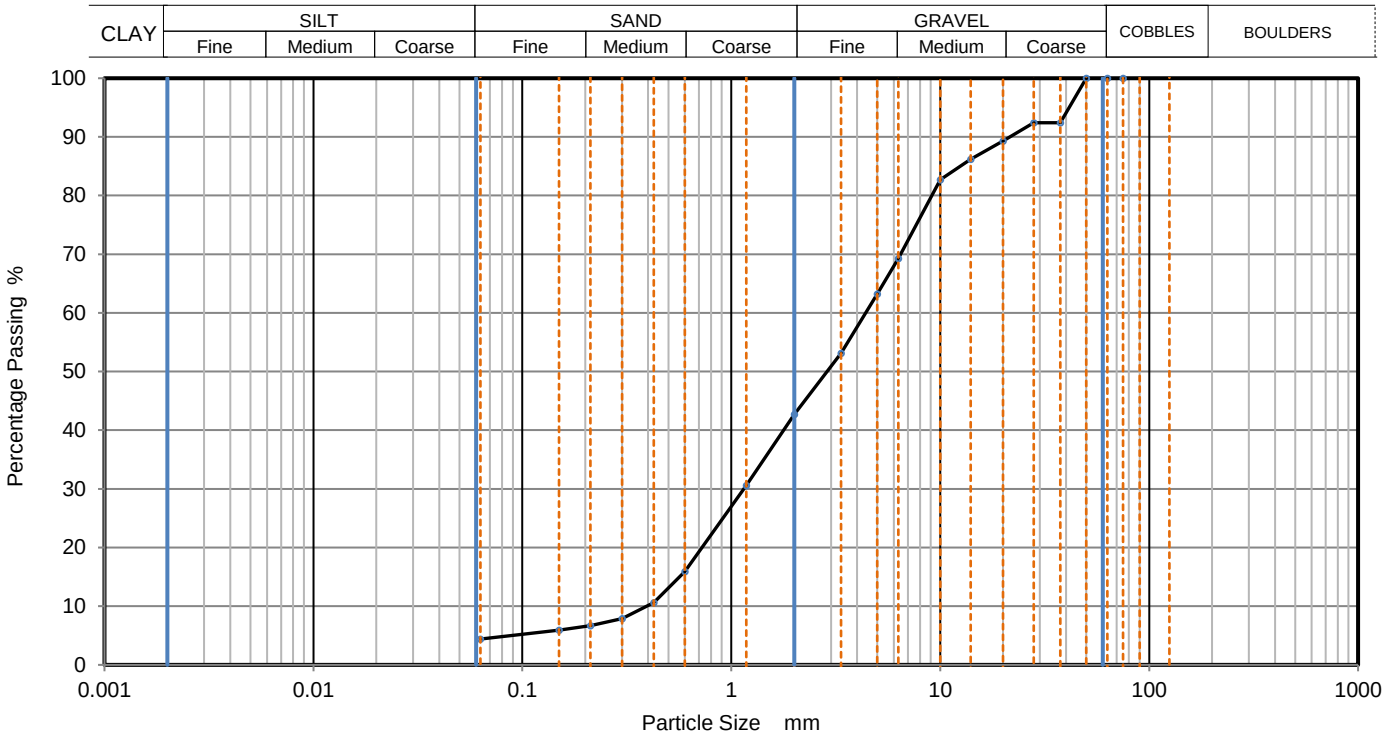
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT09
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Dark bluish-grey slighlty silty very sandy fine and medium GRAVEL.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230607218



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	92		
28	92		
20	89		
14	86		
10	83		
6.3	69		
5	63		
3.35	53		
2	43		
1.18	31		
0.6	16		
0.425	11		
0.3	8		
0.212	7		
0.15	6		
0.063	4		

Dry Mass of sample, g	1109

Sample Proportions	% dry mass
Very coarse	0
Gravel	57
Sand	38
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	4.41
D30	mm	1.15
D10	mm	0.394
Uniformity Coefficient		11
Curvature Coefficient		0.76

Remarks

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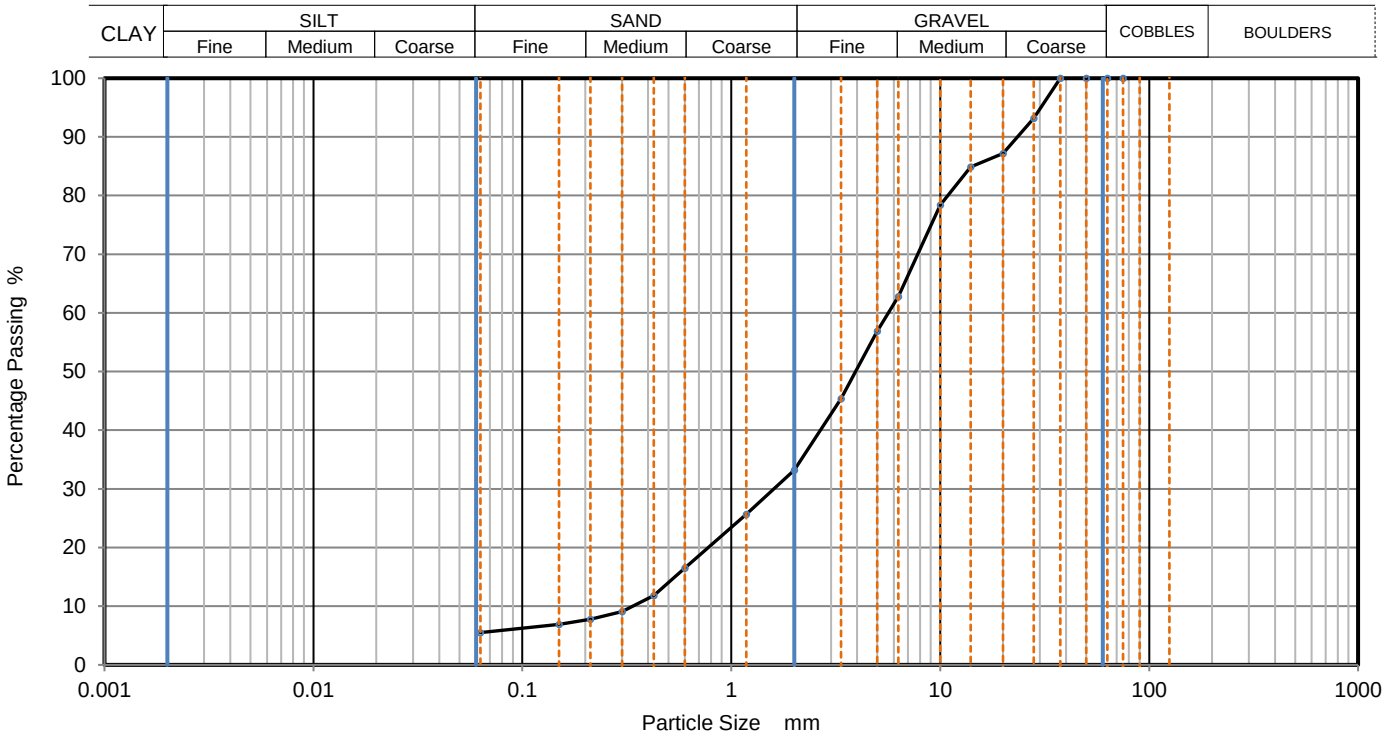
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT10
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Dark bluish-grey silty very sandy medium and fine GRAVEL.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023060725



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	87		
14	85		
10	78		
6.3	63		
5	57		
3.35	45		
2	33		
1.18	26		
0.6	17		
0.425	12		
0.3	9		
0.212	8		
0.15	7		
0.063	6		

Dry Mass of sample, g: 1013

Sample Proportions	% dry mass
Very coarse	0
Gravel	67
Sand	28
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	5.64
D30	mm	1.6
D10	mm	0.336
Uniformity Coefficient		17
Curvature Coefficient		1.3

Remarks

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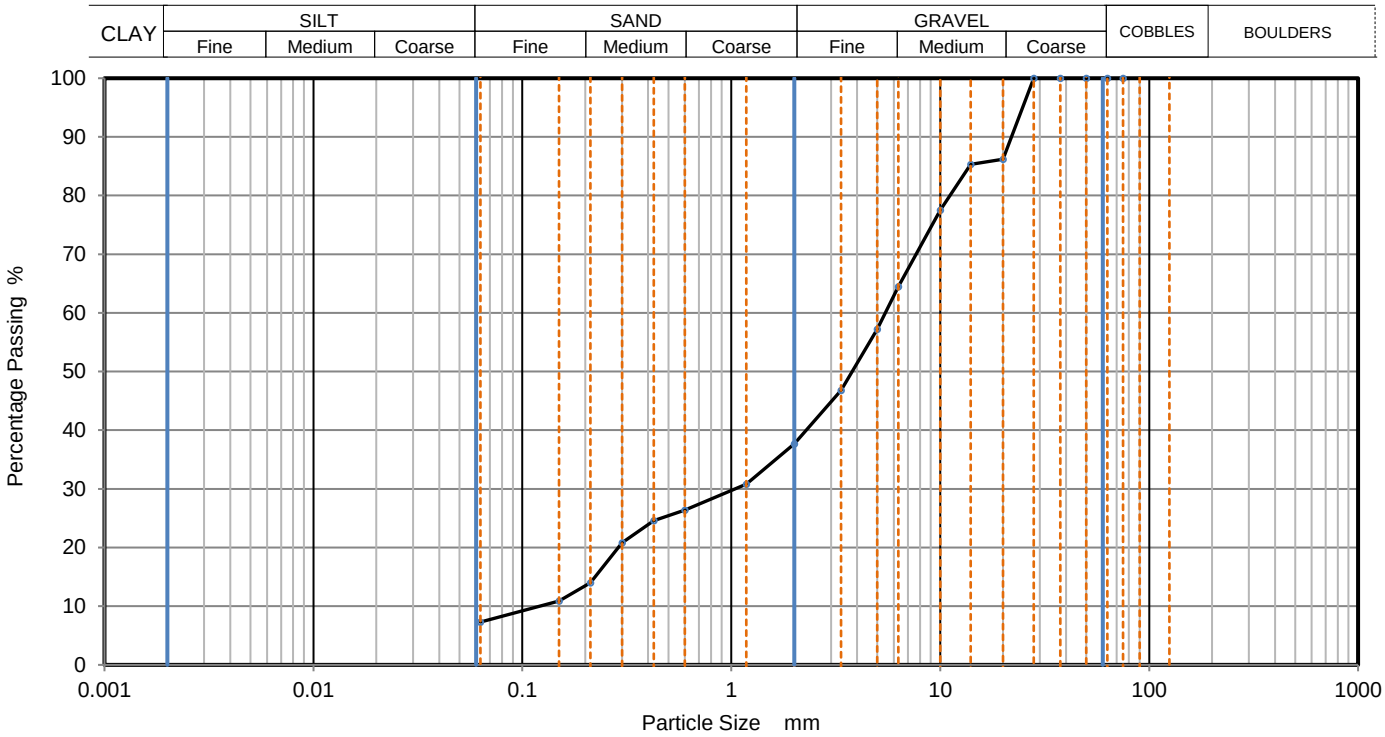
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT11
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Dark bluish-grey silty very sandy medium and fine GRAVEL.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023060749



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	86		
14	85		
10	78		
6.3	65		
5	57		
3.35	47		
2	38		
1.18	31		
0.6	26		
0.425	25		
0.3	21		
0.212	14		
0.15	11		
0.063	7		

Dry Mass of sample, g	923

Sample Proportions	% dry mass
Very coarse	0
Gravel	62
Sand	30
Fines <0.063mm	7

Grading Analysis		
D100	mm	
D60	mm	5.46
D30	mm	1.05
D10	mm	0.121
Uniformity Coefficient		45
Curvature Coefficient		1.7

Remarks

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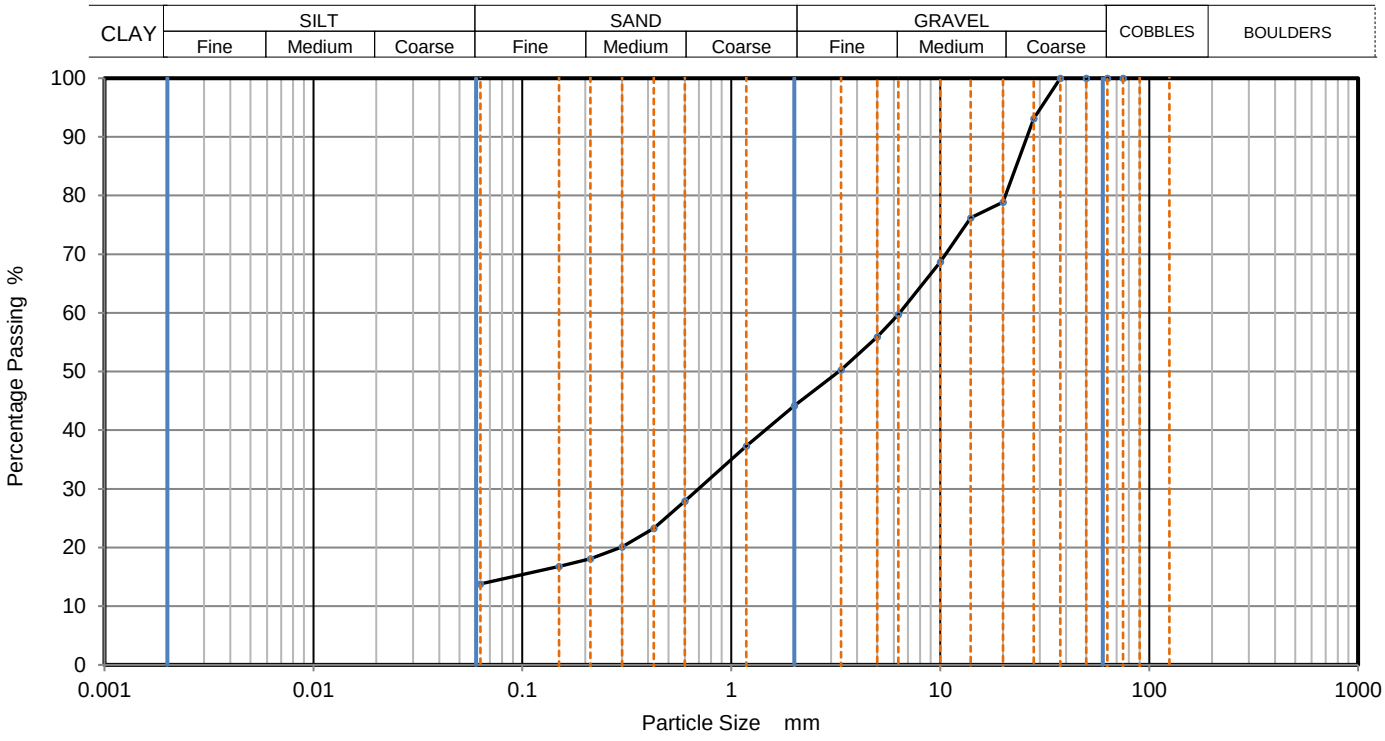
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT12
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Dark brownish-grey silty very sandy coarse GRAVEL.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023060765



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	79		
14	76		
10	69		
6.3	60		
5	56		
3.35	50		
2	44		
1.18	37		
0.6	28		
0.425	23		
0.3	20		
0.212	18		
0.15	17		
0.063	14		

Dry Mass of sample, g	816

Sample Proportions	% dry mass
Very coarse	0
Gravel	56
Sand	30
Fines <0.063mm	14

Grading Analysis		
D100	mm	
D60	mm	6.38
D30	mm	0.699
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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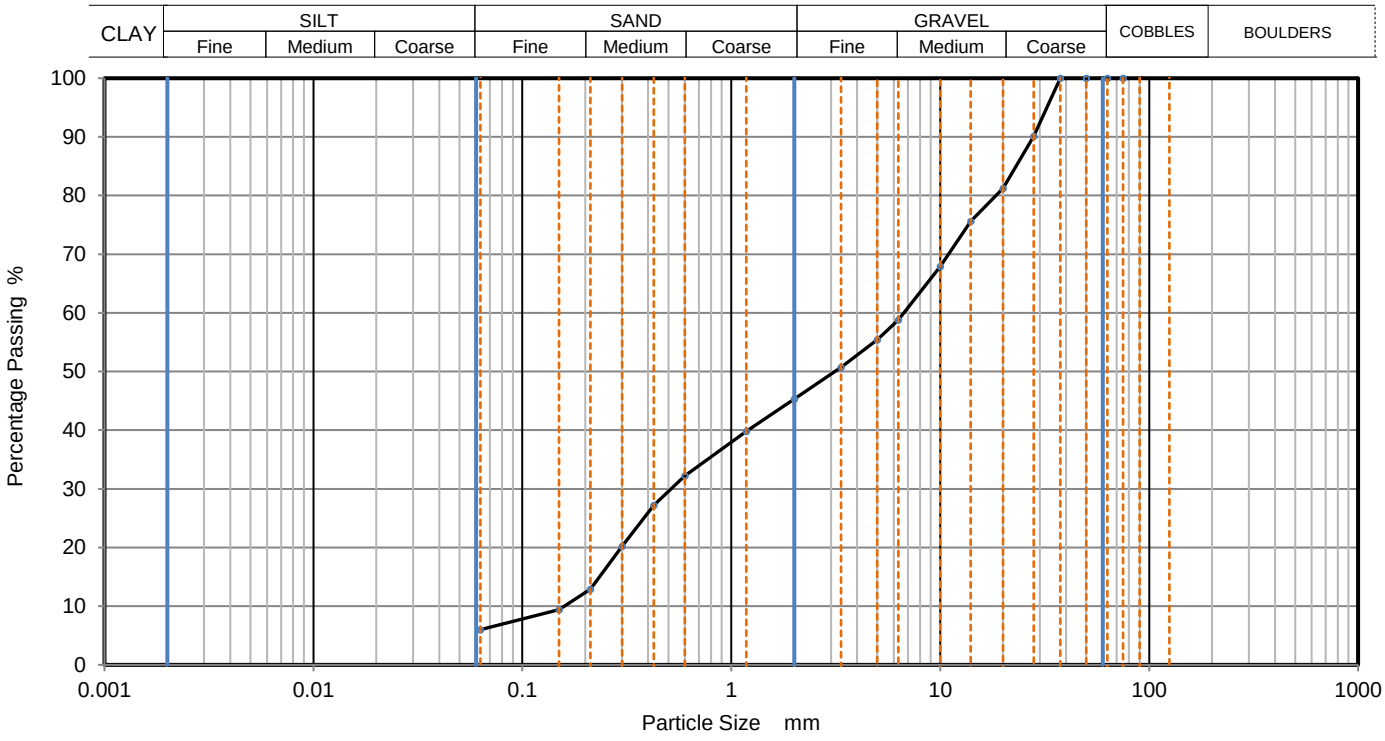
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT14
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Dark brownish-grey silty very sandy medium GRAVEL.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230607112



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	90		
20	81		
14	76		
10	68		
6.3	59		
5	55		
3.35	51		
2	45		
1.18	40		
0.6	32		
0.425	27		
0.3	20		
0.212	13		
0.15	9		
0.063	6		

Dry Mass of sample, g	1043

Sample Proportions	% dry mass
Very coarse	0
Gravel	55
Sand	39
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	6.69
D30	mm	0.515
D10	mm	0.159
Uniformity Coefficient		42
Curvature Coefficient		0.25

Remarks

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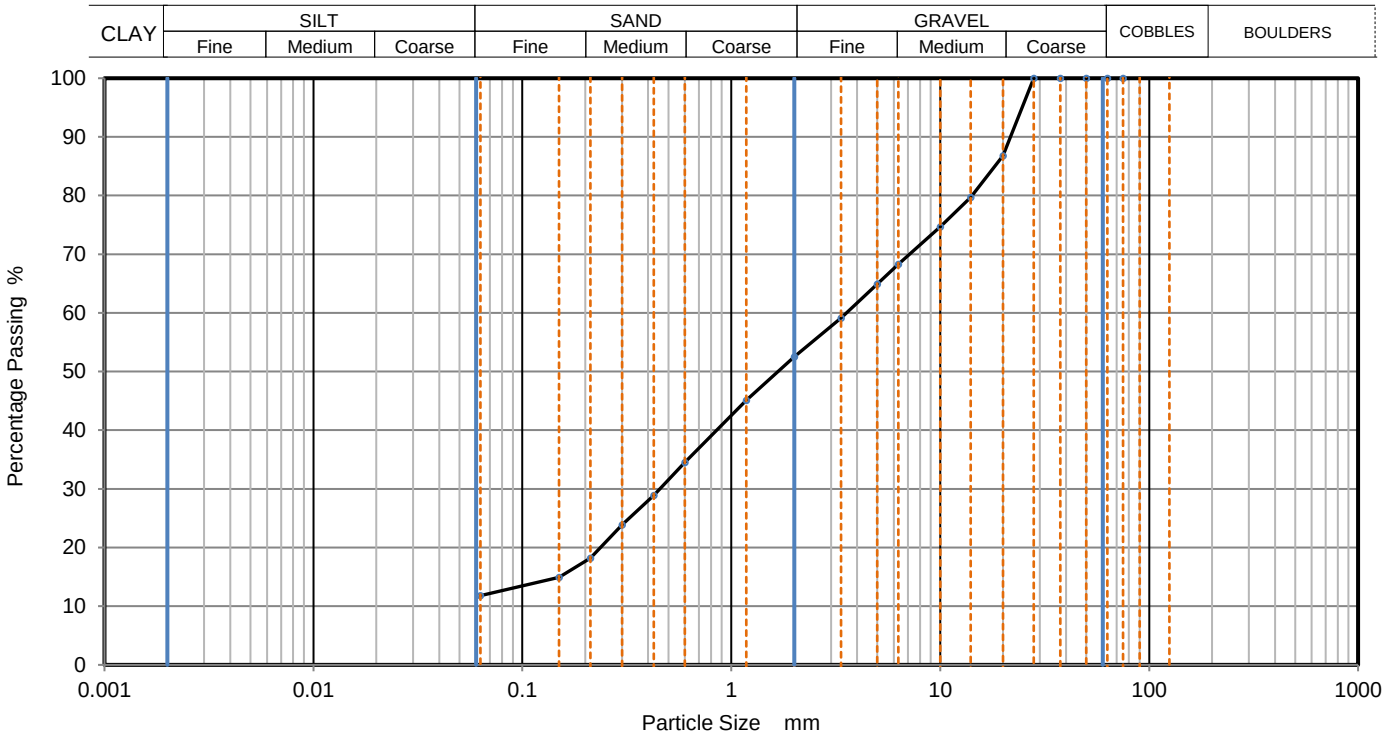
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT16
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Blackish-brown silty (peaty) SAND and GRAVEL.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703136



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	87		
14	80		
10	75		
6.3	68		
5	65		
3.35	59		
2	53		
1.18	45		
0.6	35		
0.425	29		
0.3	24		
0.212	18		
0.15	15		
0.063	12		

Dry Mass of sample, g	529

Sample Proportions	% dry mass
Very coarse	0
Gravel	48
Sand	41
Fines <0.063mm	12

Grading Analysis		
D100	mm	
D60	mm	3.57
D30	mm	0.454
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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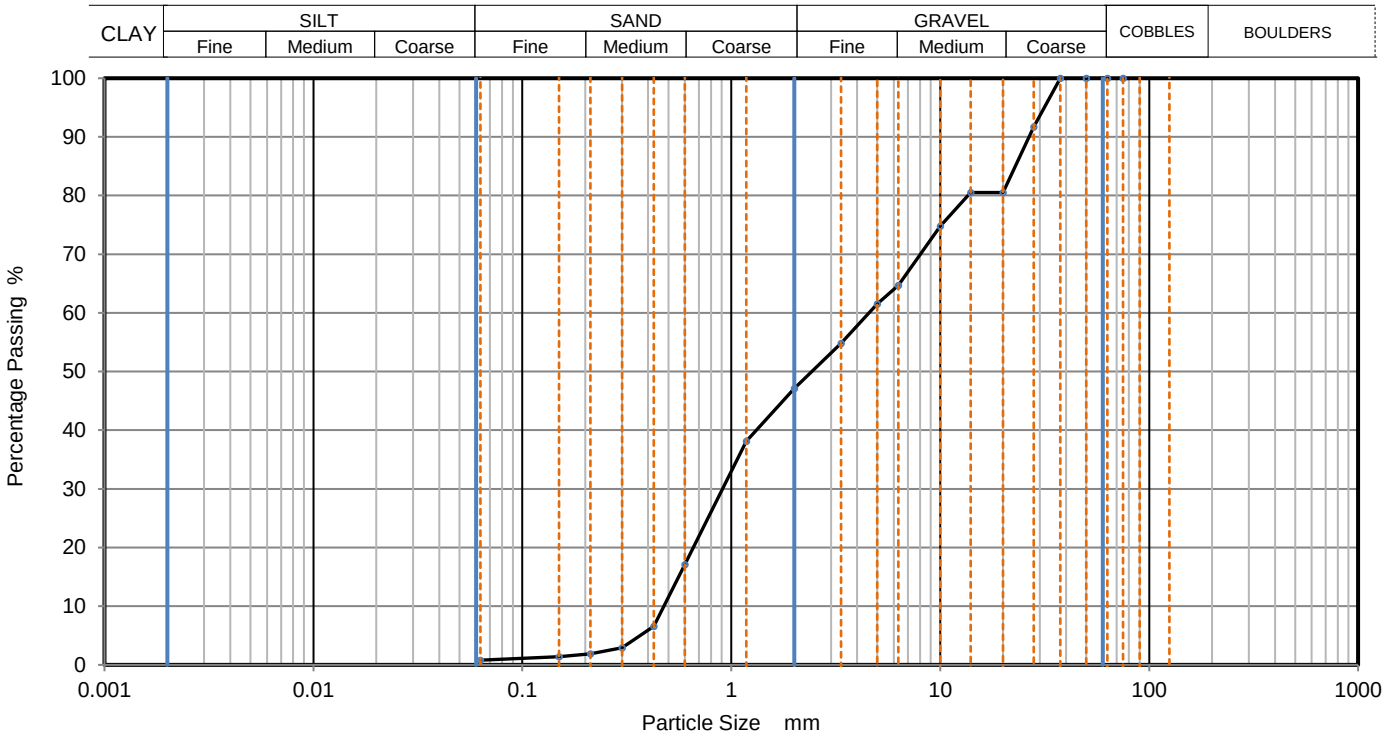
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT16
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Dark bluish-grey coarse SAND and GRAVEL.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703139



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	92		
20	81		
14	81		
10	75		
6.3	65		
5	62		
3.35	55		
2	47		
1.18	38		
0.6	17		
0.425	7		
0.3	3		
0.212	2		
0.15	1		
0.063	1		

Dry Mass of sample, g: 1030

Sample Proportions	% dry mass
Very coarse	0
Gravel	53
Sand	46
Fines <0.063mm	1

Grading Analysis		
D100	mm	
D60	mm	4.57
D30	mm	0.908
D10	mm	0.475
Uniformity Coefficient		9.6
Curvature Coefficient		0.38

Remarks

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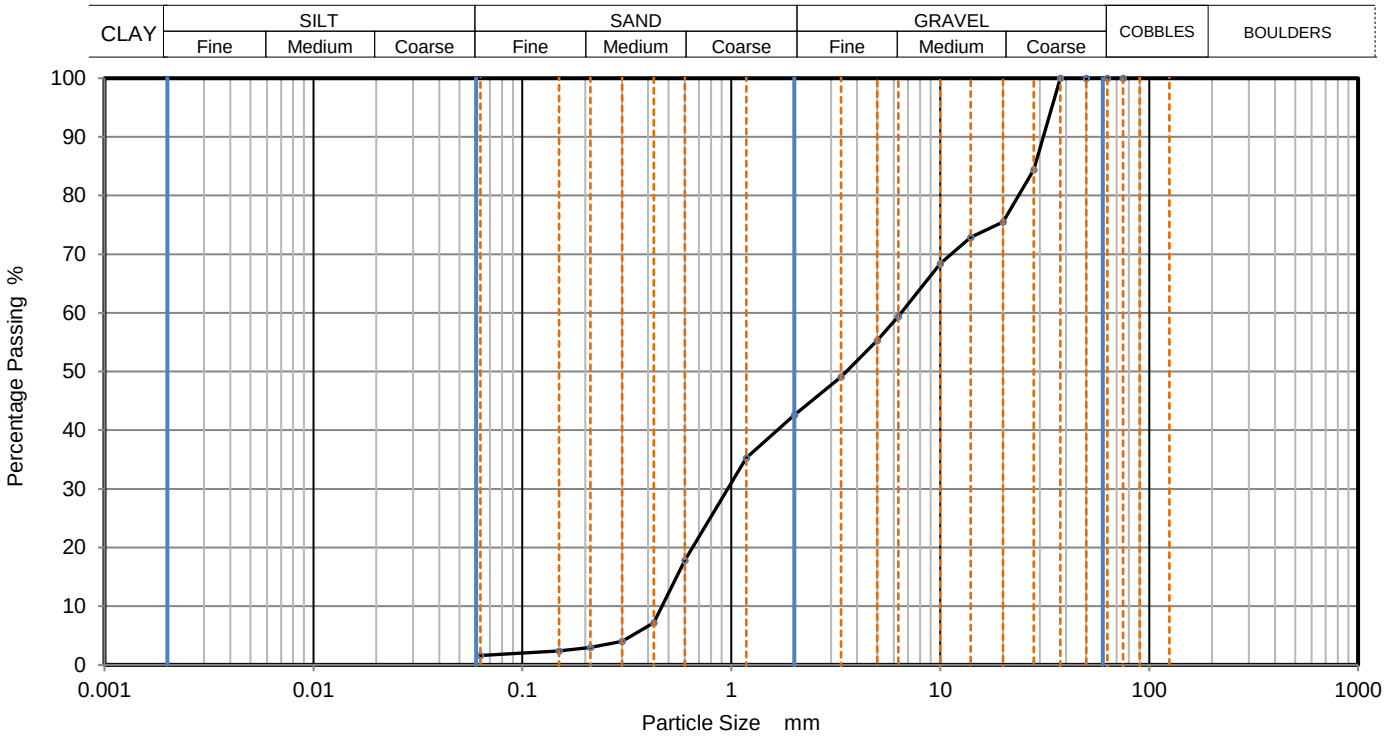
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT16
Site Name	Derrygreenagh Power	Sample No.	13
Soil Description	Bluish-grey slightly silty very sandy coarse GRAVEL. Sand is coarse.	Depth, m	4.00
Specimen Reference	Specimen Depth: m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703149



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	84		
20	76		
14	73		
10	68		
6.3	59		
5	55		
3.35	49		
2	43		
1.18	35		
0.6	18		
0.425	7		
0.3	4		
0.212	3		
0.15	2		
0.063	2		

Dry Mass of sample, g: 1062

Sample Proportions	% dry mass
Very coarse	0
Gravel	57
Sand	41
Fines <0.063mm	2

Grading Analysis		
D100	mm	
D60	mm	6.48
D30	mm	0.961
D10	mm	0.466
Uniformity Coefficient		14
Curvature Coefficient		0.31

Remarks

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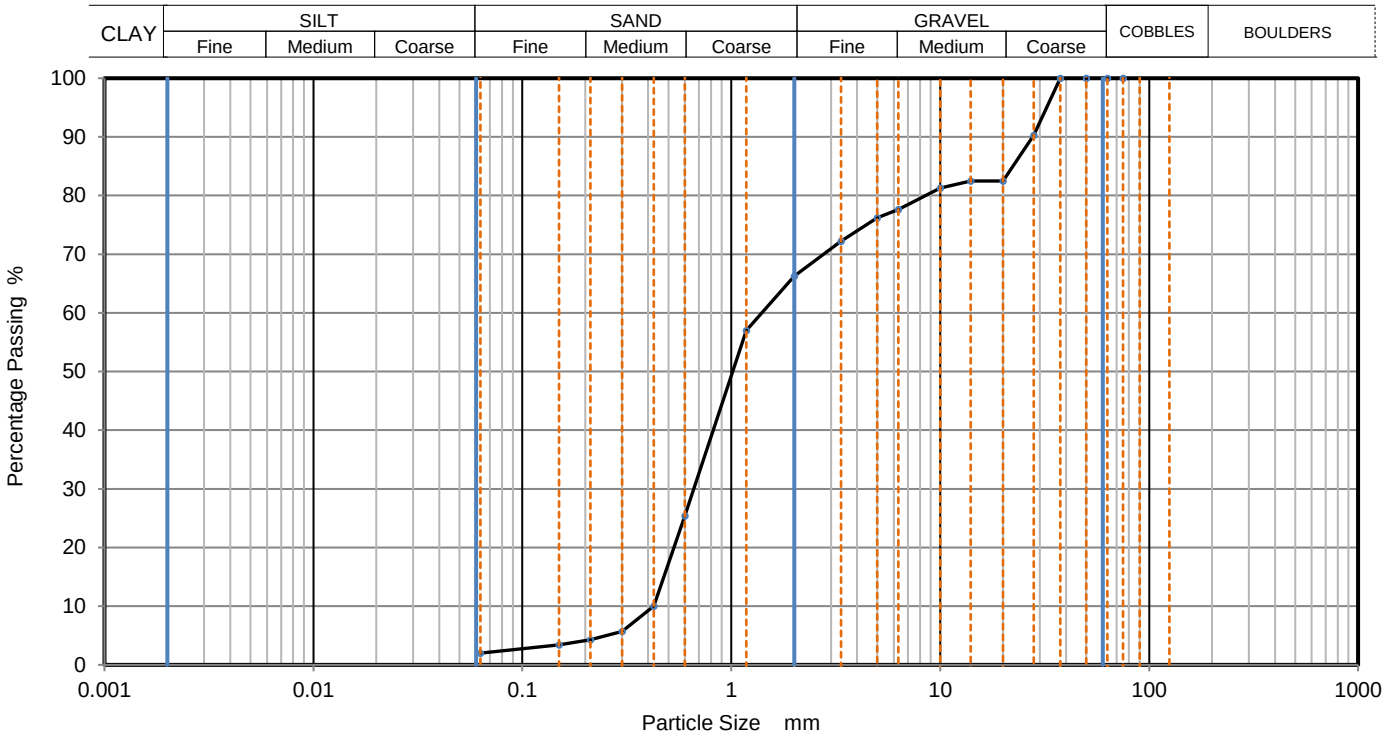
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT16
Site Name	Derrygreenagh Power	Sample No.	22
Soil Description	Bluish-grey very gravelly coarse SAND.	Depth, m	8.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230703158



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	90		
20	83		
14	83		
10	81		
6.3	78		
5	76		
3.35	72		
2	66		
1.18	57		
0.6	25		
0.425	10		
0.3	6		
0.212	4		
0.15	3		
0.063	2		

Dry Mass of sample, g	893

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	64
Fines <0.063mm	2

Grading Analysis		
D100	mm	
D60	mm	1.4
D30	mm	0.662
D10	mm	0.425
Uniformity Coefficient		3.3
Curvature Coefficient		0.74

Remarks

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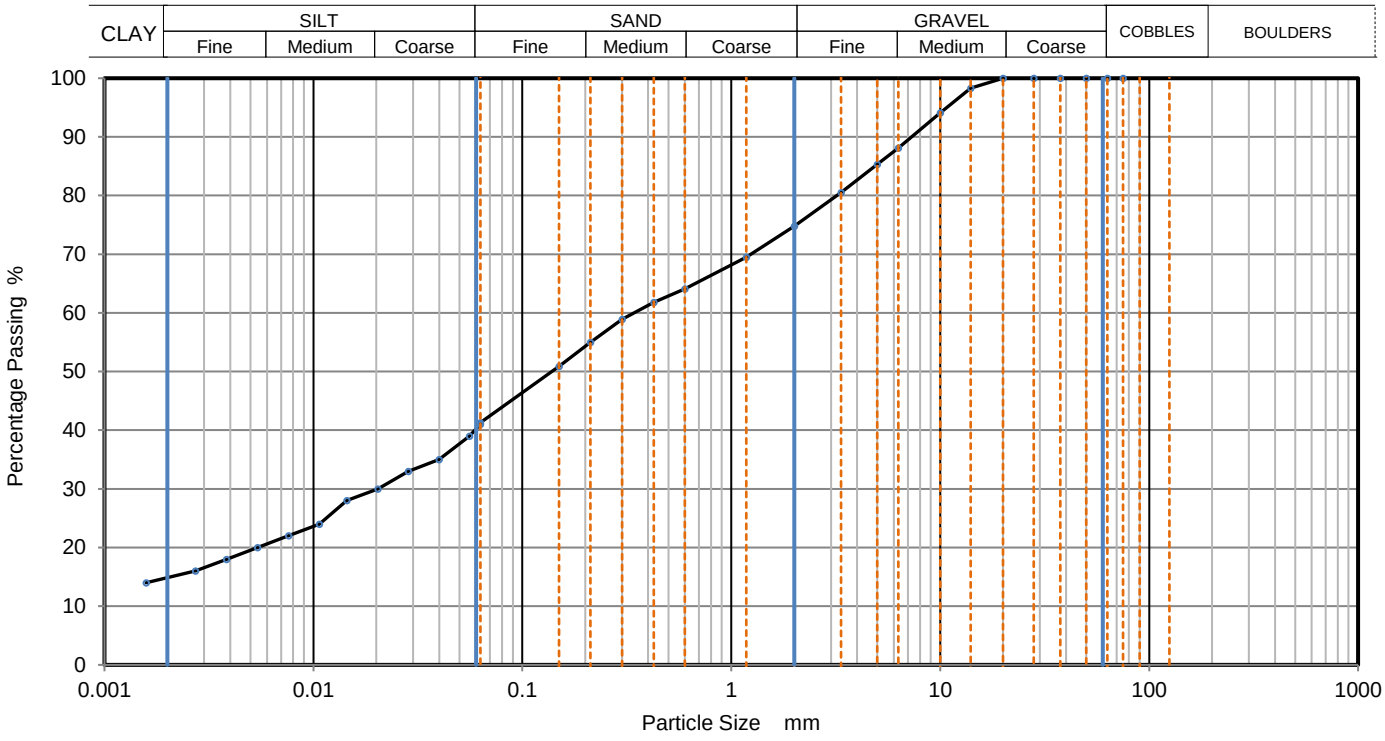
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT16A
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Dark greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	0.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202308080



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0558	39
75	100	0.0400	35
63	100	0.0284	33
50	100	0.0203	30
37.5	100	0.0145	28
28	100	0.0107	24
20	100	0.0076	22
14	98	0.0054	20
10	94	0.0038	18
6.3	88	0.0027	16
5	85	0.0016	14
3.35	81		
2	75		
1.18	70		
0.6	64	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	59		
0.212	55		
0.15	51		
0.063	41		

Dry Mass of sample, g	528

Sample Proportions	% dry mass
Very coarse	0
Gravel	25
Sand	34
Silt	27
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.343
D30	mm	0.0212
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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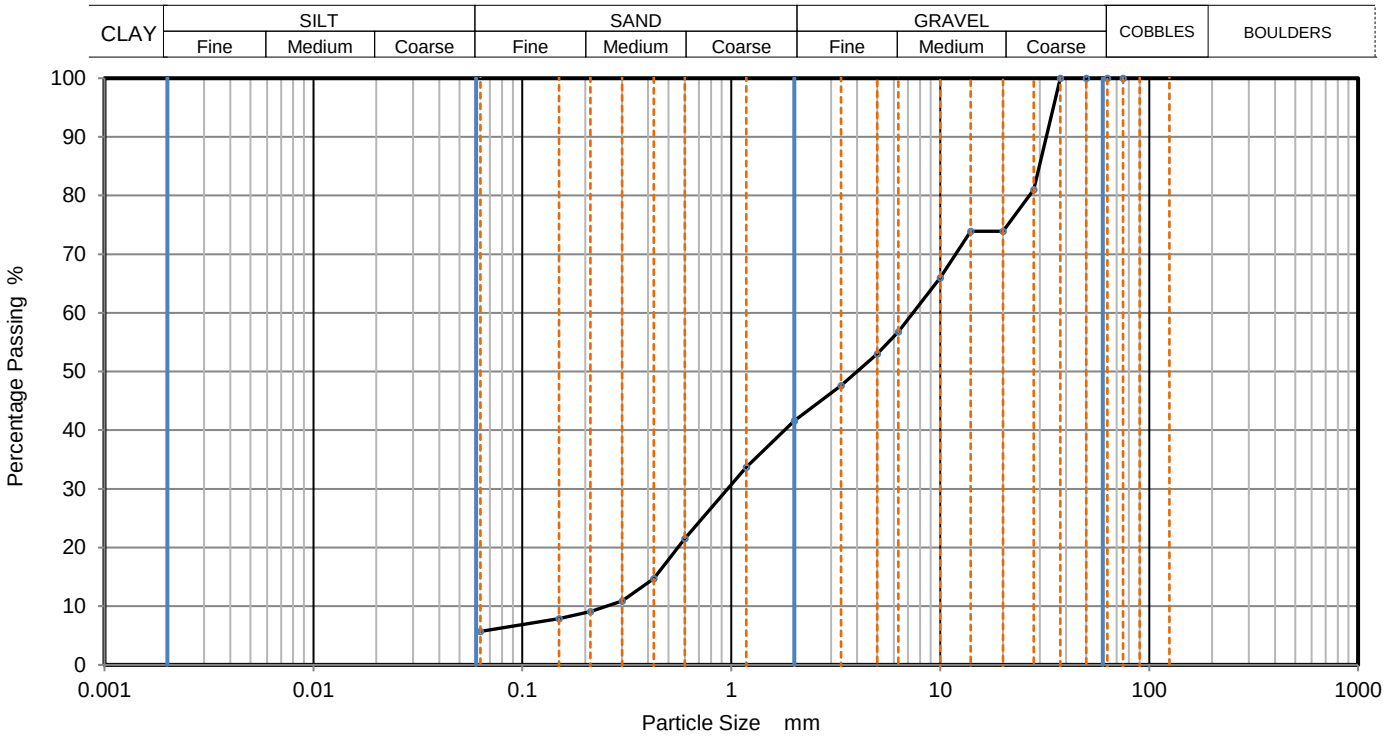
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT16A
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Dark brownish-grey silty very sandy coarse GRAVEL. Sand is coarse.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL1202308083



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	81		
20	74		
14	74		
10	66		
6.3	57		
5	53		
3.35	48		
2	42		
1.18	34		
0.6	22		
0.425	15		
0.3	11		
0.212	9		
0.15	8		
0.063	6		

Dry Mass of sample, g	779

Sample Proportions	% dry mass
Very coarse	0
Gravel	58
Sand	36
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	7.4
D30	mm	0.963
D10	mm	0.253
Uniformity Coefficient		29
Curvature Coefficient		0.49

Remarks

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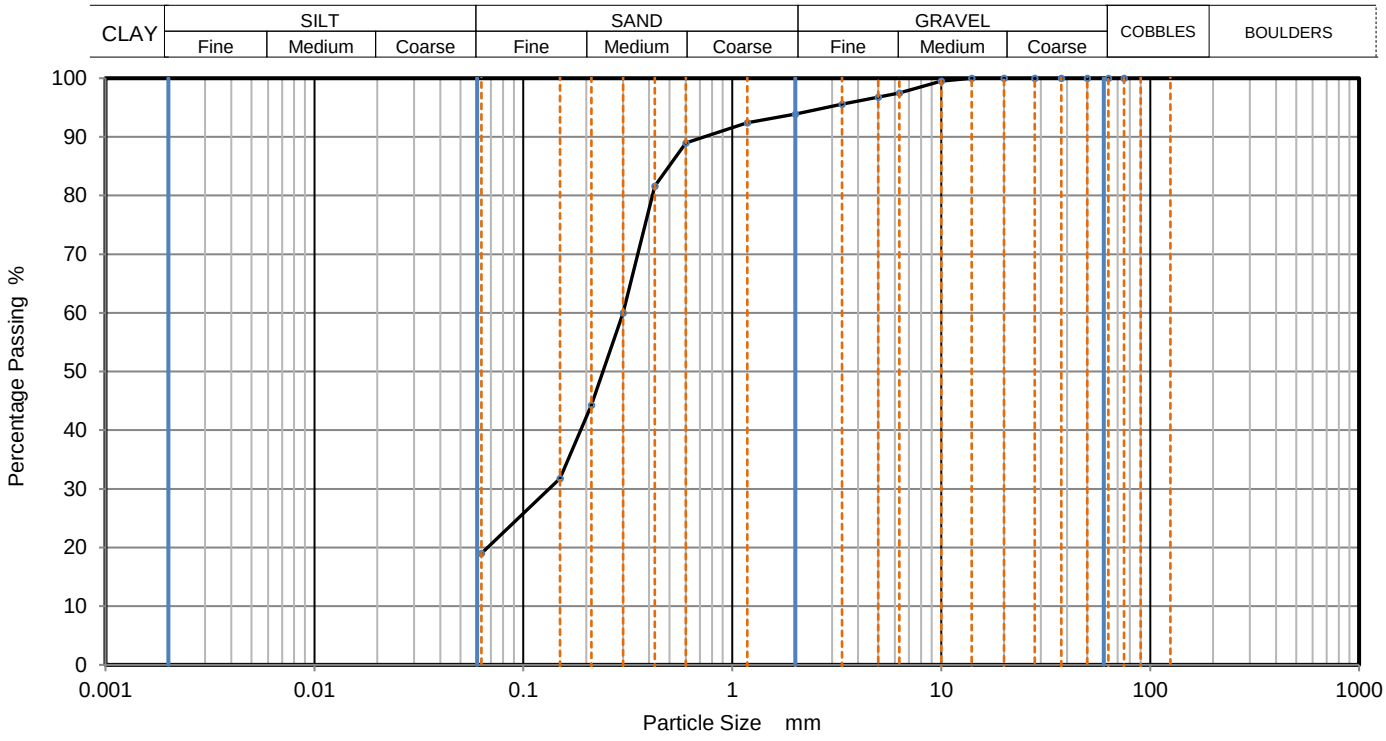
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT17
Site Name	Derrygreenagh Power	Sample No.	9
Soil Description	Dark bluish-grey gravelly silty medium SAND.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL120230607153



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	98		
5	97		
3.35	96		
2	94		
1.18	92		
0.6	89		
0.425	82		
0.3	60		
0.212	44		
0.15	32		
0.063	19		

Dry Mass of sample, g	965

Sample Proportions	% dry mass
Very coarse	0
Gravel	6
Sand	75
Fines <0.063mm	19

Grading Analysis		
D100	mm	
D60	mm	0.3
D30	mm	0.132
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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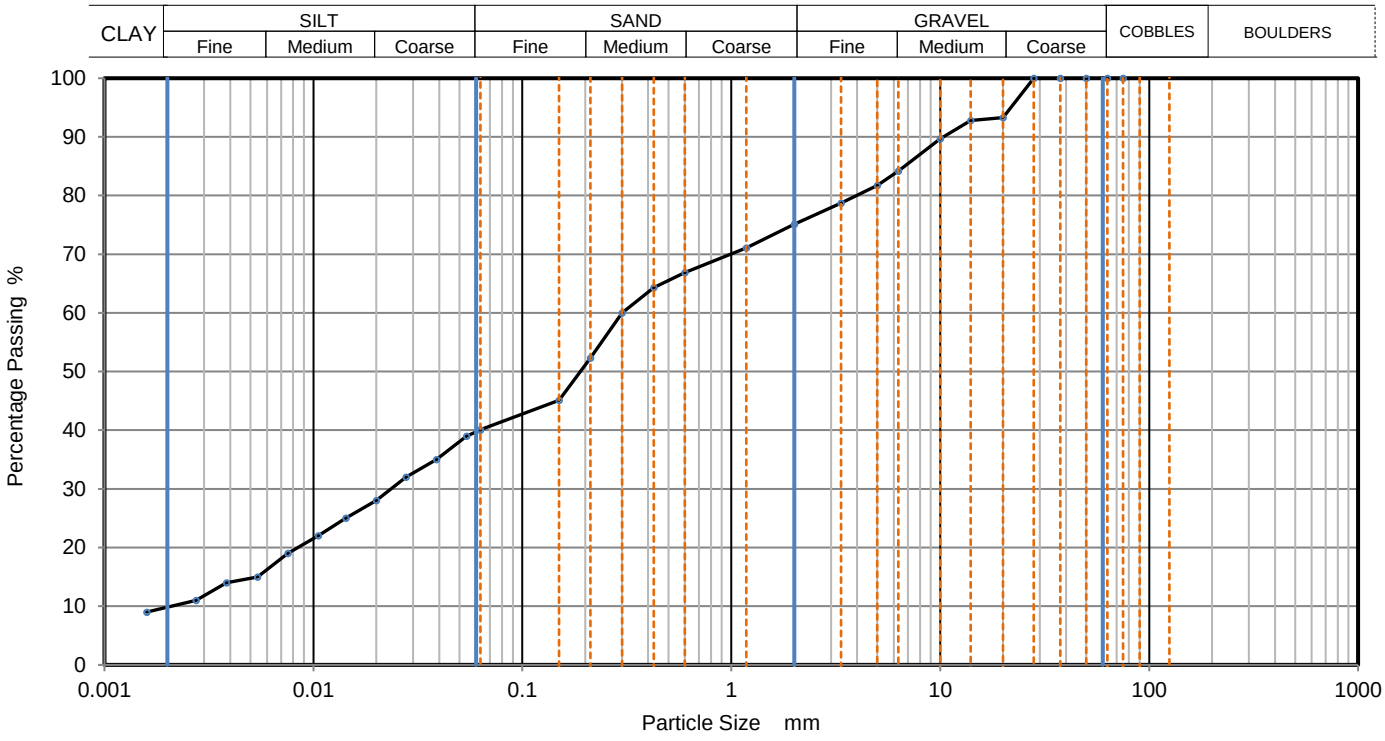
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power	Sample No.	7
Soil Description	Light grey slightly gravelly sandy SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023080813



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	40
		0.0541	39
75	100	0.0388	35
63	100	0.0278	32
50	100	0.0200	28
37.5	100	0.0143	25
28	100	0.0106	22
20	93	0.0076	19
14	93	0.0054	15
10	90	0.0038	14
6.3	84	0.0027	11
5	82	0.0016	9
3.35	79		
2	75		
1.18	71		
0.6	67	Particle density	(assumed)
0.425	64	2.65	Mg/m3
0.3	60		
0.212	52		
0.15	45		
0.063	40		

Dry Mass of sample, g	1063

Sample Proportions	% dry mass
Very coarse	0
Gravel	25
Sand	35
Silt	30
Clay	10

Grading Analysis		
D100	mm	
D60	mm	0.3
D30	mm	0.0234
D10	mm	0.00207
Uniformity Coefficient		140
Curvature Coefficient		0.88

Remarks

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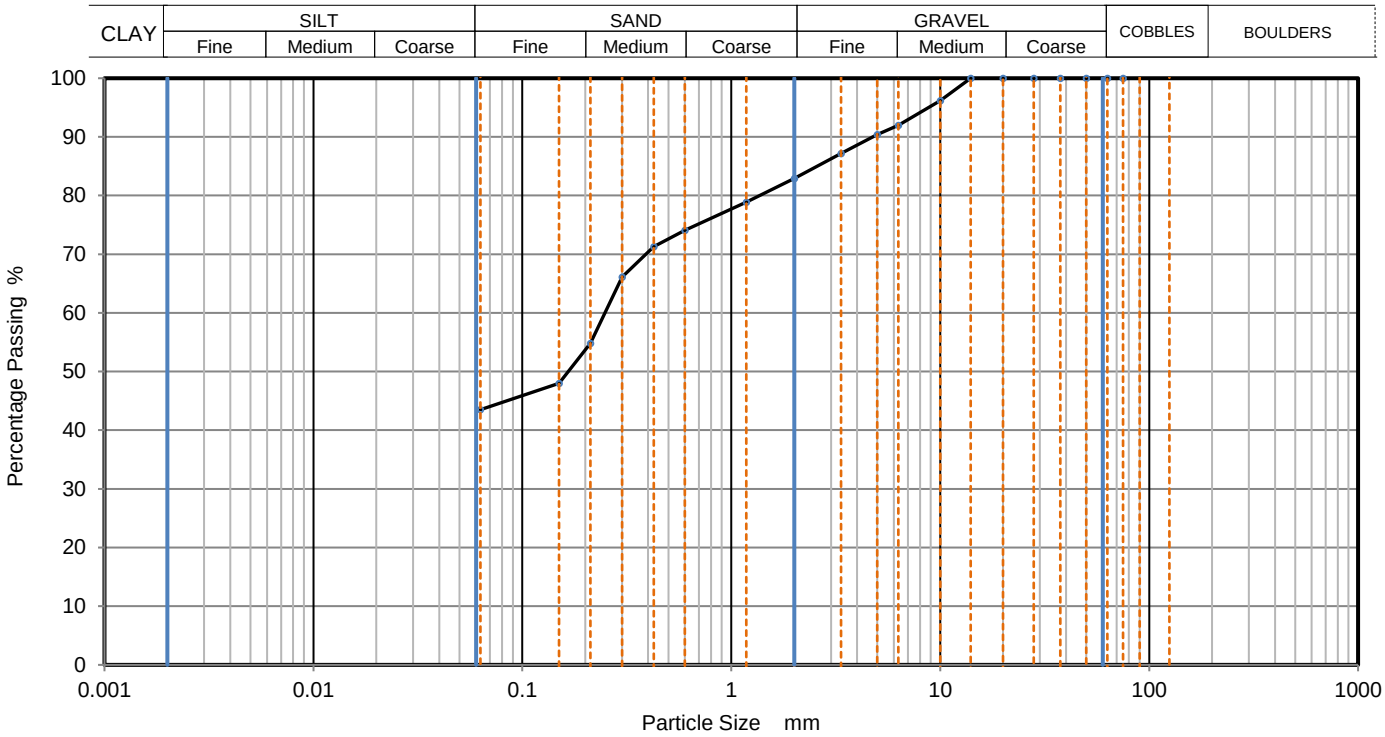
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Brownish-grey slightly gravelly sandy SILT.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023080817



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	96		
6.3	92		
5	90		
3.35	87		
2	83		
1.18	79		
0.6	74		
0.425	71		
0.3	66		
0.212	55		
0.15	48		
0.063	44		

Dry Mass of sample, g: 884

Sample Proportions	% dry mass
Very coarse	0
Gravel	17
Sand	39
Fines <0.063mm	44

Grading Analysis		
D100	mm	
D60	mm	0.248
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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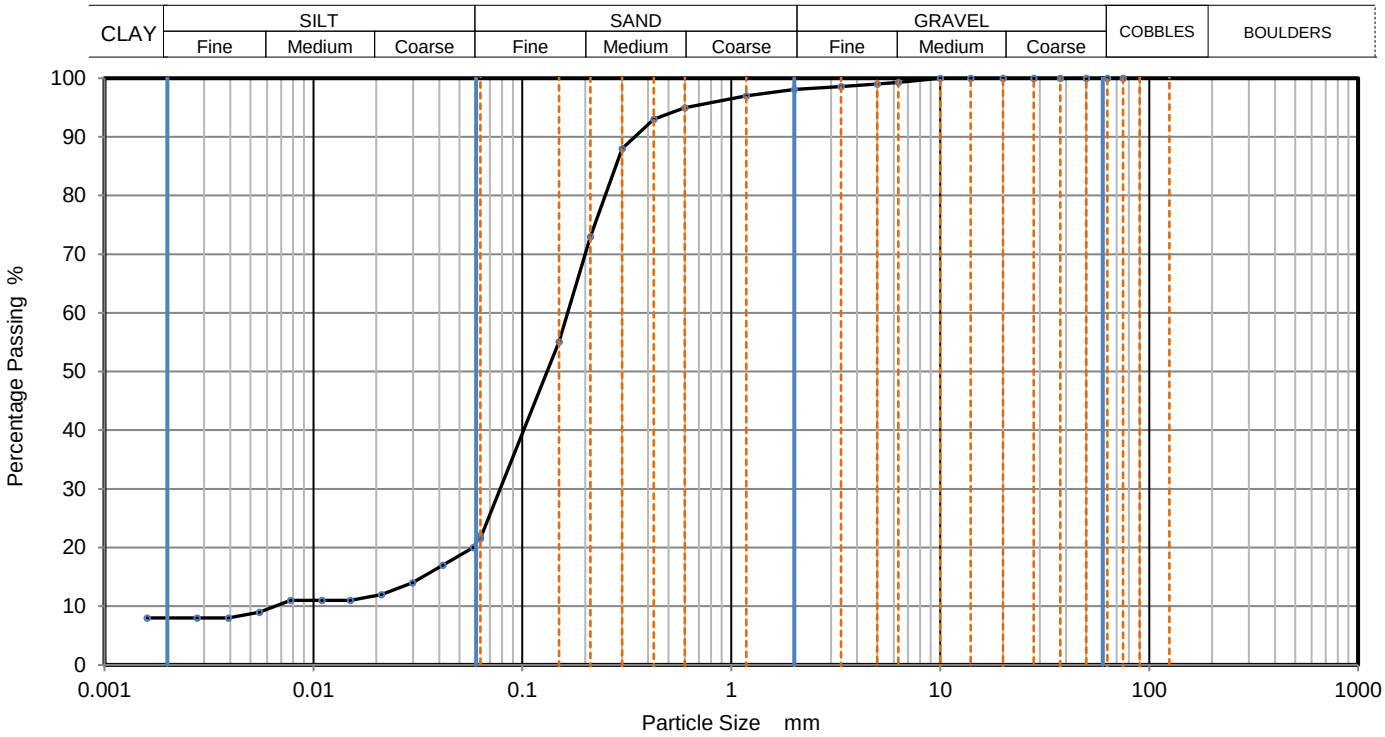
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT18A
Site Name	Derrygreenagh Power	Sample No.	10
Soil Description	Grey slightly gravelly very silty fine SAND.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023080833



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	22
		0.0582	20
75	100	0.0416	17
63	100	0.0297	14
50	100	0.0211	12
37.5	100	0.0150	11
28	100	0.0110	11
20	100	0.0078	11
14	100	0.0055	9
10	100	0.0039	8
6.3	99	0.0028	8
5	99	0.0016	8
3.35	99		
2	98		
1.18	97		
0.6	95	Particle density	(assumed)
0.425	93	2.65	Mg/m3
0.3	88		
0.212	73		
0.15	55		
0.063	22		

Dry Mass of sample, g: 1152

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	77
Silt	14
Clay	8

Grading Analysis		
D100	mm	
D60	mm	0.165
D30	mm	0.0784
D10	mm	0.00657
Uniformity Coefficient		25
Curvature Coefficient		5.7

Remarks

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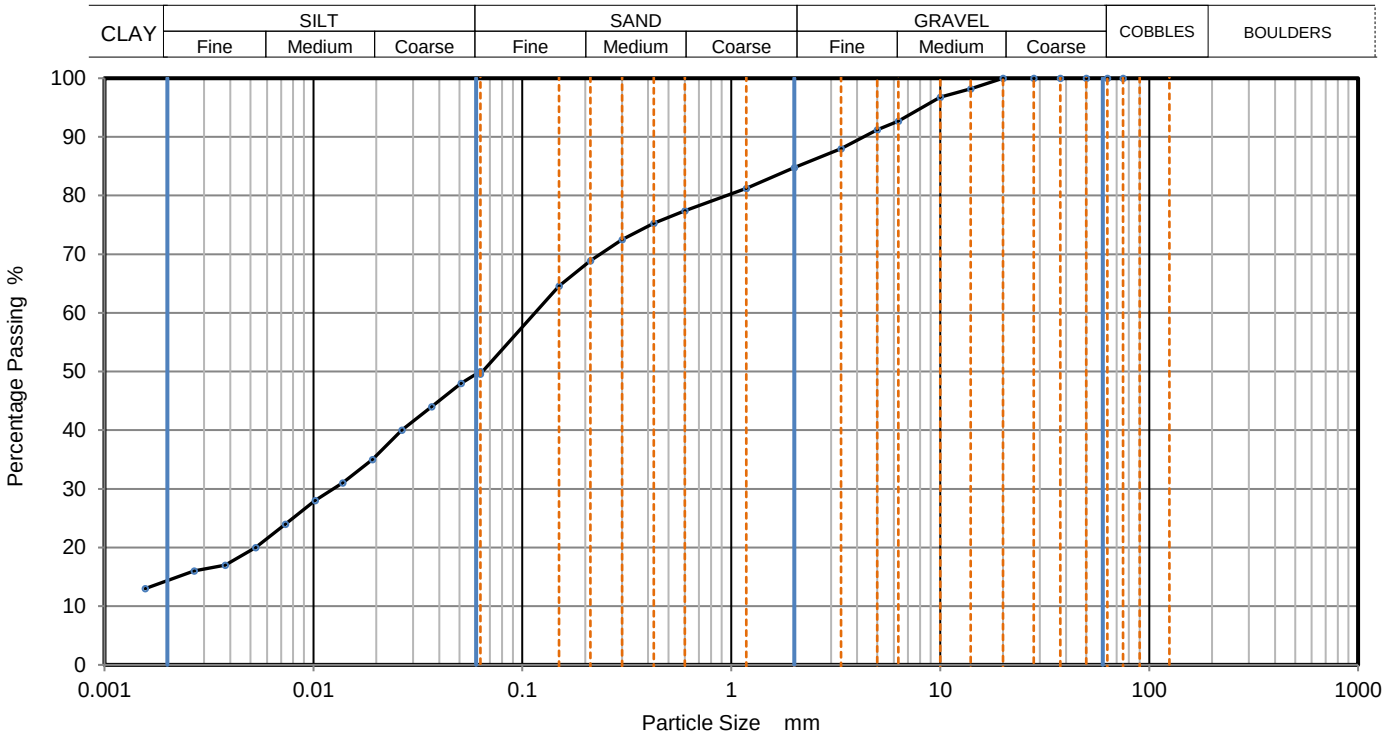
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	BHT18A
Site Name	Derrygreenagh Power	Sample No.	16
Soil Description	Dark grey slightly gravelly sandy SILT. Sand is fine.	Depth, m	5.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023080839



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	50
		0.0509	48
75	100	0.0368	44
63	100	0.0265	40
50	100	0.0191	35
37.5	100	0.0138	31
28	100	0.0102	28
20	100	0.0073	24
14	98	0.0053	20
10	97	0.0038	17
6.3	93	0.0027	16
5	91	0.0016	13
3.35	88		
2	85		
1.18	81		
0.6	77	Particle density	(assumed)
0.425	75	2.65	Mg/m3
0.3	73		
0.212	69		
0.15	65		
0.063	50		

Dry Mass of sample, g: 983

Sample Proportions	% dry mass
Very coarse	0
Gravel	15
Sand	35
Silt	36
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.115
D30	mm	0.0122
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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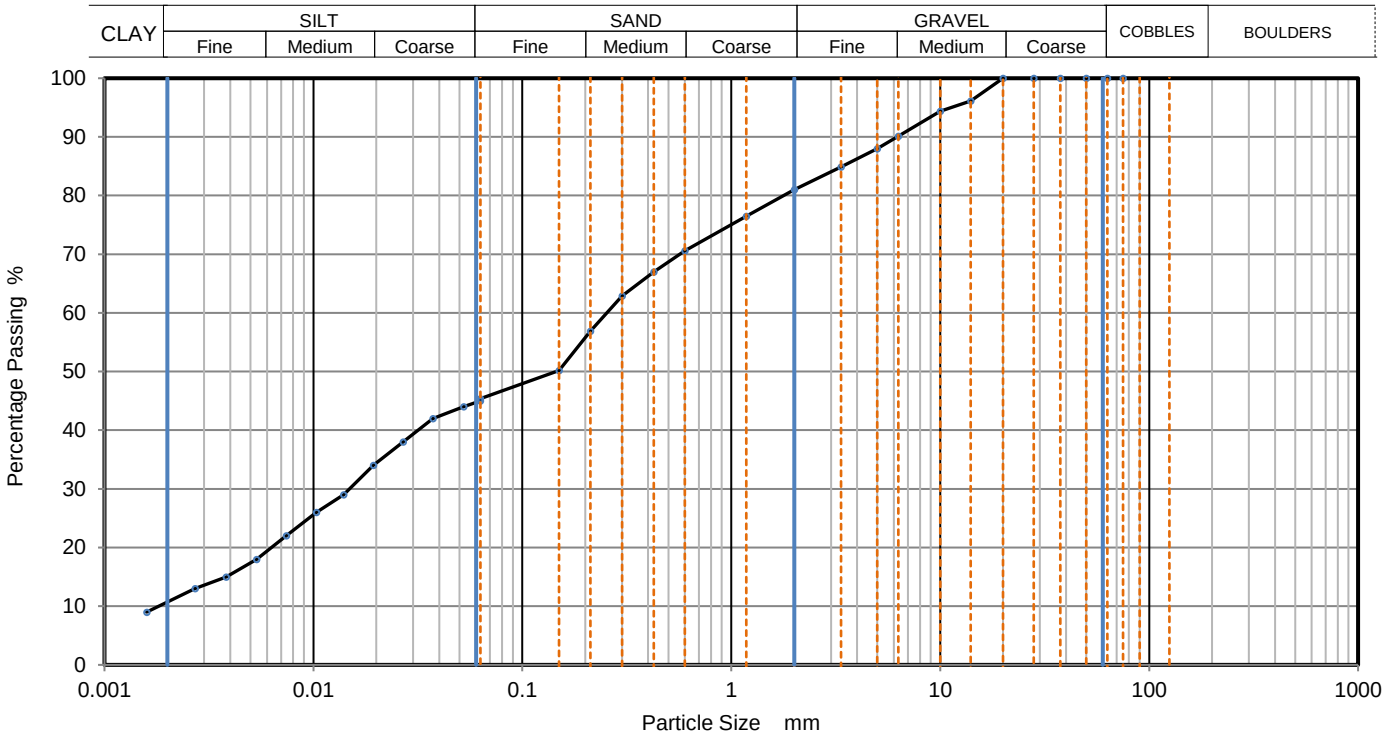
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP201
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Dark grey slightly gravelly sandy SILT.	Depth, m	2.80
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230505115



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0523	44
75	100	0.0373	42
63	100	0.0269	38
50	100	0.0194	34
37.5	100	0.0140	29
28	100	0.0103	26
20	100	0.0074	22
14	96	0.0053	18
10	94	0.0038	15
6.3	90	0.0027	13
5	88	0.0016	9
3.35	85		
2	81		
1.18	77		
0.6	71	Particle density	(assumed)
0.425	67	2.65	Mg/m3
0.3	63		
0.212	57		
0.15	50		
0.063	45		

Dry Mass of sample, g	745

Sample Proportions	% dry mass
Very coarse	0
Gravel	19
Sand	36
Silt	35
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.254
D30	mm	0.0147
D10	mm	0.00184
Uniformity Coefficient		140
Curvature Coefficient		0.46

Remarks

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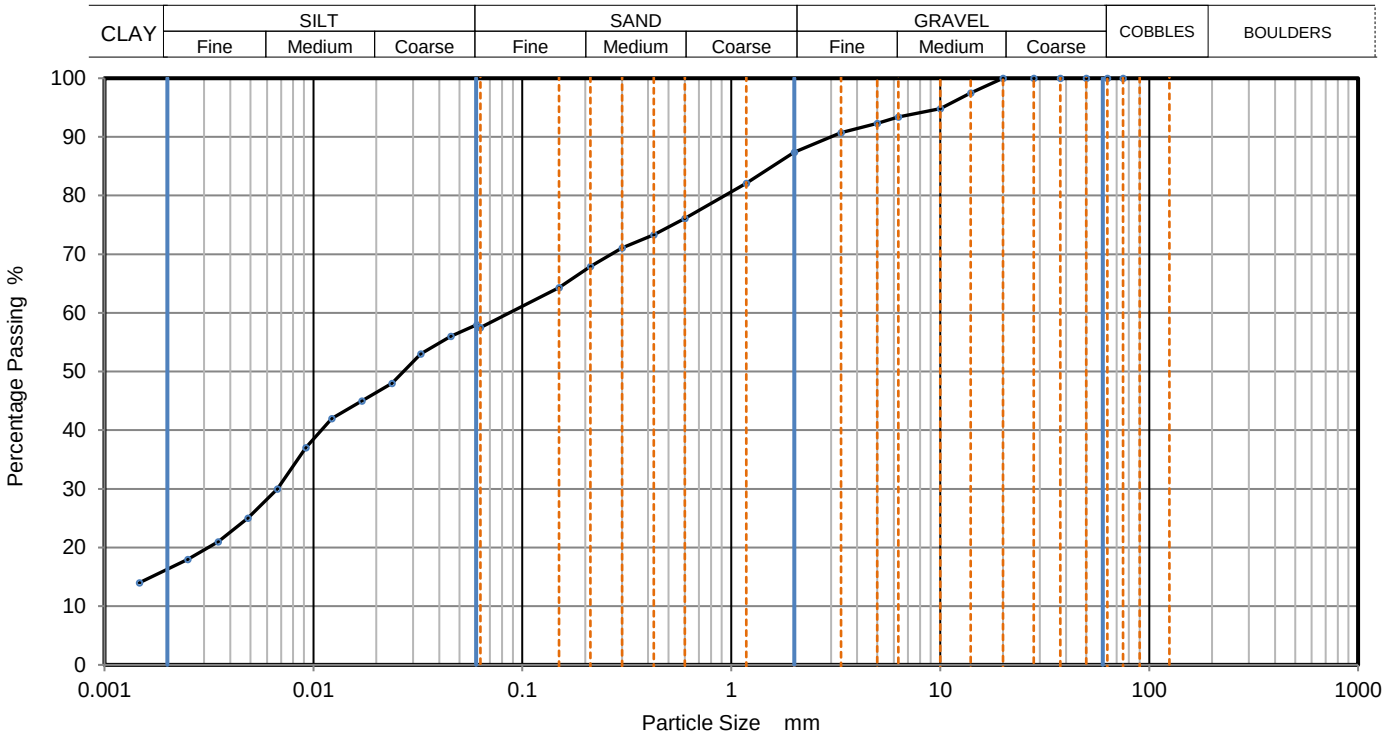
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP204
Site Name	Derrygreenagh Power	Sample No.	5
Soil Description	Greenish-grey slightly gravelly slightly sandy SILT.	Depth, m	2.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230505129



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0606	58
		0.0454	56
75	100	0.0326	53
63	100	0.0238	48
50	100	0.0171	45
37.5	100	0.0122	42
28	100	0.0092	37
20	100	0.0067	30
14	98	0.0049	25
10	95	0.0035	21
6.3	93	0.0025	18
5	92	0.0015	14
3.35	91		
2	87		
1.18	82		
0.6	76	Particle density (assumed)	
0.425	73	2.65 Mg/m3	
0.3	71		
0.212	68		
0.15	64		
0.063	58		

Dry Mass of sample, g	738

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	30
Silt	41
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.0868
D30	mm	0.00667
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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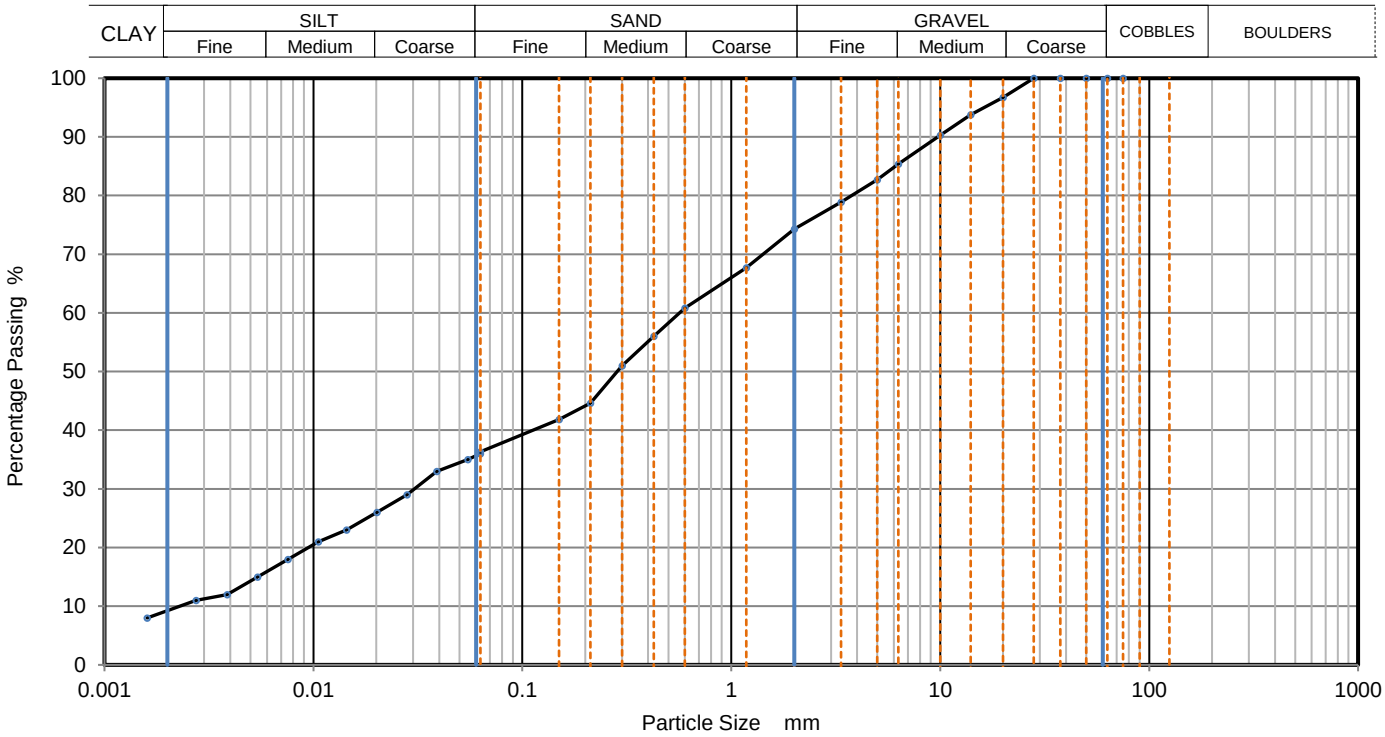
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP205
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Greenish-brown slightly sandy gravelly SILT.	Depth, m	2.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230505134



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	36
		0.0548	35
75	100	0.0390	33
63	100	0.0281	29
50	100	0.0201	26
37.5	100	0.0144	23
28	100	0.0106	21
20	97	0.0076	18
14	94	0.0054	15
10	90	0.0039	12
6.3	85	0.0027	11
5	83	0.0016	8
3.35	79		
2	74		
1.18	68		
0.6	61	Particle density	(assumed)
0.425	56	2.65	Mg/m3
0.3	51		
0.212	45		
0.15	42		
0.063	36		

Dry Mass of sample, g	745

Sample Proportions	% dry mass
Very coarse	0
Gravel	26
Sand	38
Silt	28
Clay	9

Grading Analysis		
D100	mm	
D60	mm	0.566
D30	mm	0.0308
D10	mm	0.00247
Uniformity Coefficient		230
Curvature Coefficient		0.68

Remarks

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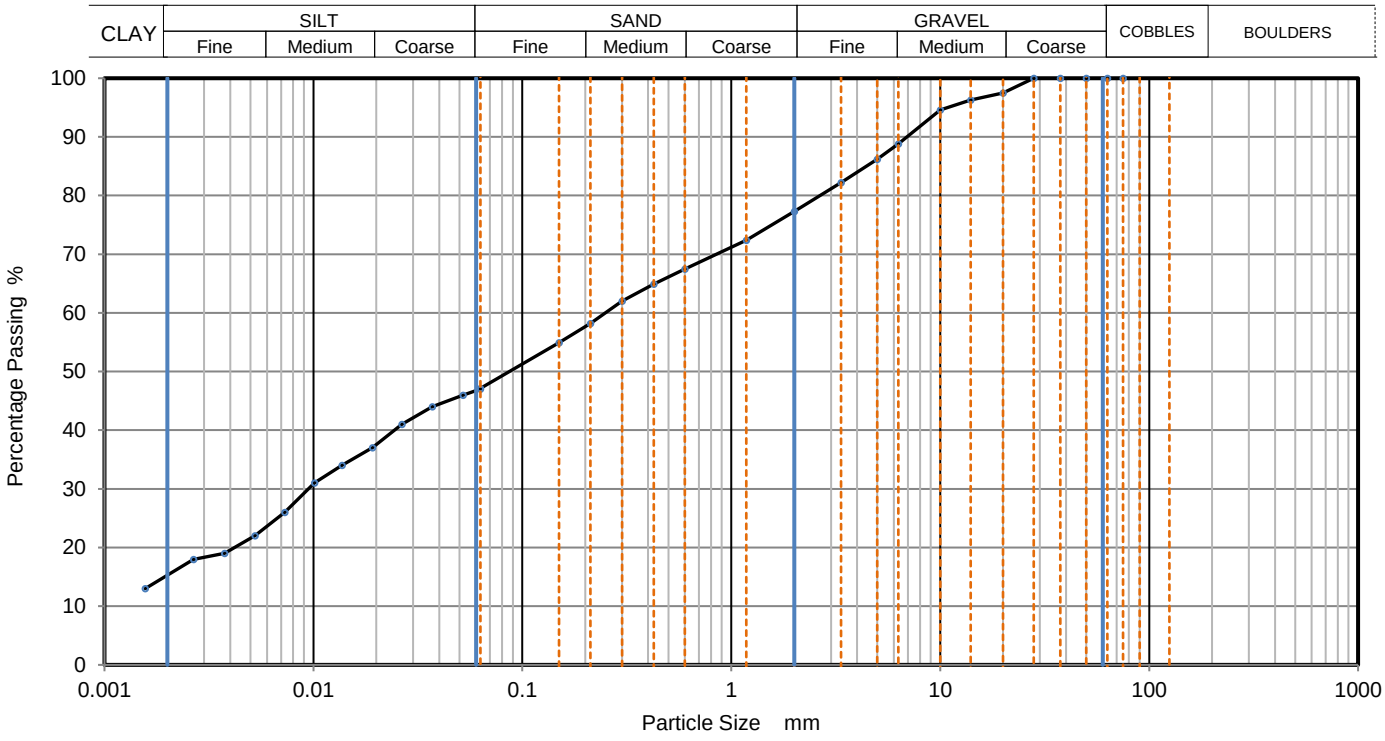
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP206A
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brown slightly gravelly slightly sandy SILT.	Depth, m	0.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202305170



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	47
		0.0520	46
75	100	0.0370	44
63	100	0.0265	41
50	100	0.0191	37
37.5	100	0.0137	34
28	100	0.0101	31
20	98	0.0073	26
14	96	0.0053	22
10	95	0.0038	19
6.3	89	0.0027	18
5	86	0.0016	13
3.35	82		
2	77		
1.18	72		
0.6	68	Particle density	(assumed)
0.425	65	2.65	Mg/m3
0.3	62		
0.212	58		
0.15	55		
0.063	47		

Dry Mass of sample, g	667

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	30
Silt	32
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.25
D30	mm	0.00947
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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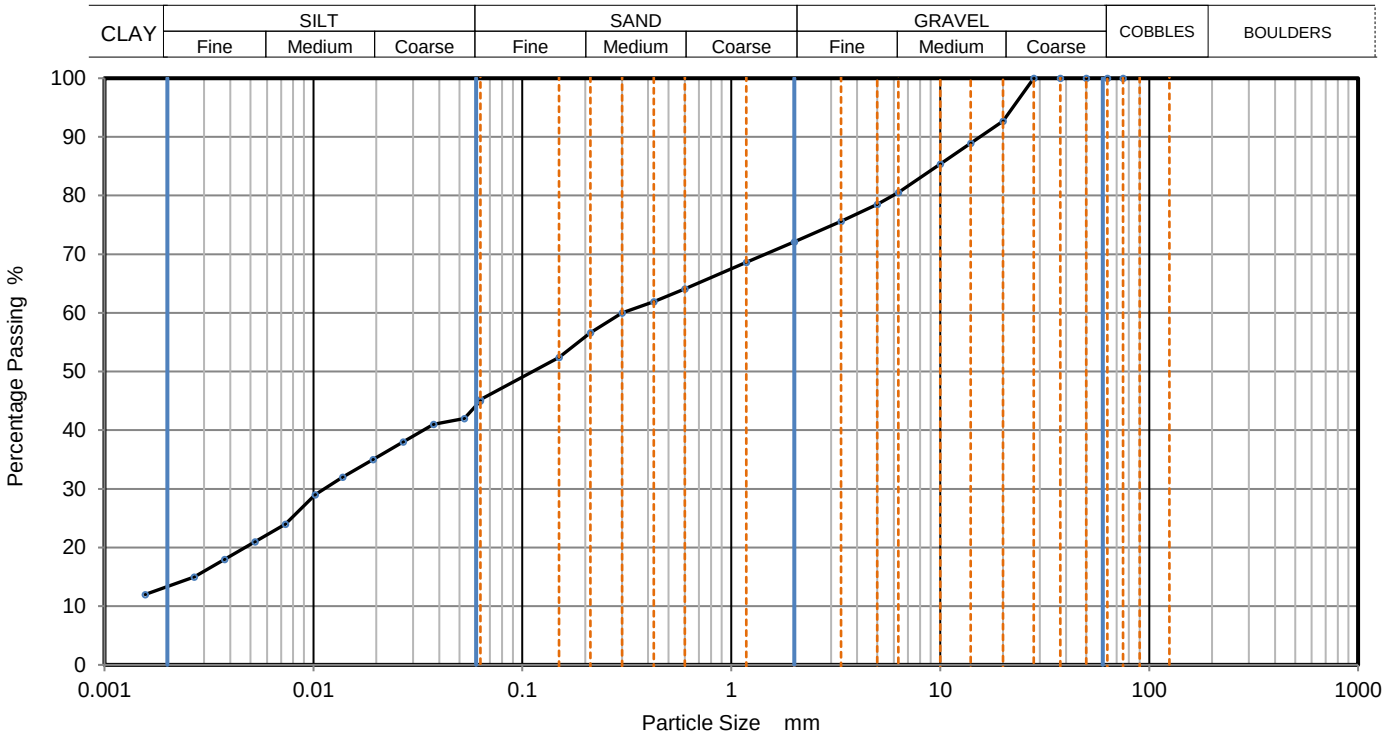
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP207
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Greenish-grey slightly sandy slightly gravelly SILT.	Depth, m	1.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230505142



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0527	42
75	100	0.0375	41
63	100	0.0269	38
50	100	0.0193	35
37.5	100	0.0138	32
28	100	0.0102	29
20	93	0.0073	24
14	89	0.0052	21
10	85	0.0038	18
6.3	81	0.0027	15
5	79	0.0016	12
3.35	76		
2	72		
1.18	69		
0.6	64	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	60		
0.212	57		
0.15	52		
0.063	45		

Dry Mass of sample, g	1061

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	27
Silt	32
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.299
D30	mm	0.0117
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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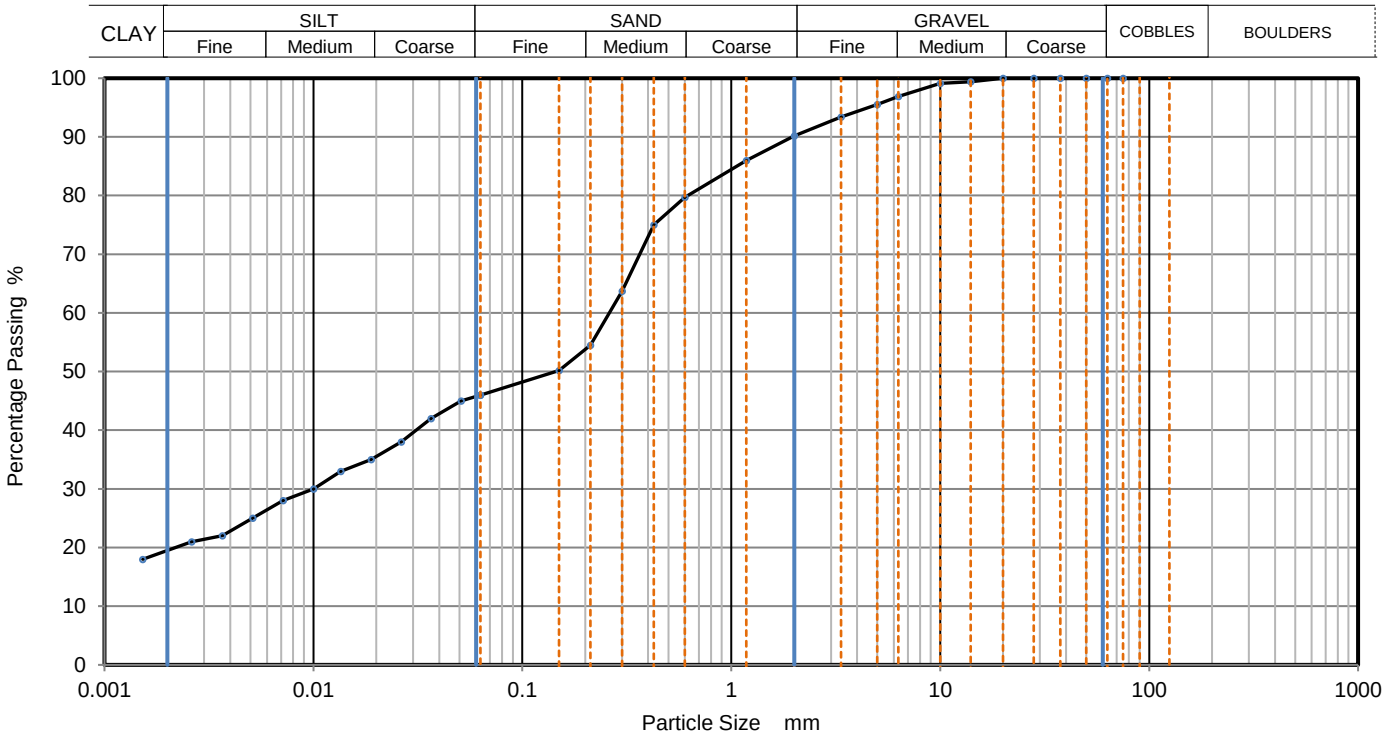
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Dark brown slightly gravelly sandy SILT. Sand is medium.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202308162



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	46
		0.0509	45
75	100	0.0365	42
63	100	0.0264	38
50	100	0.0189	35
37.5	100	0.0135	33
28	100	0.0100	30
20	100	0.0072	28
14	99	0.0051	25
10	99	0.0037	22
6.3	97	0.0026	21
5	96	0.0015	18
3.35	93		
2	90		
1.18	86		
0.6	80	Particle density (assumed)	
0.425	75	2.65 Mg/m3	
0.3	64		
0.212	55		
0.15	50		
0.063	46		

Dry Mass of sample, g	577

Sample Proportions	% dry mass
Very coarse	0
Gravel	10
Sand	44
Silt	26
Clay	20

Grading Analysis		
D100	mm	
D60	mm	0.261
D30	mm	0.00972
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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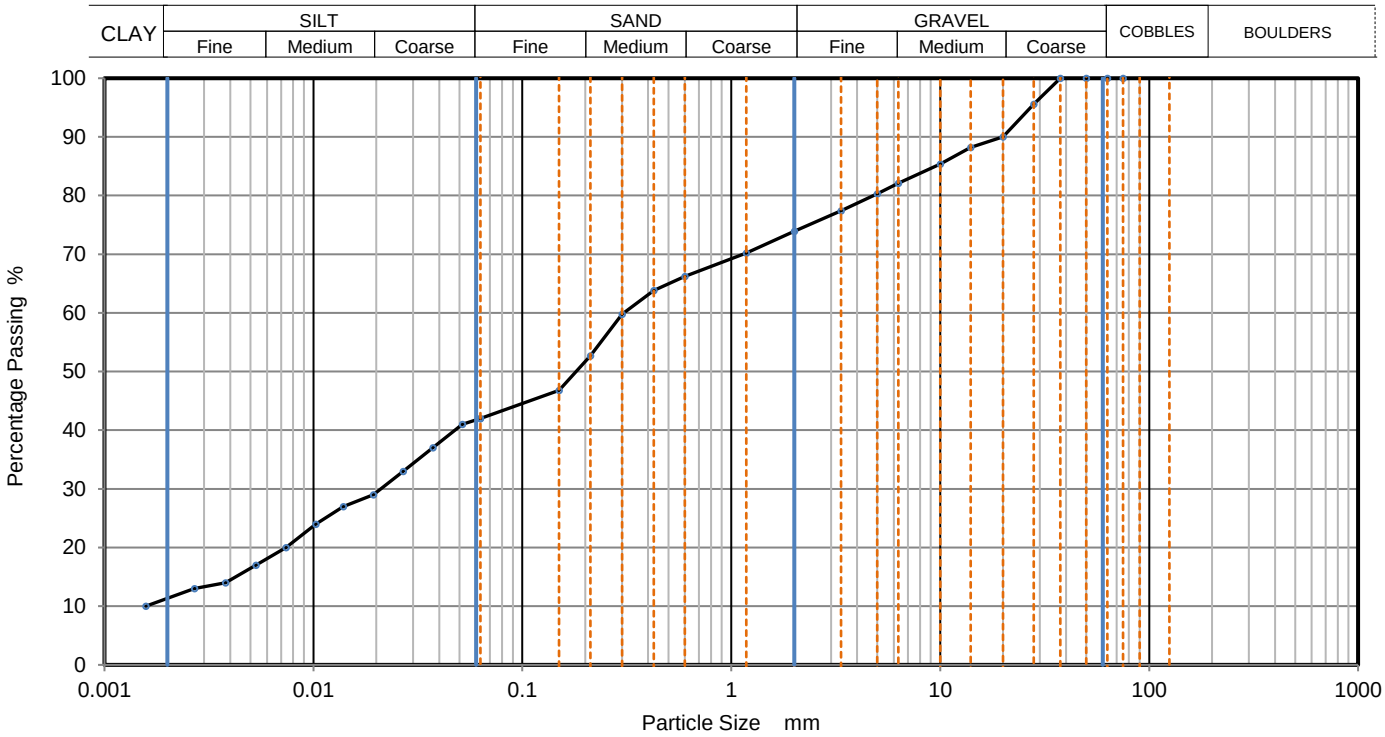
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Light brown slightly gravelly slightly sandy SILT.	Depth, m	2.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202308165



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	42
		0.0516	41
75	100	0.0373	37
63	100	0.0269	33
50	100	0.0194	29
37.5	100	0.0139	27
28	96	0.0103	24
20	90	0.0074	20
14	88	0.0053	17
10	85	0.0038	14
6.3	82	0.0027	13
5	80	0.0016	10
3.35	77		
2	74		
1.18	70		
0.6	66	Particle density (assumed)	
0.425	64	2.65 Mg/m3	
0.3	60		
0.212	53		
0.15	47		
0.063	42		

Dry Mass of sample, g	1070

Sample Proportions	% dry mass
Very coarse	0
Gravel	26
Sand	32
Silt	31
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.306
D30	mm	0.0206
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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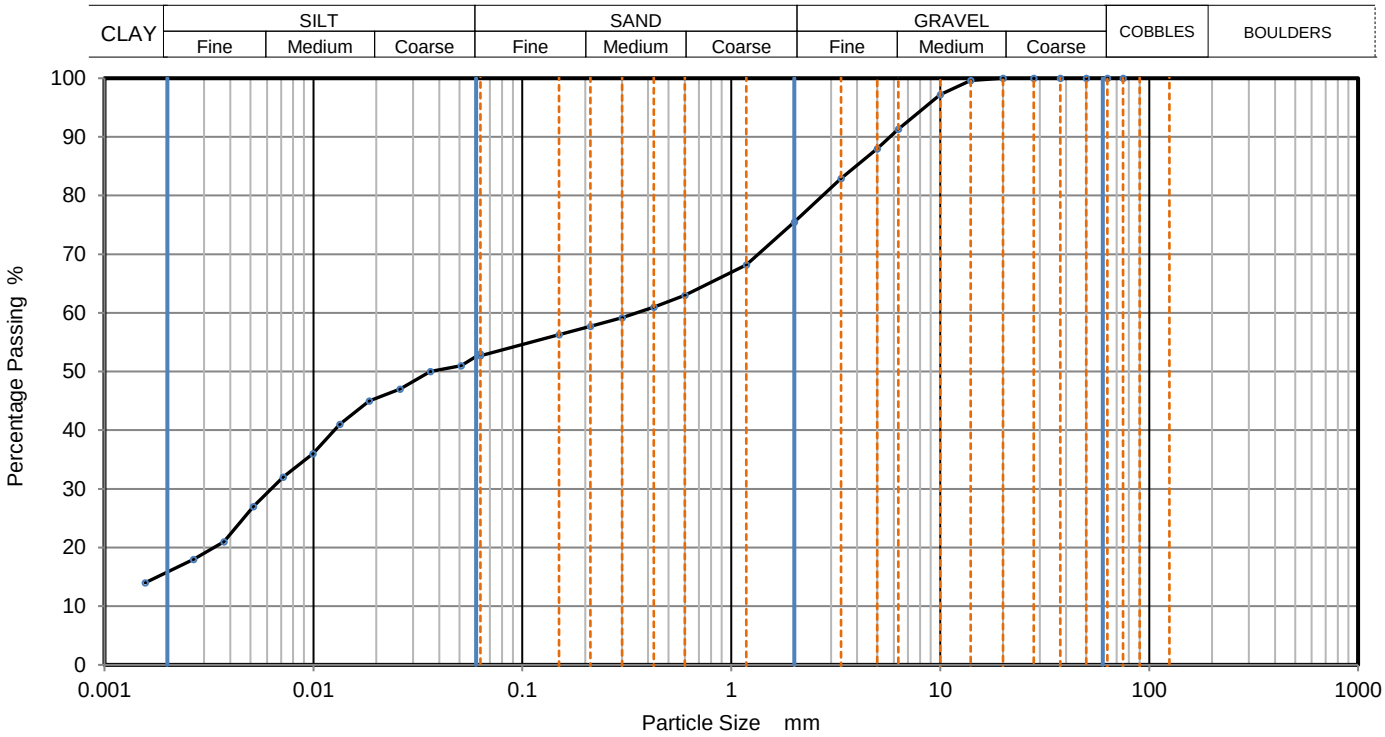
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP209
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.	Depth, m	1.30
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051711



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	53
		0.0509	51
75	100	0.0362	50
63	100	0.0260	47
50	100	0.0185	45
37.5	100	0.0134	41
28	100	0.0099	36
20	100	0.0072	32
14	100	0.0052	27
10	97	0.0037	21
6.3	91	0.0027	18
5	88	0.0016	14
3.35	83		
2	76		
1.18	68		
0.6	63	Particle density	(assumed)
0.425	61	2.65	Mg/m3
0.3	59		
0.212	58		
0.15	56		
0.063	53		

Dry Mass of sample, g	738

Sample Proportions	% dry mass
Very coarse	0
Gravel	25
Sand	23
Silt	37
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.351
D30	mm	0.00637
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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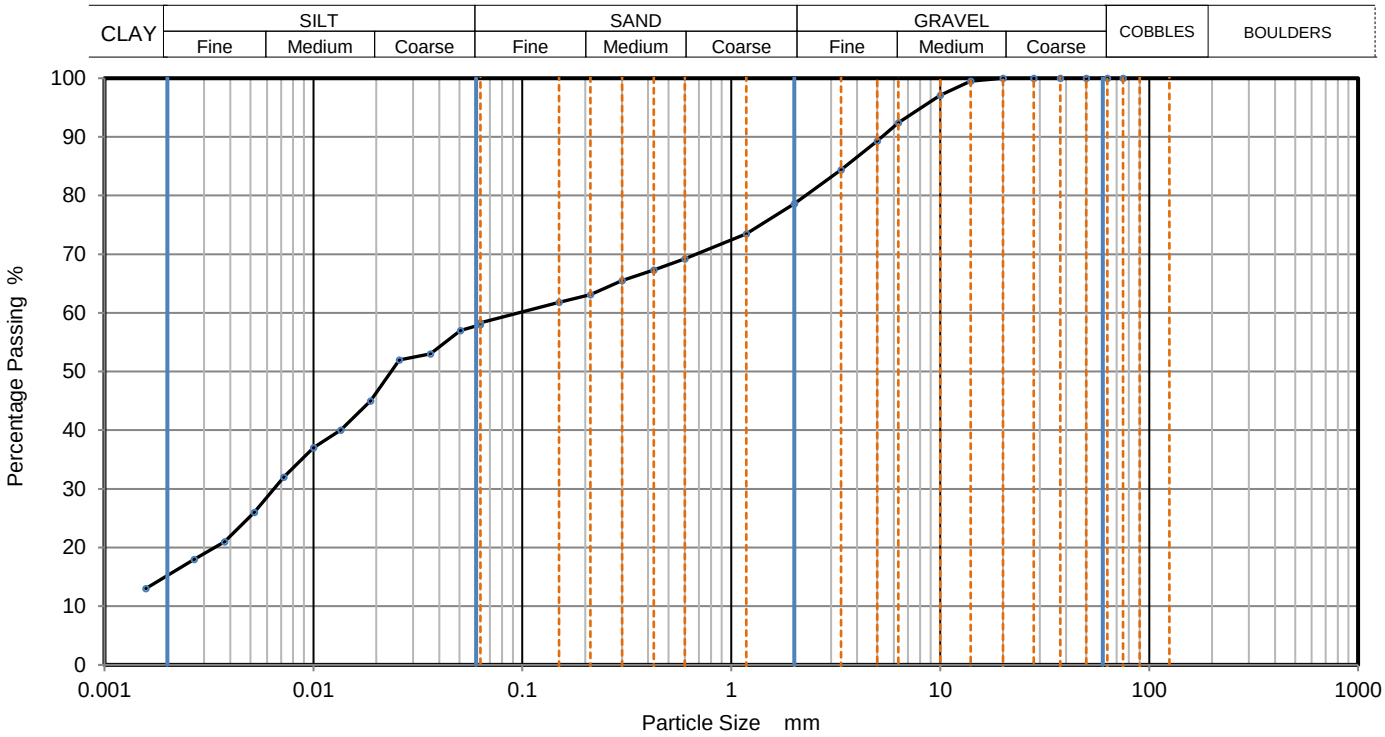
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP210
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Light brown slightly sandy slightly gravelly SILT.	Depth, m	0.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051715



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	58
		0.0505	57
75	100	0.0362	53
63	100	0.0258	52
50	100	0.0188	45
37.5	100	0.0135	40
28	100	0.0100	37
20	100	0.0072	32
14	100	0.0052	26
10	97	0.0038	21
6.3	92	0.0027	18
5	89	0.0016	13
3.35	84		
2	79		
1.18	74		
0.6	69	Particle density (assumed)	
0.425	67	2.65 Mg/m3	
0.3	66		
0.212	63		
0.15	62		
0.063	58		

Dry Mass of sample, g	611

Sample Proportions	% dry mass
Very coarse	0
Gravel	21
Sand	20
Silt	43
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.096
D30	mm	0.0064
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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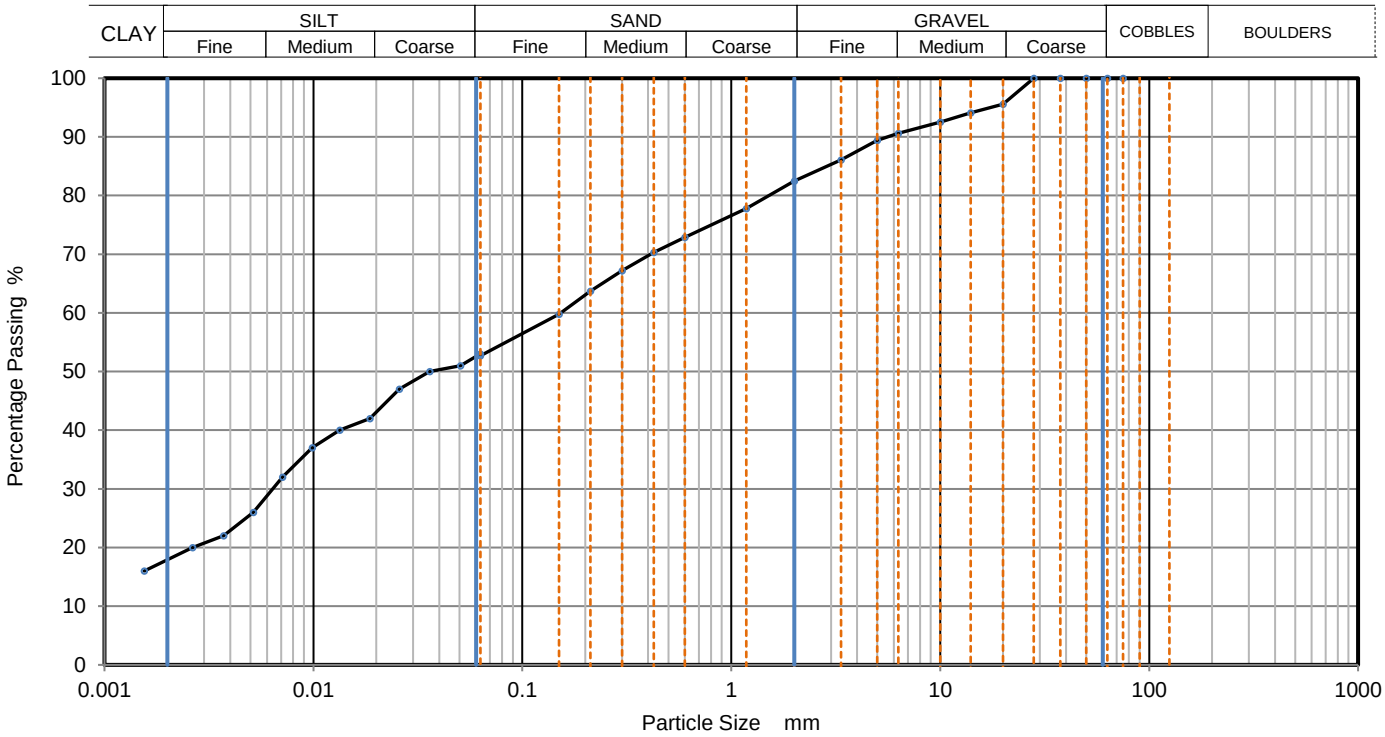
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP211
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Brown slightly gravelly slightly sandy SILT.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051723



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	53
		0.0505	51
75	100	0.0360	50
63	100	0.0258	47
50	100	0.0186	42
37.5	100	0.0134	40
28	100	0.0099	37
20	96	0.0071	32
14	94	0.0052	26
10	93	0.0037	22
6.3	91	0.0026	20
5	89	0.0015	16
3.35	86		
2	83		
1.18	78		
0.6	73	Particle density (assumed)	
0.425	70	2.65 Mg/m3	
0.3	67		
0.212	64		
0.15	60		
0.063	53		

Dry Mass of sample, g	729

Sample Proportions	% dry mass
Very coarse	0
Gravel	18
Sand	30
Silt	35
Clay	18

Grading Analysis		
D100	mm	
D60	mm	0.153
D30	mm	0.00631
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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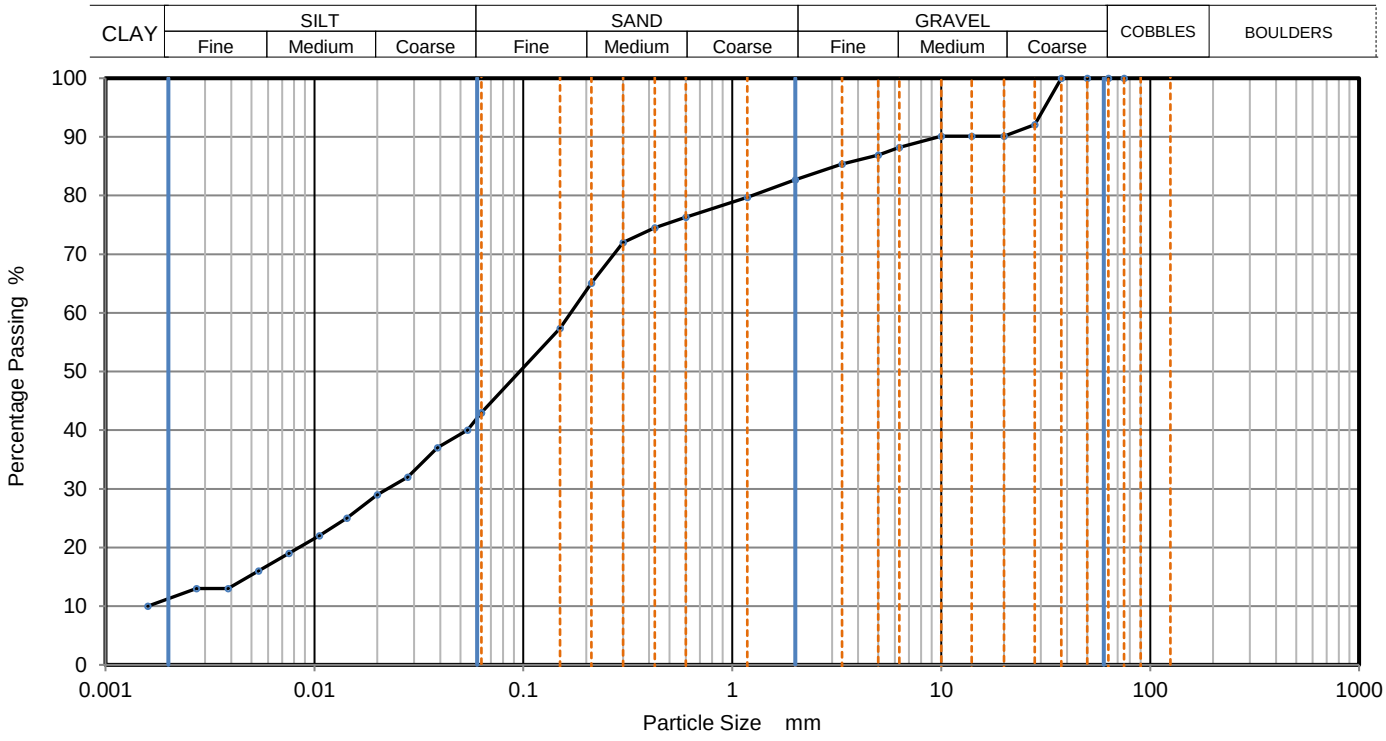
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP212
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Brown slightly gravelly sandy SILT. Sand is fine.	Depth, m	1.10
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051732



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	43
		0.0541	40
75	100	0.0388	37
63	100	0.0279	32
50	100	0.0200	29
37.5	100	0.0143	25
28	92	0.0106	22
20	90	0.0076	19
14	90	0.0054	16
10	90	0.0039	13
6.3	88	0.0027	13
5	87	0.0016	10
3.35	85		
2	83		
1.18	80		
0.6	76	Particle density	(assumed)
0.425	75	2.65	Mg/m3
0.3	72		
0.212	65		
0.15	57		
0.063	43		

Dry Mass of sample, g	730

Sample Proportions	% dry mass
Very coarse	0
Gravel	17
Sand	40
Silt	32
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.169
D30	mm	0.023
D10	mm	0.00172
Uniformity Coefficient		98
Curvature Coefficient		1.8

Remarks

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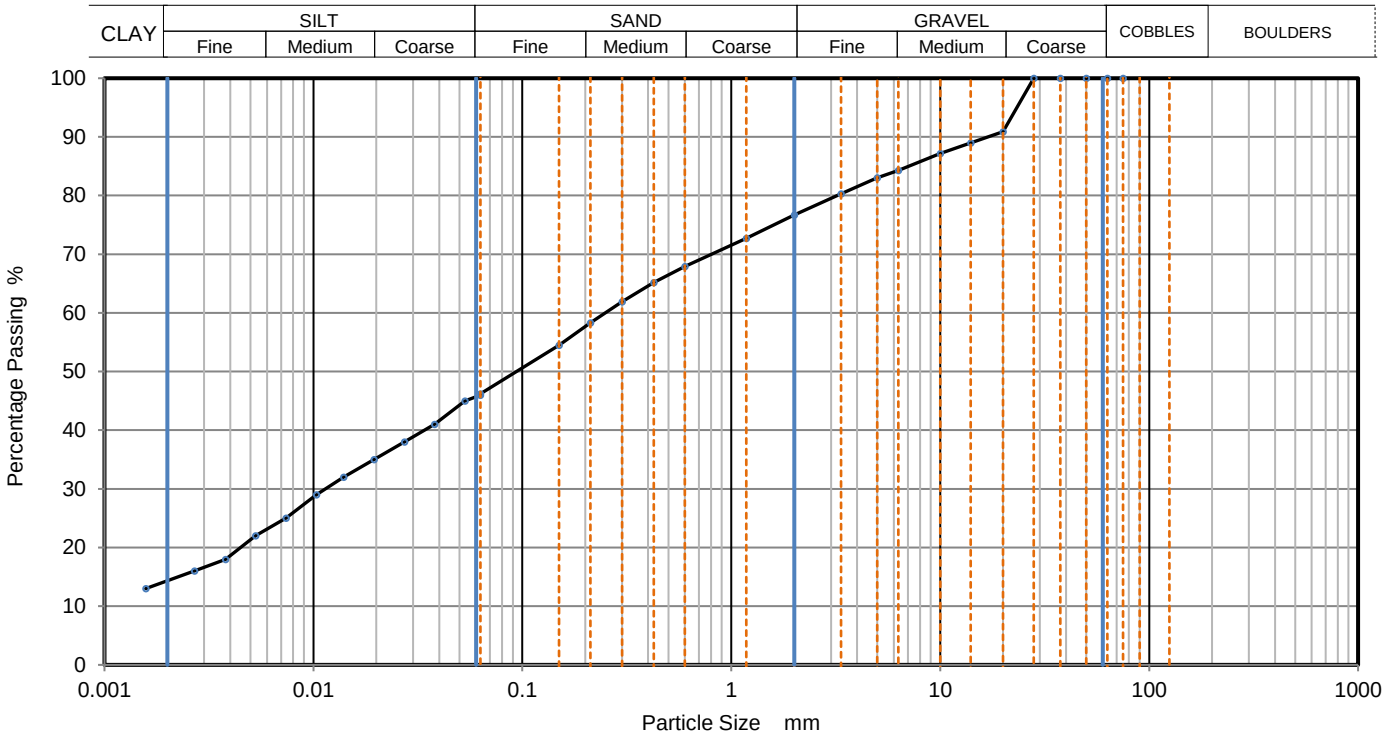
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP214
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Light grey slightly gravelly slightly sandy SILT.	Depth, m	1.70
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202305232



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	46
		0.0531	45
75	100	0.0380	41
63	100	0.0272	38
50	100	0.0195	35
37.5	100	0.0140	32
28	100	0.0103	29
20	91	0.0074	25
14	89	0.0053	22
10	87	0.0038	18
6.3	84	0.0027	16
5	83	0.0016	13
3.35	80		
2	77		
1.18	73		
0.6	68	Particle density (assumed)	
0.425	65	2.65 Mg/m3	
0.3	62		
0.212	58		
0.15	55		
0.063	46		

Dry Mass of sample, g	1020

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	31
Silt	32
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.249
D30	mm	0.0117
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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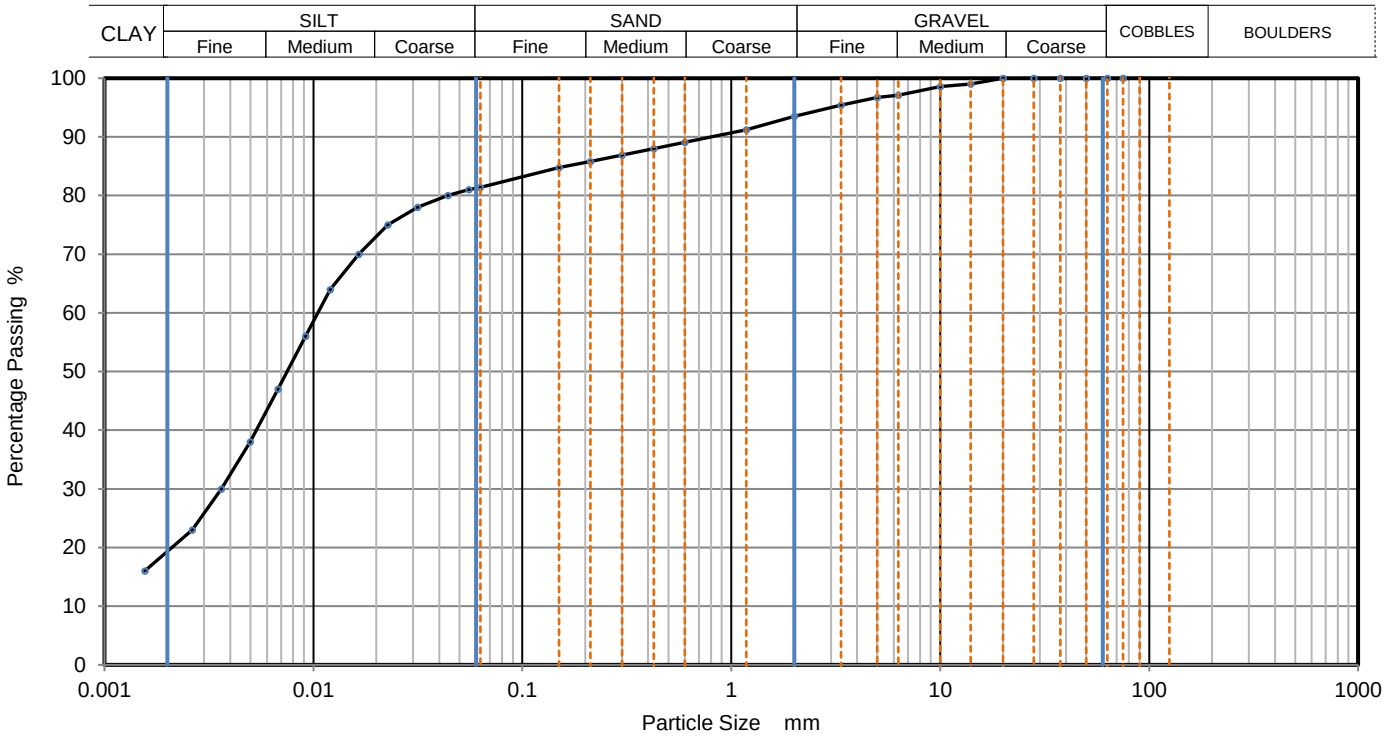
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP215
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Orange-brown slightly gravelly slightly sandy SILT.	Depth, m	1.60
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202305238



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0553	81
		0.0441	80
75	100	0.0315	78
63	100	0.0227	75
50	100	0.0165	70
37.5	100	0.0120	64
28	100	0.0092	56
20	100	0.0068	47
14	99	0.0050	38
10	99	0.0036	30
6.3	97	0.0026	23
5	97	0.0016	16
3.35	95		
2	94		
1.18	91		
0.6	89	Particle density	(assumed)
0.425	88	2.65	Mg/m3
0.3	87		
0.212	86		
0.15	85		
0.063	81		

Dry Mass of sample, g	859

Sample Proportions	% dry mass
Very coarse	0
Gravel	7
Sand	12
Silt	62
Clay	19

Grading Analysis		
D100	mm	
D60	mm	0.0104
D30	mm	0.00366
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

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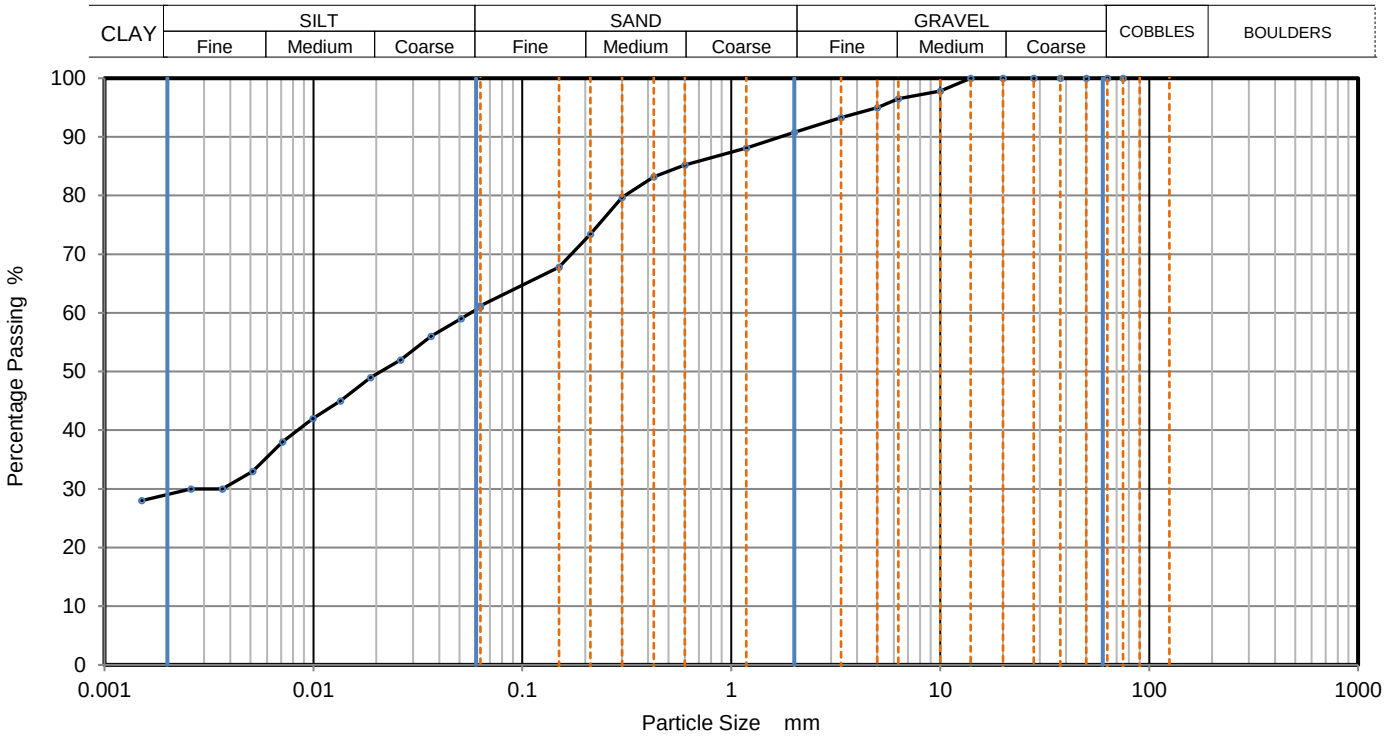
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP216
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brown slightly gravelly sandy SILT.	Depth, m	0.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051738



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	61
		0.0509	59
75	100	0.0365	56
63	100	0.0262	52
50	100	0.0188	49
37.5	100	0.0134	45
28	100	0.0099	42
20	100	0.0071	38
14	100	0.0051	33
10	98	0.0037	30
6.3	97	0.0026	30
5	95	0.0015	28
3.35	93		
2	91		
1.18	88		
0.6	85	Particle density	(assumed)
0.425	83	2.65	Mg/m3
0.3	80		
0.212	73		
0.15	68		
0.063	61		

Dry Mass of sample, g	644

Sample Proportions	% dry mass
Very coarse	0
Gravel	9
Sand	30
Silt	32
Clay	29

Grading Analysis		
D100	mm	
D60	mm	0.0544
D30	mm	0.00377
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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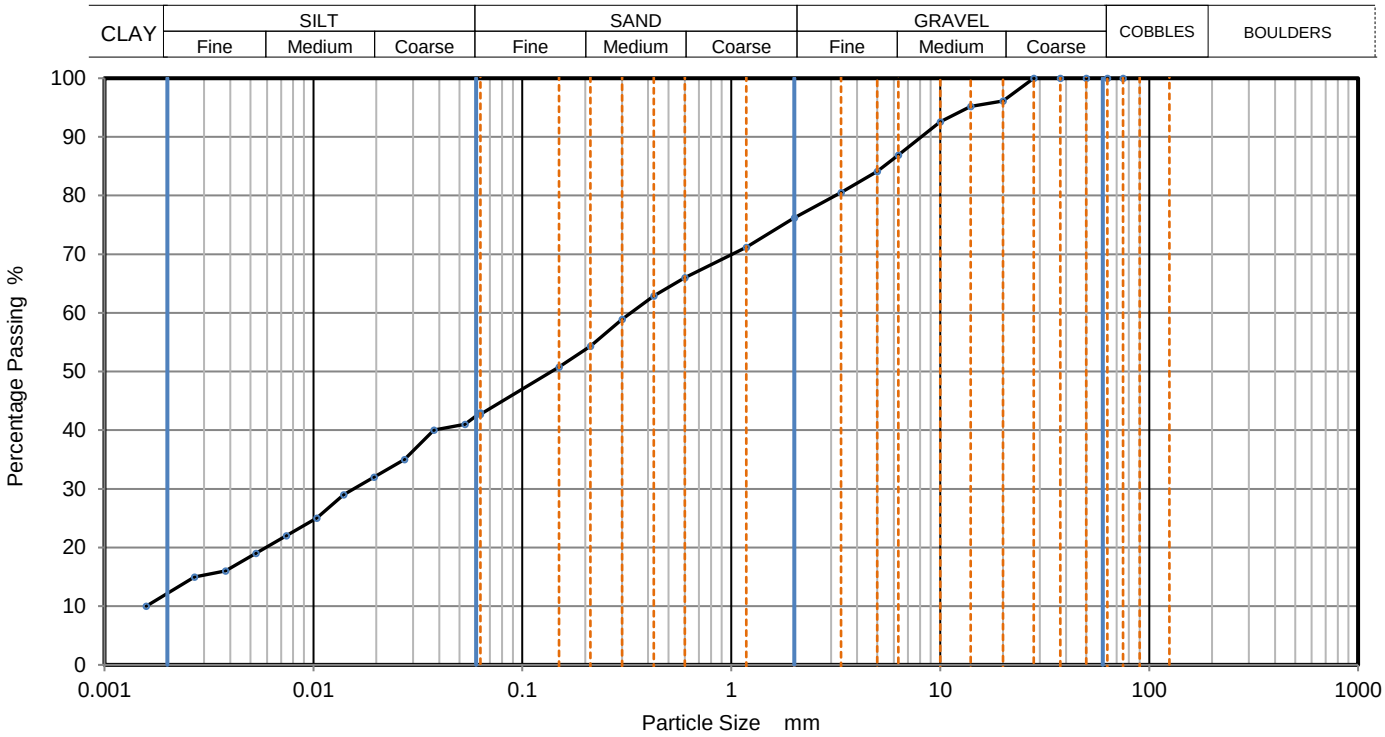
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP217
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greyish-brown slightly gravelly sandy SILT.	Depth, m	1.60
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051747



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	43
		0.0531	41
75	100	0.0378	40
63	100	0.0272	35
50	100	0.0195	32
37.5	100	0.0140	29
28	100	0.0104	25
20	96	0.0074	22
14	95	0.0053	19
10	93	0.0038	16
6.3	87	0.0027	15
5	84	0.0016	10
3.35	81		
2	76		
1.18	71		
0.6	66	Particle density	(assumed)
0.425	63	2.65	Mg/m3
0.3	59		
0.212	54		
0.15	51		
0.063	43		

Dry Mass of sample, g	709

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	34
Silt	31
Clay	12

Grading Analysis		
D100	mm	
D60	mm	0.329
D30	mm	0.0149
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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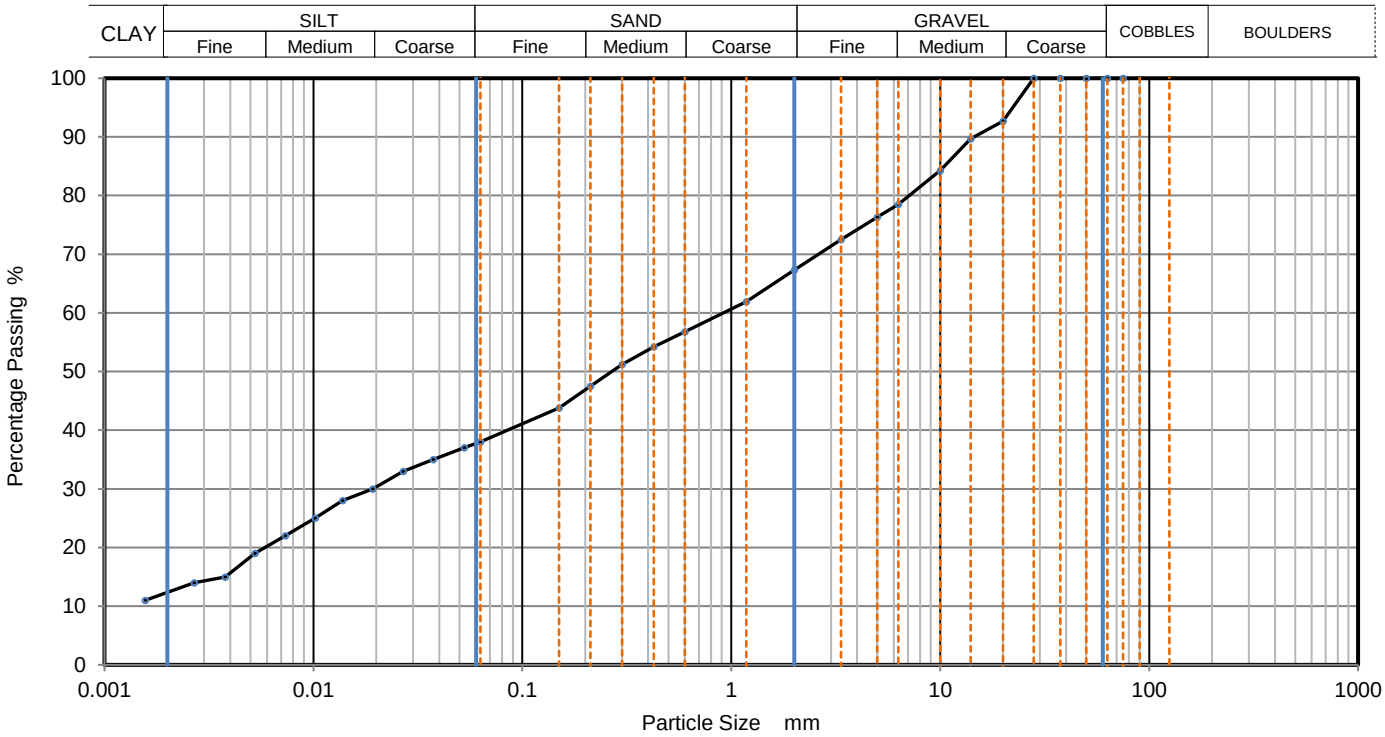
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP218
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brown slightly sandy slightly gravelly SILT.	Depth, m	0.60
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051753



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	38
		0.0527	37
75	100	0.0375	35
63	100	0.0269	33
50	100	0.0193	30
37.5	100	0.0138	28
28	100	0.0102	25
20	93	0.0073	22
14	90	0.0053	19
10	84	0.0038	15
6.3	79	0.0027	14
5	76	0.0016	11
3.35	73		
2	67		
1.18	62		
0.6	57	Particle density	(assumed)
0.425	54	2.65	Mg/m3
0.3	51		
0.212	48		
0.15	44		
0.063	38		

Dry Mass of sample, g	547

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	29
Silt	26
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.917
D30	mm	0.0183
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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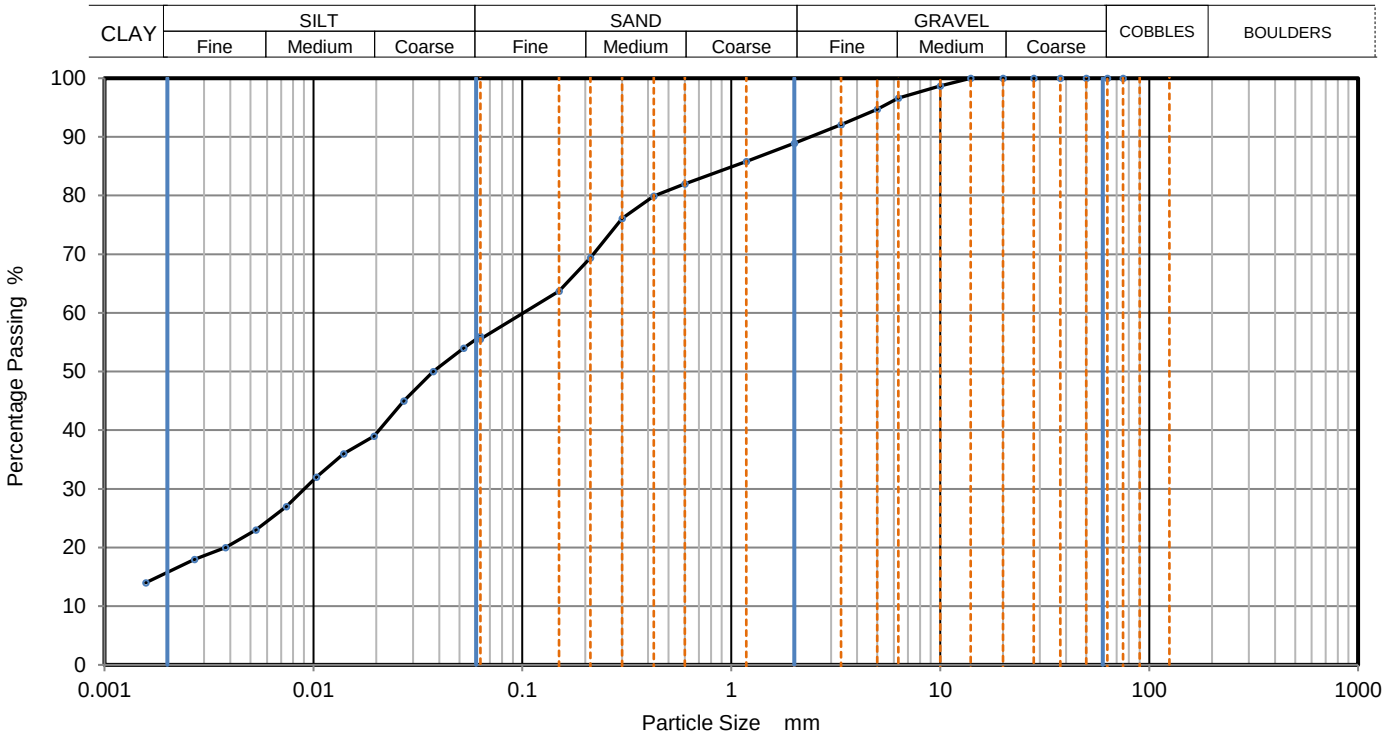
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP219
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brown slightly gravelly slightly sandy SILT.	Depth, m	0.60
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023051761



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	56
		0.0523	54
75	100	0.0375	50
63	100	0.0271	45
50	100	0.0195	39
37.5	100	0.0140	36
28	100	0.0103	32
20	100	0.0074	27
14	100	0.0053	23
10	99	0.0038	20
6.3	97	0.0027	18
5	95	0.0016	14
3.35	92		
2	89		
1.18	86		
0.6	82	Particle density (assumed)	
0.425	80	2.65 Mg/m3	
0.3	76		
0.212	69		
0.15	64		
0.063	56		

Dry Mass of sample, g: 726

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	33
Silt	40
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.101
D30	mm	0.009
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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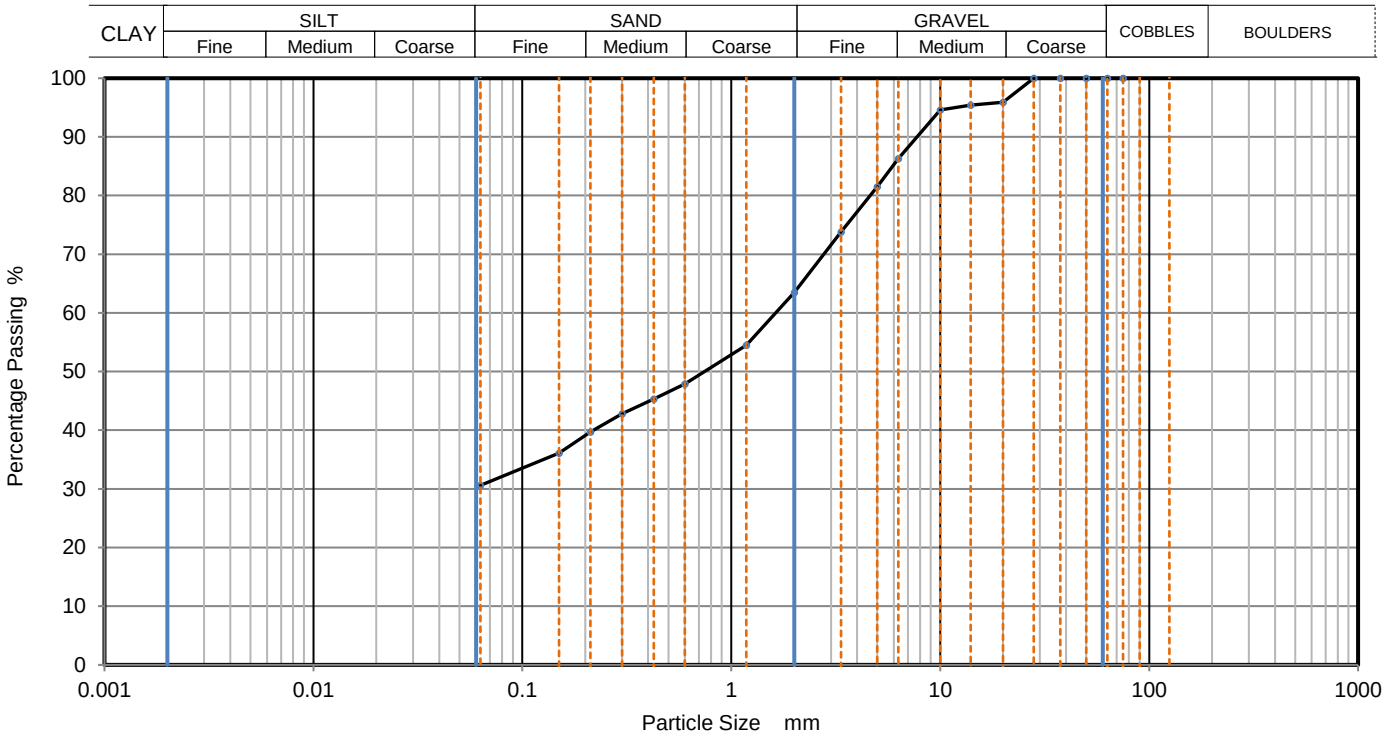
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP220
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greyish-brown very silty SAND and GRAVEL.	Depth, m	2.40
Specimen Reference	Specimen Depth: m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023051771



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	95		
10	95		
6.3	86		
5	82		
3.35	74		
2	64		
1.18	55		
0.6	48		
0.425	45		
0.3	43		
0.212	40		
0.15	36		
0.063	31		

Dry Mass of sample, g	780

Sample Proportions	% dry mass
Very coarse	0
Gravel	37
Sand	33
Fines <0.063mm	31

Grading Analysis		
D100	mm	
D60	mm	1.62
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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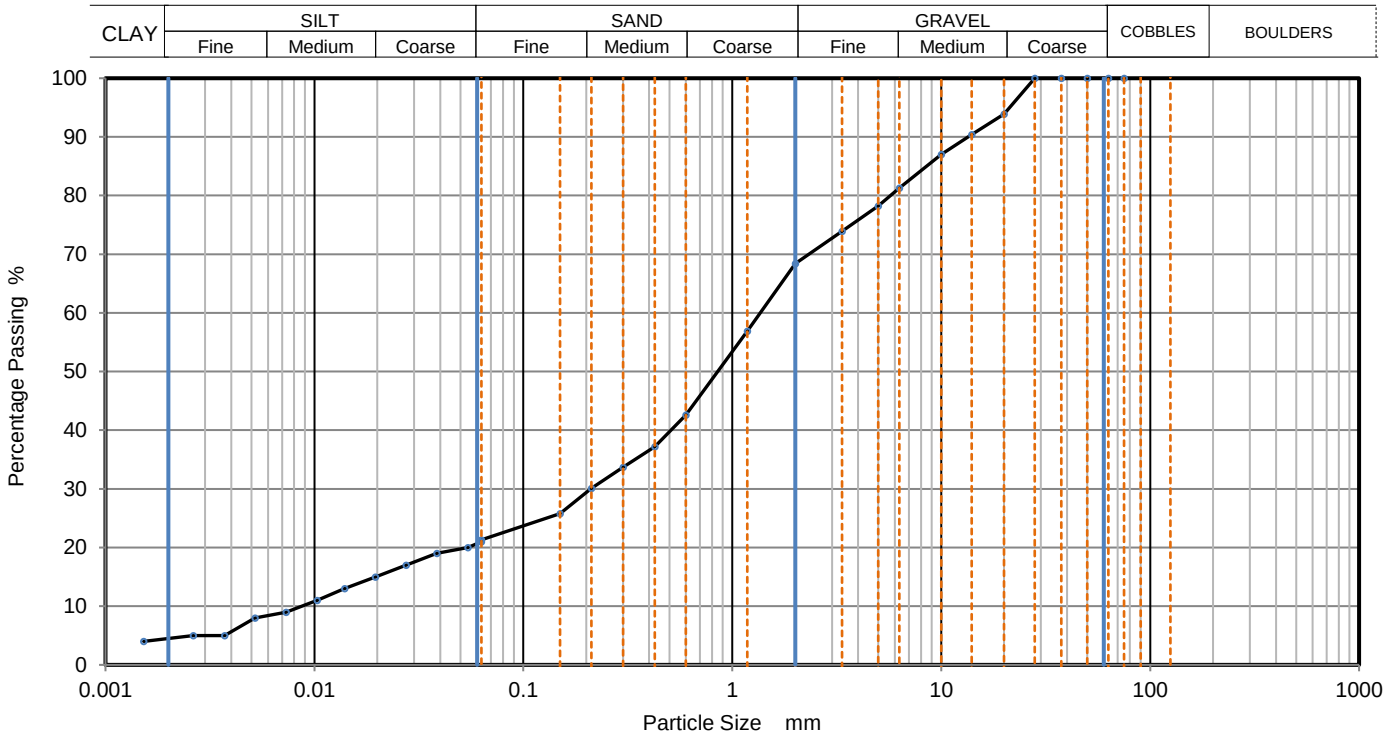
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP221
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown very silty very gravelly coarse SAND.	Depth, m	3.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202306221



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	21
		0.0542	20
75	100	0.0386	19
63	100	0.0274	17
50	100	0.0196	15
37.5	100	0.0139	13
28	100	0.0103	11
20	94	0.0073	9
14	90	0.0052	8
10	87	0.0037	5
6.3	81	0.0026	5
5	78	0.0015	4
3.35	74		
2	68		
1.18	57		
0.6	43	Particle density	(assumed)
0.425	37	2.65	Mg/m3
0.3	34		
0.212	30		
0.15	26		
0.063	21		

Dry Mass of sample, g	738

Sample Proportions	% dry mass
Very coarse	0
Gravel	32
Sand	47
Silt	17
Clay	5

Grading Analysis		
D100	mm	
D60	mm	1.36
D30	mm	0.21
D10	mm	0.00871
Uniformity Coefficient		160
Curvature Coefficient		3.7

Remarks

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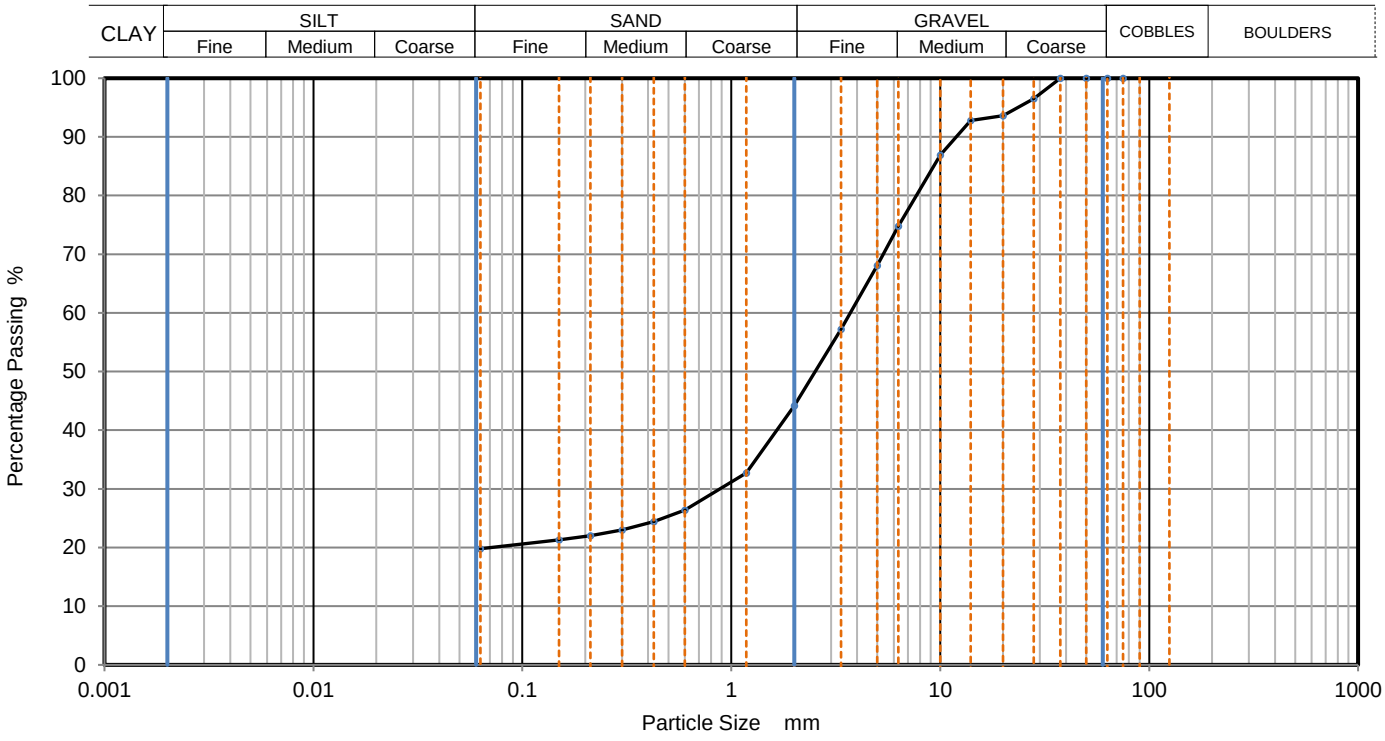
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP222
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Greyish-black very silty very sandy fine GRAVEL.	Depth, m	2.70
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL1202306224



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	97		
20	94		
14	93		
10	87		
6.3	75		
5	68		
3.35	57		
2	44		
1.18	33		
0.6	26		
0.425	24		
0.3	23		
0.212	22		
0.15	21		
0.063	20		

Dry Mass of sample, g	876

Sample Proportions	% dry mass
Very coarse	0
Gravel	56
Sand	24
Fines <0.063mm	20

Grading Analysis		
D100	mm	
D60	mm	3.71
D30	mm	0.881
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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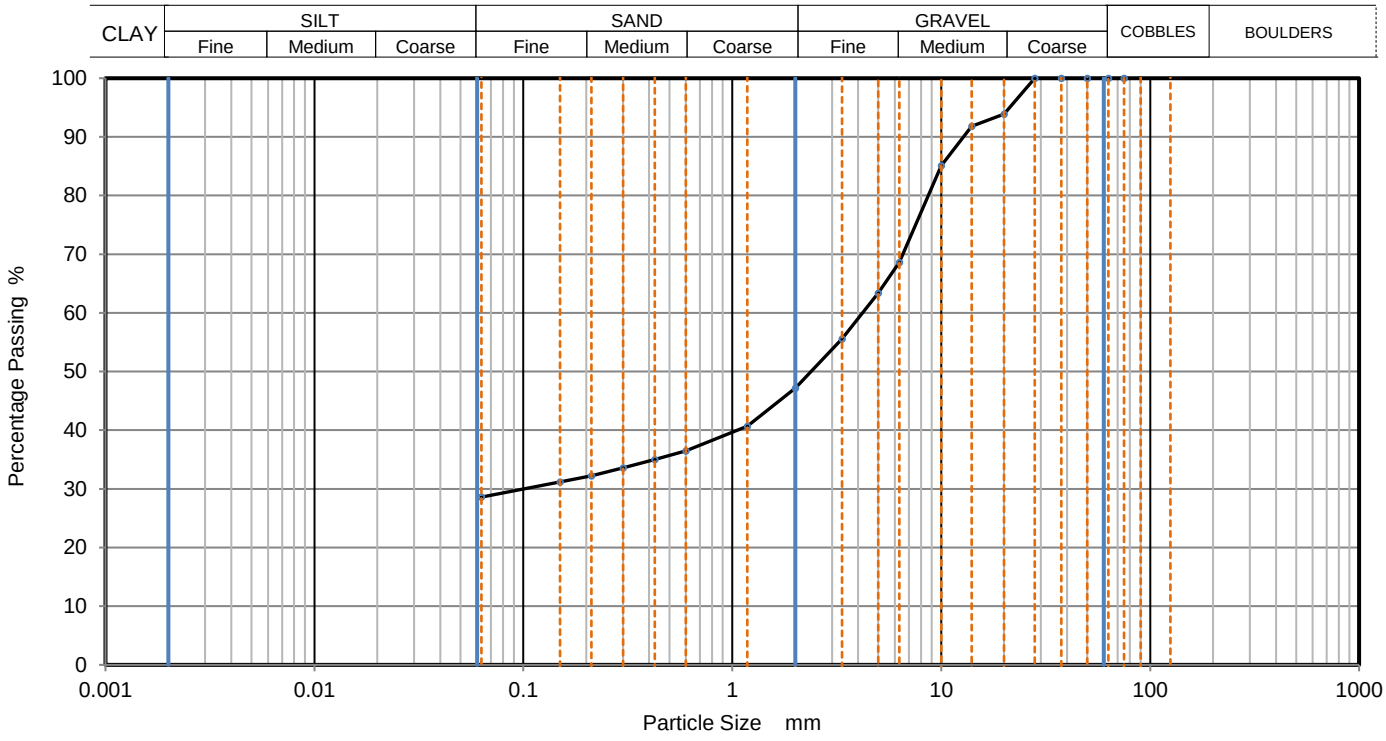
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP224
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Dark brown sandy very silty fine and medium GRAVEL.	Depth, m	2.30
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL1202306228



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	94		
14	92		
10	85		
6.3	69		
5	63		
3.35	56		
2	47		
1.18	41		
0.6	37		
0.425	35		
0.3	34		
0.212	32		
0.15	31		
0.063	29		

Dry Mass of sample, g: 1028

Sample Proportions	% dry mass
Very coarse	0
Gravel	53
Sand	19
Fines <0.063mm	29

Grading Analysis		
D100	mm	
D60	mm	4.2
D30	mm	0.1
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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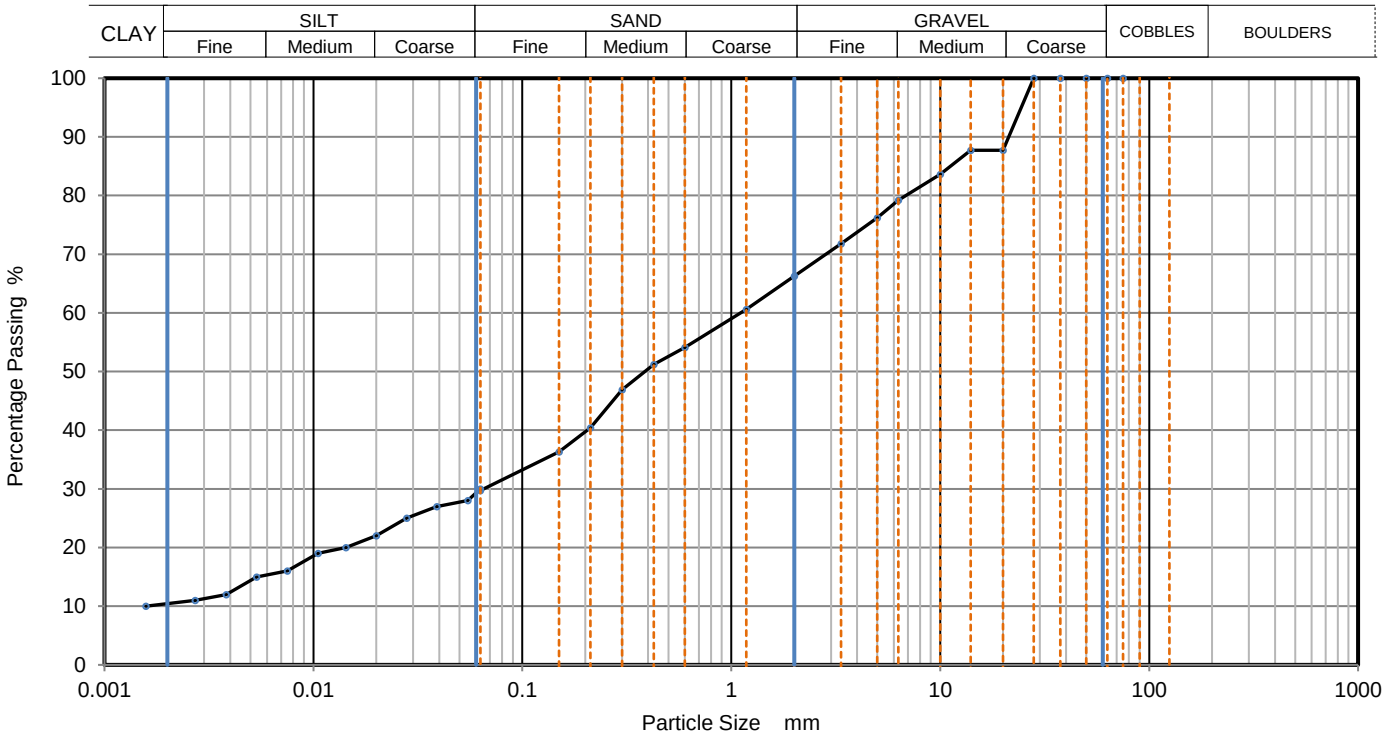
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP302
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Blackish-brown very silty SAND and GRAVEL.	Depth, m	0.90
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023053011



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	30
		0.0548	28
75	100	0.0390	27
63	100	0.0279	25
50	100	0.0200	22
37.5	100	0.0143	20
28	100	0.0105	19
20	88	0.0075	16
14	88	0.0053	15
10	84	0.0038	12
6.3	79	0.0027	11
5	76	0.0016	10
3.35	72		
2	66		
1.18	61		
0.6	54	Particle density	(assumed)
0.425	51	2.65	Mg/m3
0.3	47		
0.212	40		
0.15	36		
0.063	30		

Dry Mass of sample, g: 527

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	37
Silt	19
Clay	10

Grading Analysis		
D100	mm	
D60	mm	1.11
D30	mm	0.0657
D10	mm	0.00165
Uniformity Coefficient		670
Curvature Coefficient		2.4

Remarks

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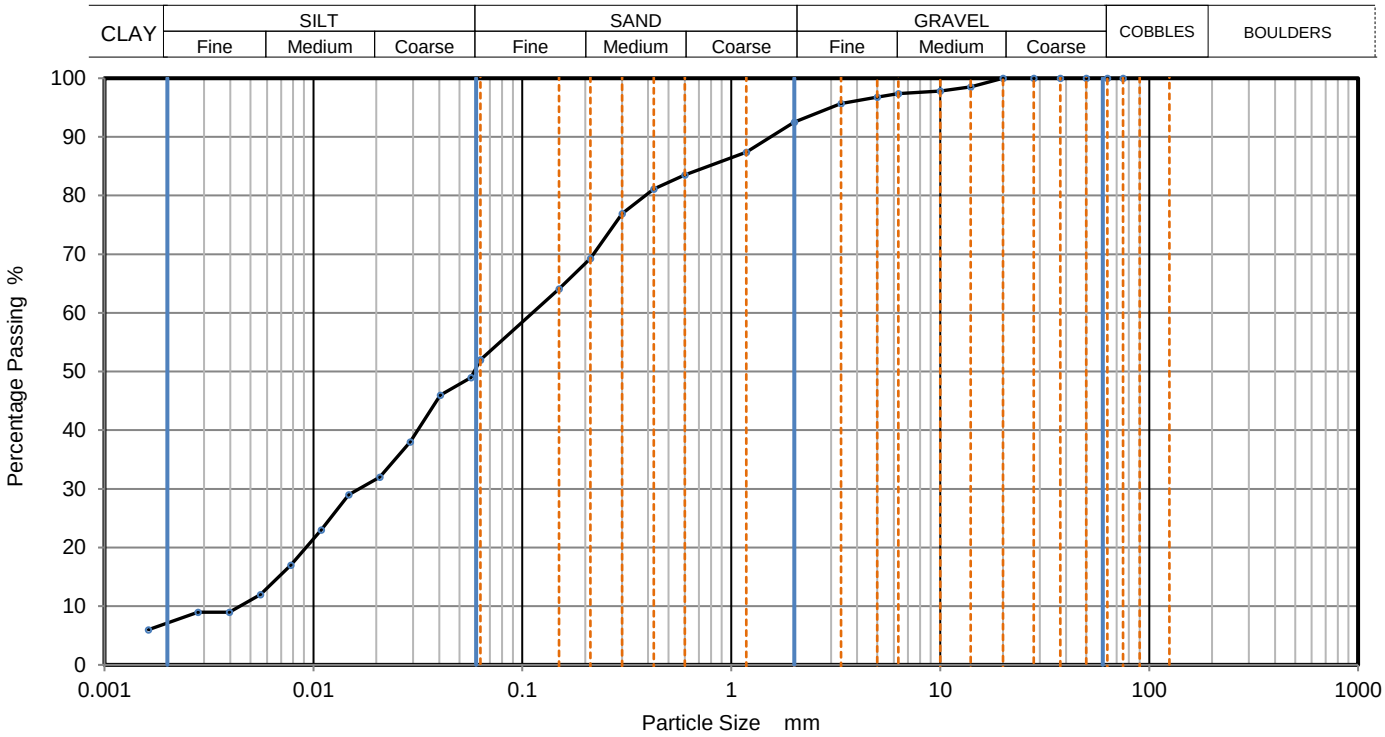
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP303
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Black-brown PEAT, with sand sized particles.	Depth, m	2.20
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023053019



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	52
		0.0569	49
75	100	0.0404	46
63	100	0.0291	38
50	100	0.0208	32
37.5	100	0.0148	29
28	100	0.0109	23
20	100	0.0078	17
14	99	0.0056	12
10	98	0.0040	9
6.3	97	0.0028	9
5	97	0.0016	6
3.35	96		
2	93		
1.18	87		
0.6	84	Particle density	(assumed)
0.425	81	2.65	Mg/m3
0.3	77		
0.212	69		
0.15	64		
0.063	52		

Dry Mass of sample, g	396

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	41
Silt	45
Clay	7

Grading Analysis		
D100	mm	
D60	mm	0.112
D30	mm	0.0169
D10	mm	0.00464
Uniformity Coefficient		24
Curvature Coefficient		0.55

Remarks

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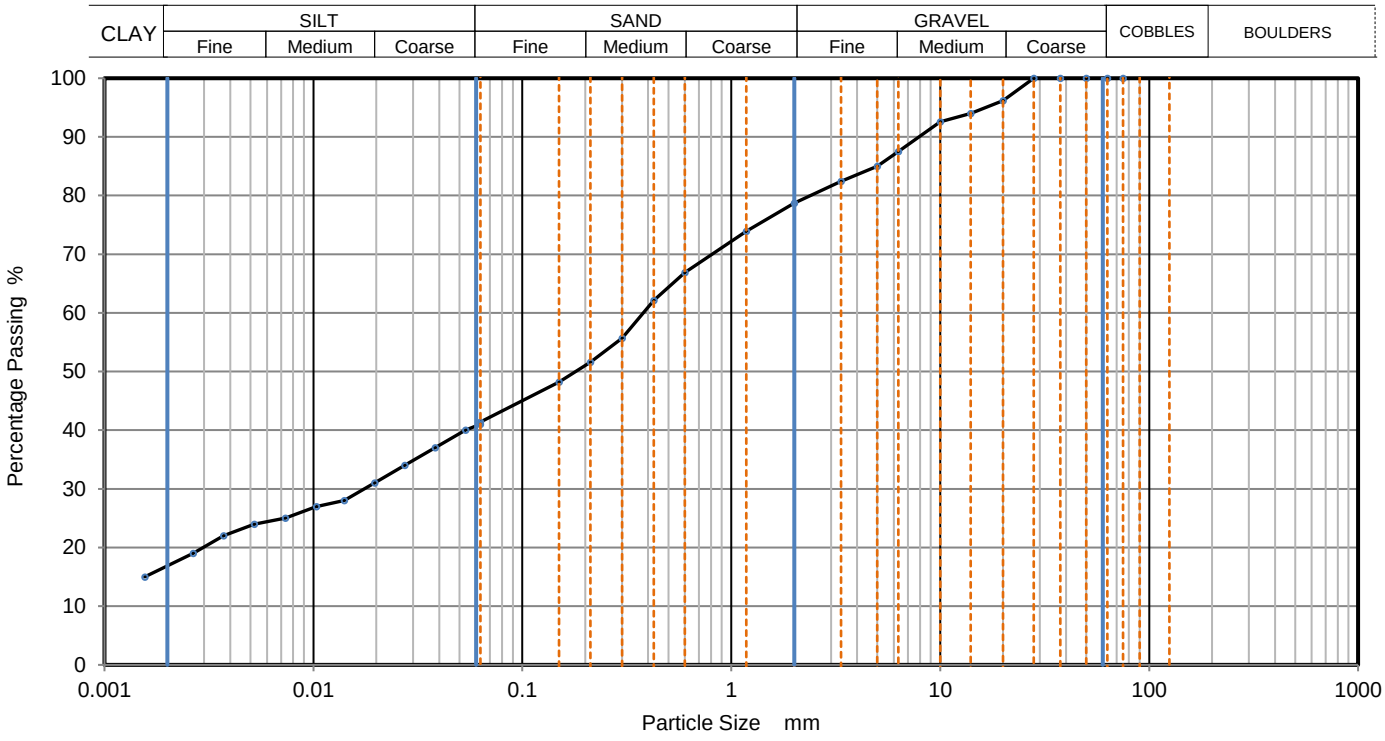
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP305
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown slightly gravelly sandy SILT.	Depth, m	0.80
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023053031



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0534	40
75	100	0.0383	37
63	100	0.0274	34
50	100	0.0196	31
37.5	100	0.0140	28
28	100	0.0103	27
20	96	0.0073	25
14	94	0.0052	24
10	93	0.0037	22
6.3	88	0.0027	19
5	85	0.0016	15
3.35	82		
2	79		
1.18	74		
0.6	67	Particle density (assumed)	
0.425	62	2.65 Mg/m3	
0.3	56		
0.212	52		
0.15	48		
0.063	41		

Dry Mass of sample, g	699

Sample Proportions	% dry mass
Very coarse	0
Gravel	21
Sand	37
Silt	25
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.38
D30	mm	0.0174
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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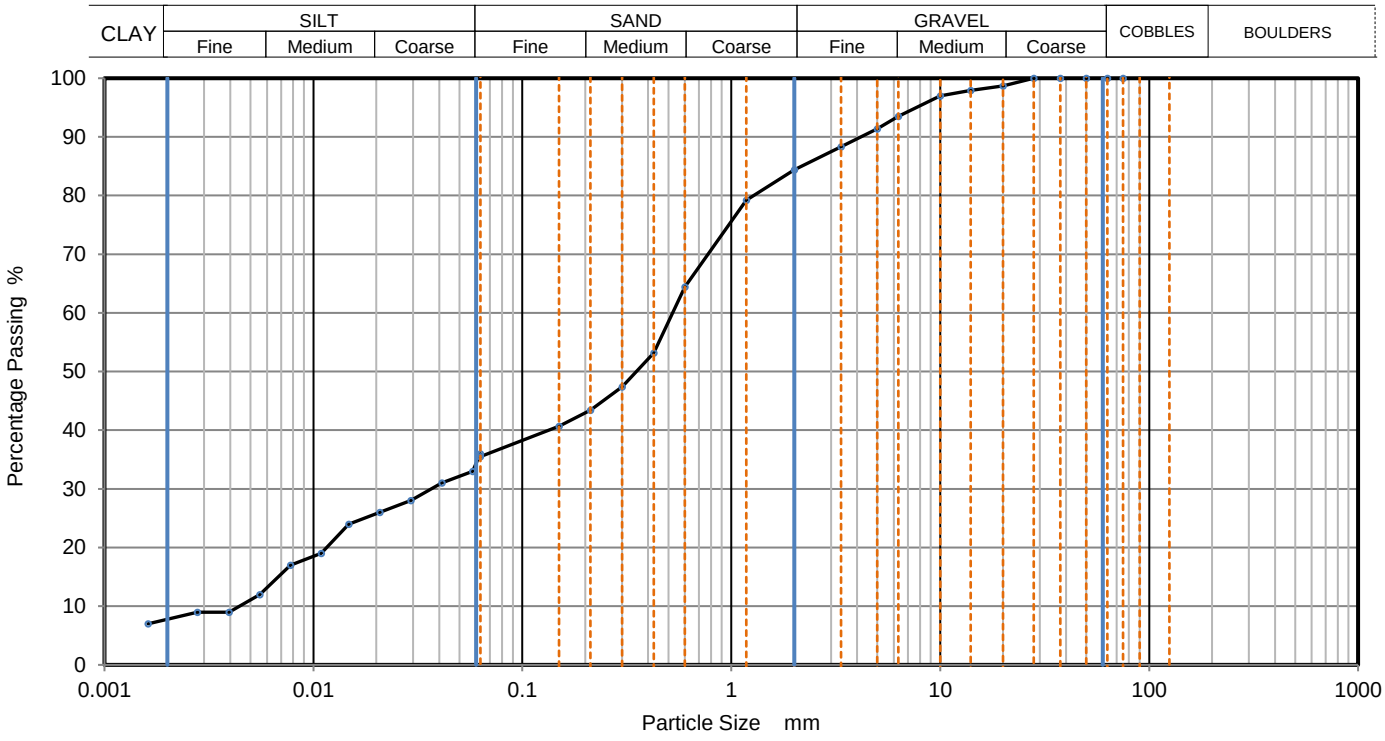
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP308
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Brownish-grey slightly gravelly sandy SILT.	Depth, m	1.30
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060224



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	36
		0.0578	33
75	100	0.0411	31
63	100	0.0292	28
50	100	0.0208	26
37.5	100	0.0148	24
28	100	0.0109	19
20	99	0.0078	17
14	98	0.0055	12
10	97	0.0039	9
6.3	94	0.0028	9
5	91	0.0016	7
3.35	88		
2	84		
1.18	79		
0.6	64	Particle density	(assumed)
0.425	53	2.65	Mg/m3
0.3	47		
0.212	43		
0.15	41		
0.063	36		

Dry Mass of sample, g	653

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	49
Silt	28
Clay	8

Grading Analysis		
D100	mm	
D60	mm	0.524
D30	mm	0.0368
D10	mm	0.00425
Uniformity Coefficient		120
Curvature Coefficient		0.61

Remarks

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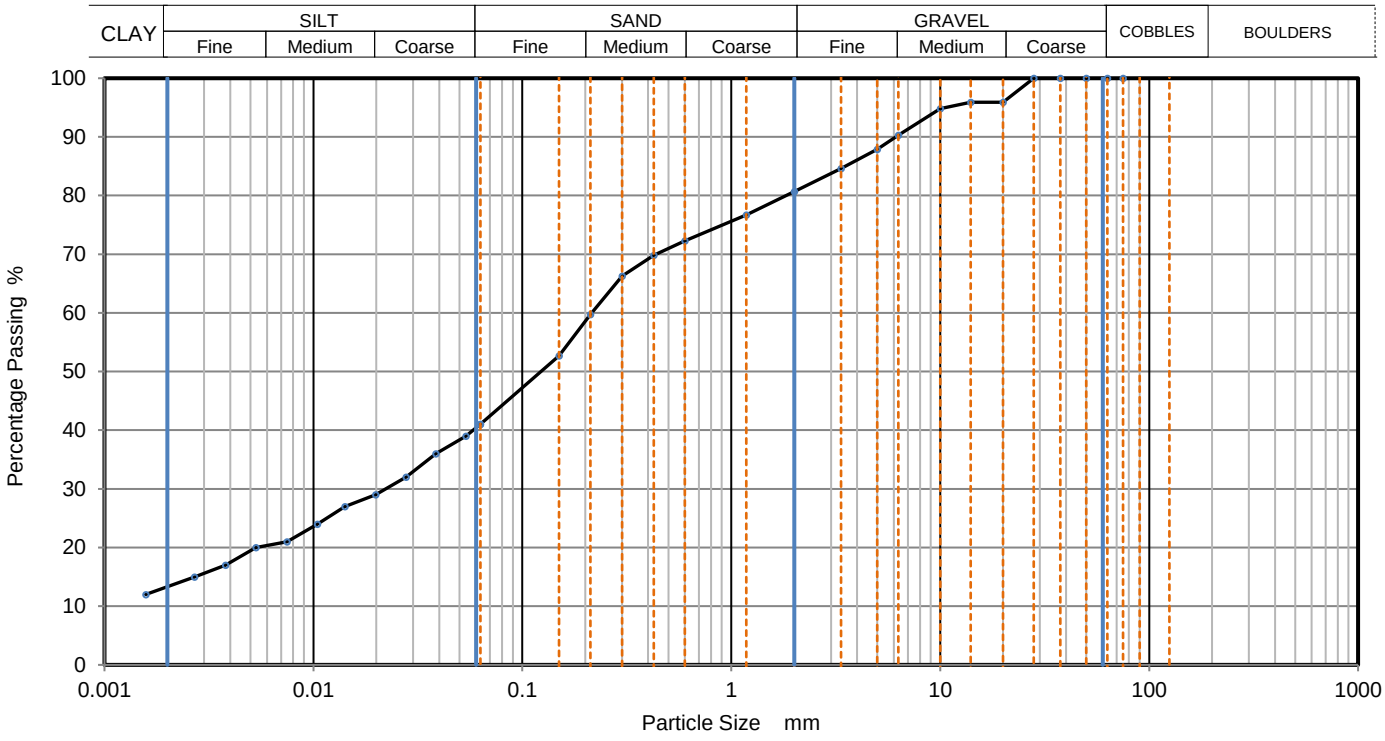
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TP312
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Brownish-grey slightly gravelly sandy SILT.	Depth, m	1.20
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL1202306091



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0538	39
75	100	0.0385	36
63	100	0.0278	32
50	100	0.0199	29
37.5	100	0.0141	27
28	100	0.0104	24
20	96	0.0075	21
14	96	0.0053	20
10	95	0.0038	17
6.3	90	0.0027	15
5	88	0.0016	12
3.35	85		
2	81		
1.18	77		
0.6	72	Particle density	(assumed)
0.425	70	2.65	Mg/m3
0.3	66		
0.212	60		
0.15	53		
0.063	41		

Dry Mass of sample, g	861

Sample Proportions	% dry mass
Very coarse	0
Gravel	19
Sand	40
Silt	28
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.216
D30	mm	0.0225
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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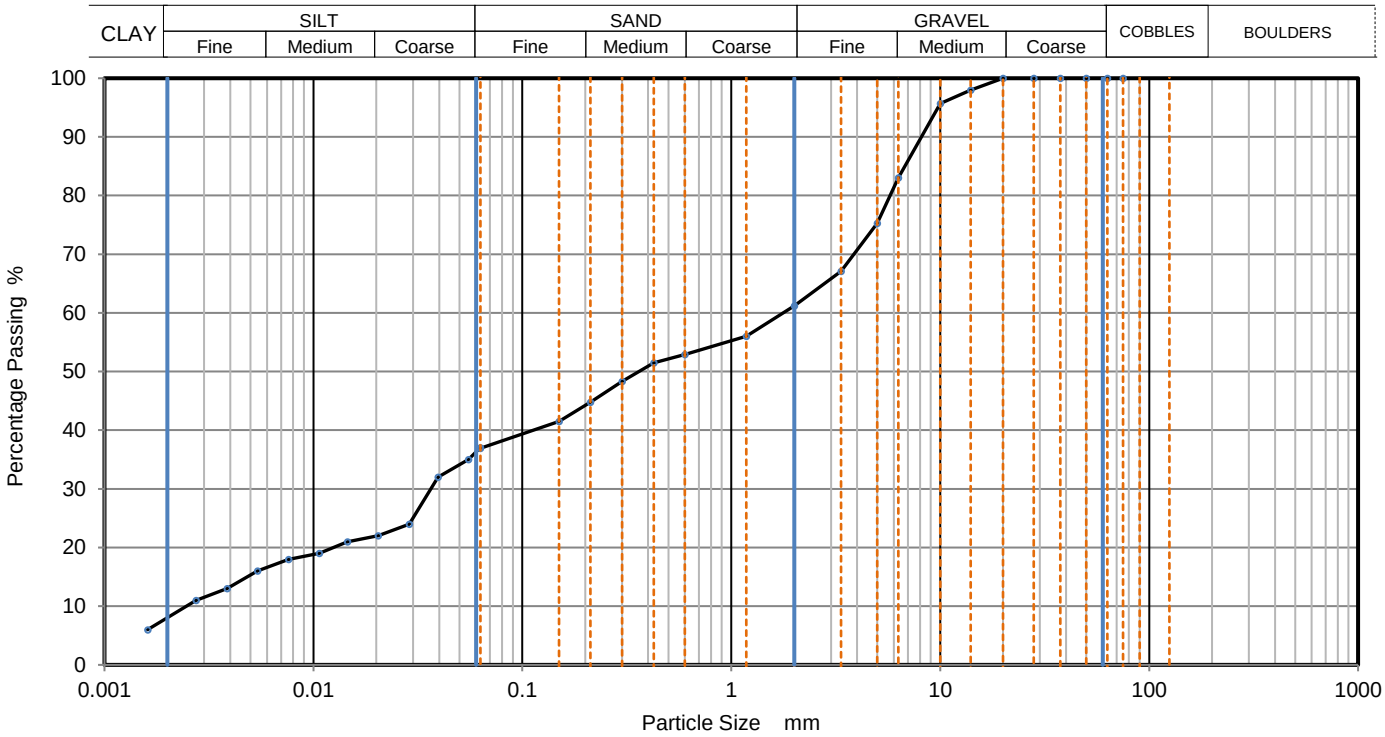
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPBP01
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Dark blackish-brown slightly sandy gravelly SILT.	Depth, m	1.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060257



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	37
		0.0552	35
75	100	0.0395	32
63	100	0.0288	24
50	100	0.0205	22
37.5	100	0.0145	21
28	100	0.0107	19
20	100	0.0076	18
14	98	0.0054	16
10	96	0.0039	13
6.3	83	0.0027	11
5	75	0.0016	6
3.35	67		
2	61		
1.18	56		
0.6	53	Particle density	(assumed)
0.425	52	2.65	Mg/m3
0.3	48		
0.212	45		
0.15	42		
0.063	37		

Dry Mass of sample, g	381

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	24
Silt	29
Clay	8

Grading Analysis		
D100	mm	
D60	mm	1.77
D30	mm	0.0364
D10	mm	0.00239
Uniformity Coefficient		740
Curvature Coefficient		0.31

Remarks

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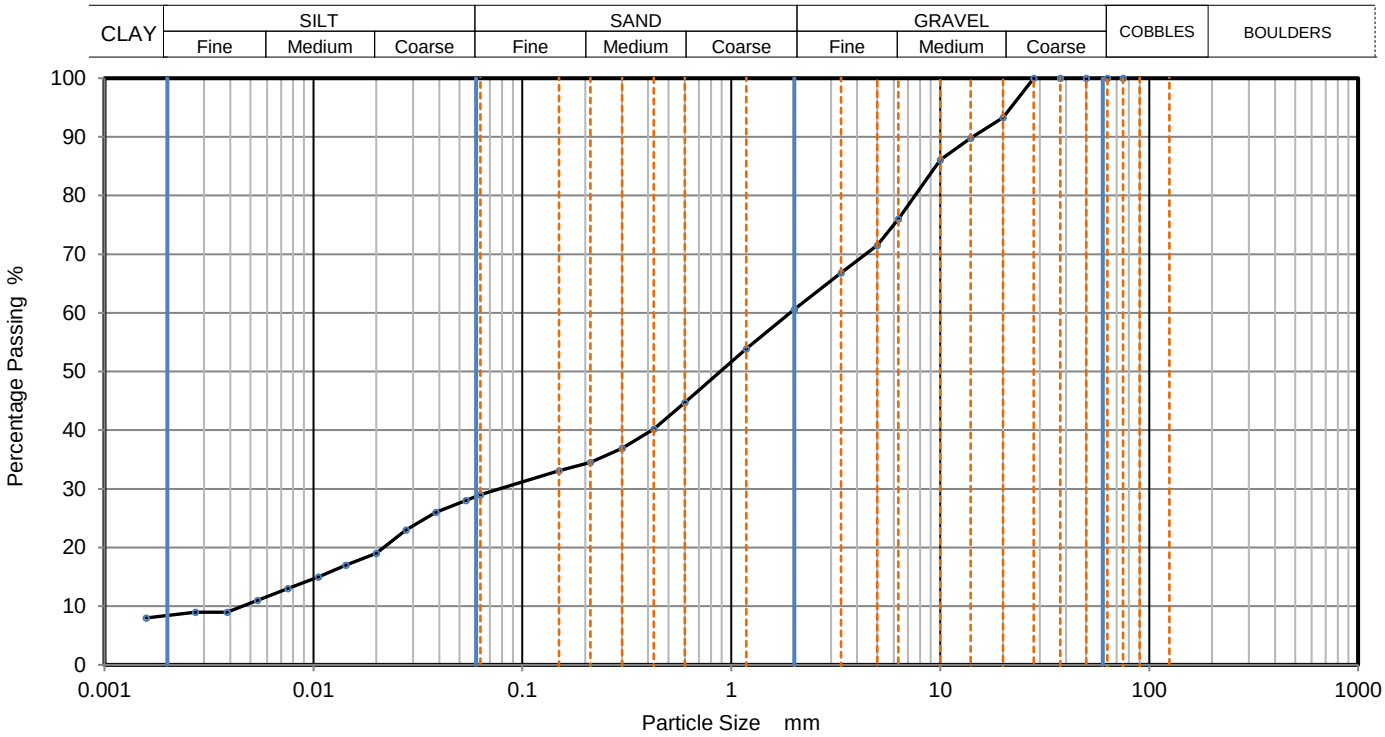
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPBP06
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Brownish-grey very silty very sandy GRAVEL.	Depth, m	1.20
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060283



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	29
		0.0538	28
75	100	0.0385	26
63	100	0.0278	23
50	100	0.0200	19
37.5	100	0.0143	17
28	100	0.0106	15
20	93	0.0076	13
14	90	0.0054	11
10	86	0.0039	9
6.3	76	0.0027	9
5	72	0.0016	8
3.35	67		
2	61		
1.18	54		
0.6	45	Particle density	(assumed)
0.425	40	2.65	Mg/m3
0.3	37		
0.212	35		
0.15	33		
0.063	29		

Dry Mass of sample, g	1092

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	32
Silt	21
Clay	8

Grading Analysis		
D100	mm	
D60	mm	1.91
D30	mm	0.0783
D10	mm	0.00481
Uniformity Coefficient		400
Curvature Coefficient		0.67

Remarks

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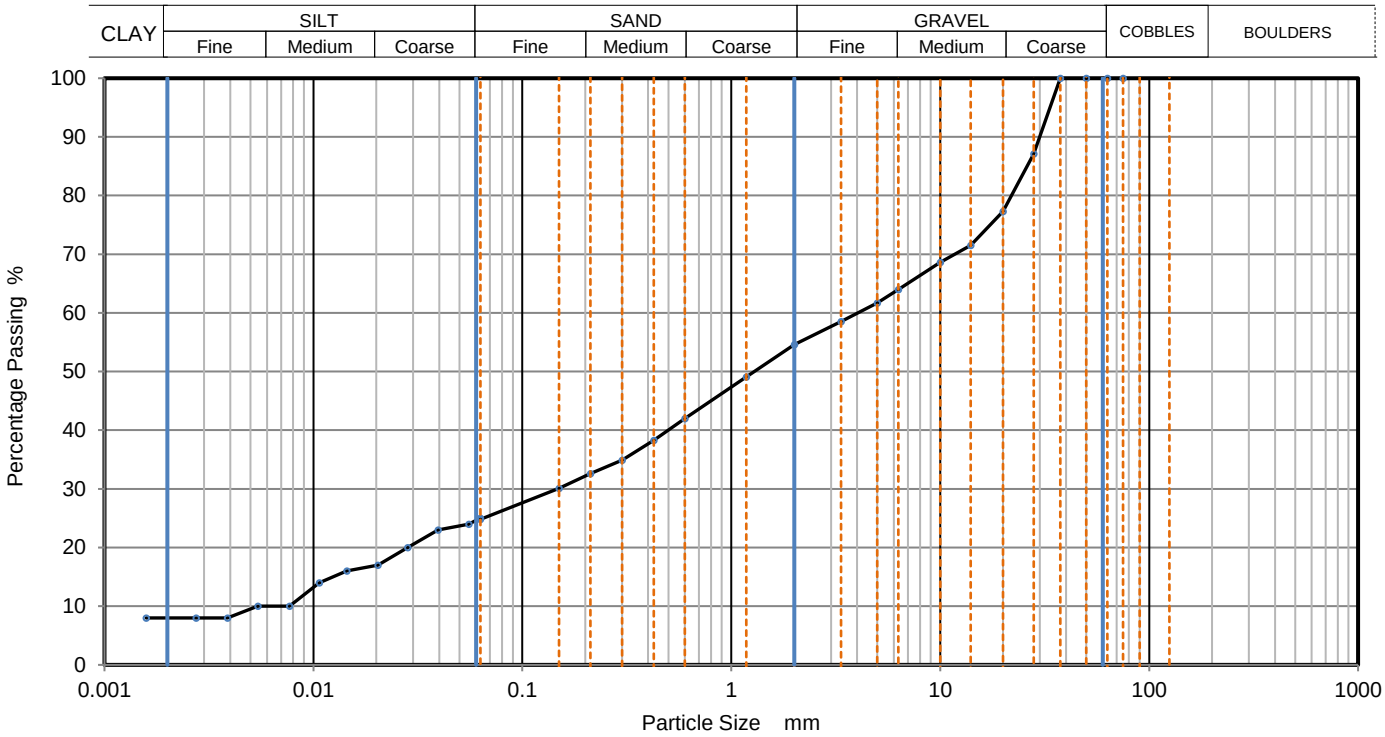
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPBP08
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brownish-black vey silty very sandy coarse GRAVEL.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060292



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	25
		0.0555	24
75	100	0.0395	23
63	100	0.0283	20
50	100	0.0203	17
37.5	100	0.0145	16
28	87	0.0107	14
20	77	0.0077	10
14	72	0.0054	10
10	69	0.0039	8
6.3	64	0.0027	8
5	62	0.0016	8
3.35	59		
2	55		
1.18	49		
0.6	42	Particle density	(assumed)
0.425	38	2.65	Mg/m3
0.3	35		
0.212	33		
0.15	30		
0.063	25		

Dry Mass of sample, g	608

Sample Proportions	% dry mass
Very coarse	0
Gravel	45
Sand	30
Silt	17
Clay	8

Grading Analysis		
D100	mm	
D60	mm	4.04
D30	mm	0.148
D10	mm	0.00531
Uniformity Coefficient		760
Curvature Coefficient		1

Remarks

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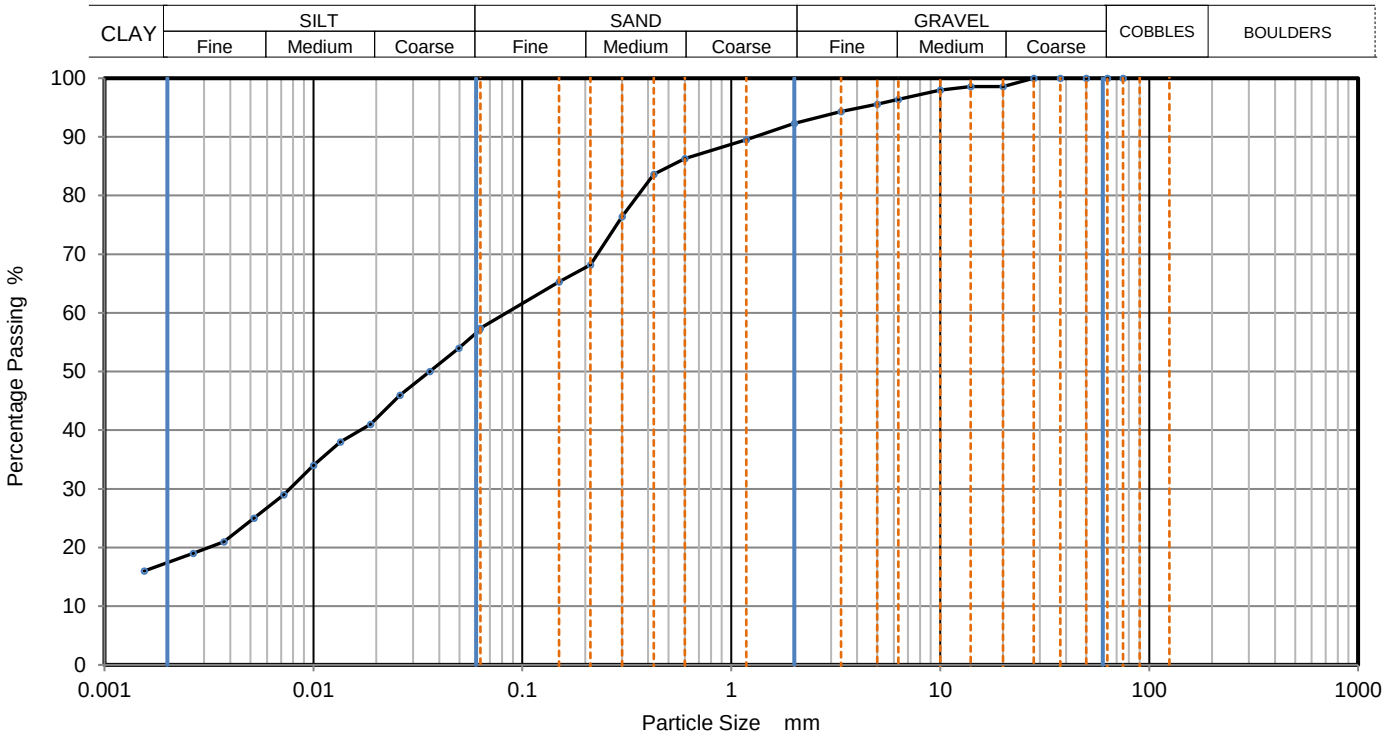
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPC02
Site Name	Derrygreenagh Power	Sample No.	5
Soil Description	Dark grey slightly gravelly sandy SILT.	Depth, m	2.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060924



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0621	57
		0.0497	54
75	100	0.0360	50
63	100	0.0260	46
50	100	0.0188	41
37.5	100	0.0134	38
28	100	0.0100	34
20	99	0.0072	29
14	99	0.0052	25
10	98	0.0037	21
6.3	96	0.0027	19
5	96	0.0015	16
3.35	94		
2	92		
1.18	90		
0.6	86	Particle density	(assumed)
0.425	84	2.65	Mg/m3
0.3	76		
0.212	68		
0.15	65		
0.063	57		

Dry Mass of sample, g	763

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	35
Silt	40
Clay	18

Grading Analysis		
D100	mm	
D60	mm	0.084
D30	mm	0.00752
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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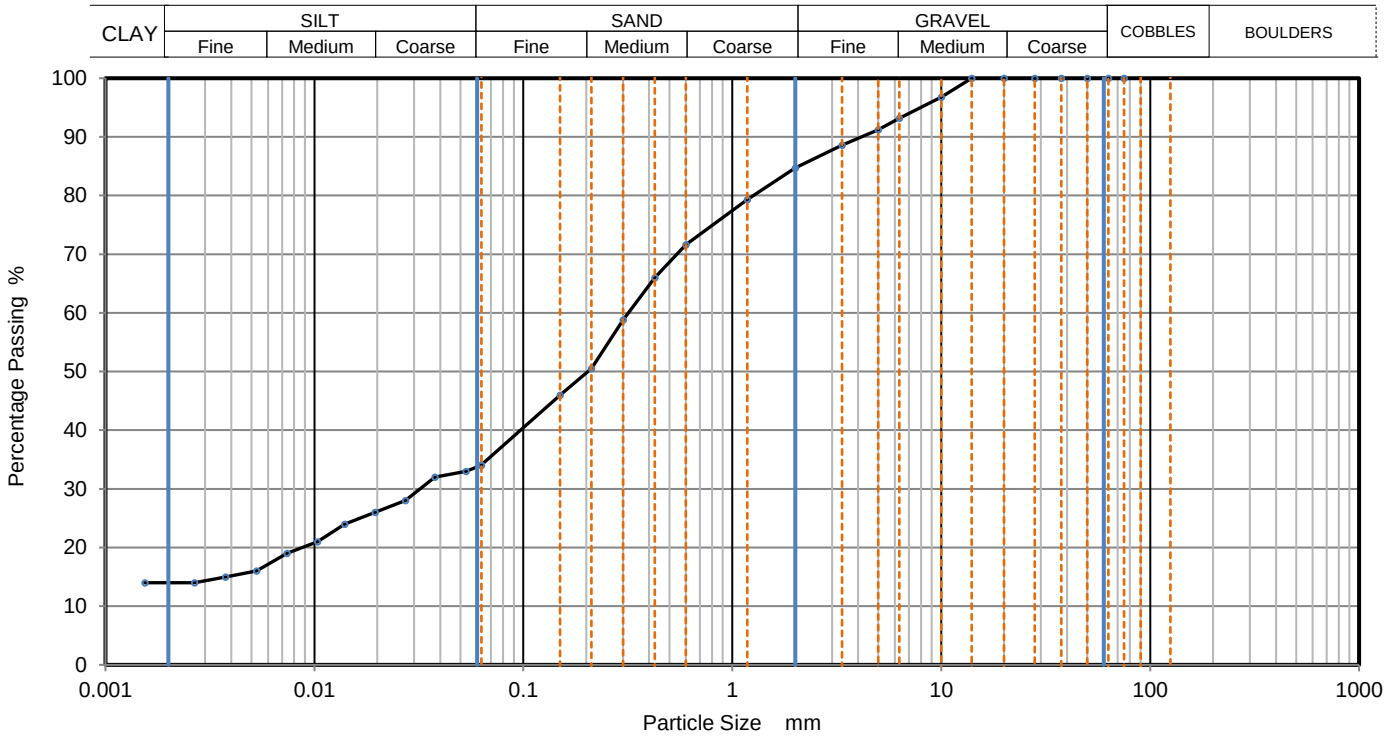
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPC04
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Dark greenish-grey gravelly very silty medium SAND.	Depth, m	1.60
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060942



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	34
		0.0531	33
75	100	0.0378	32
63	100	0.0272	28
50	100	0.0195	26
37.5	100	0.0140	24
28	100	0.0103	21
20	100	0.0074	19
14	100	0.0053	16
10	97	0.0038	15
6.3	93	0.0027	14
5	91	0.0015	14
3.35	89		
2	85		
1.18	79		
0.6	72	Particle density	(assumed)
0.425	66	2.65	Mg/m3
0.3	59		
0.212	51		
0.15	46		
0.063	34		

Dry Mass of sample, g: 775

Sample Proportions	% dry mass
Very coarse	0
Gravel	15
Sand	51
Silt	20
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.318
D30	mm	0.0321
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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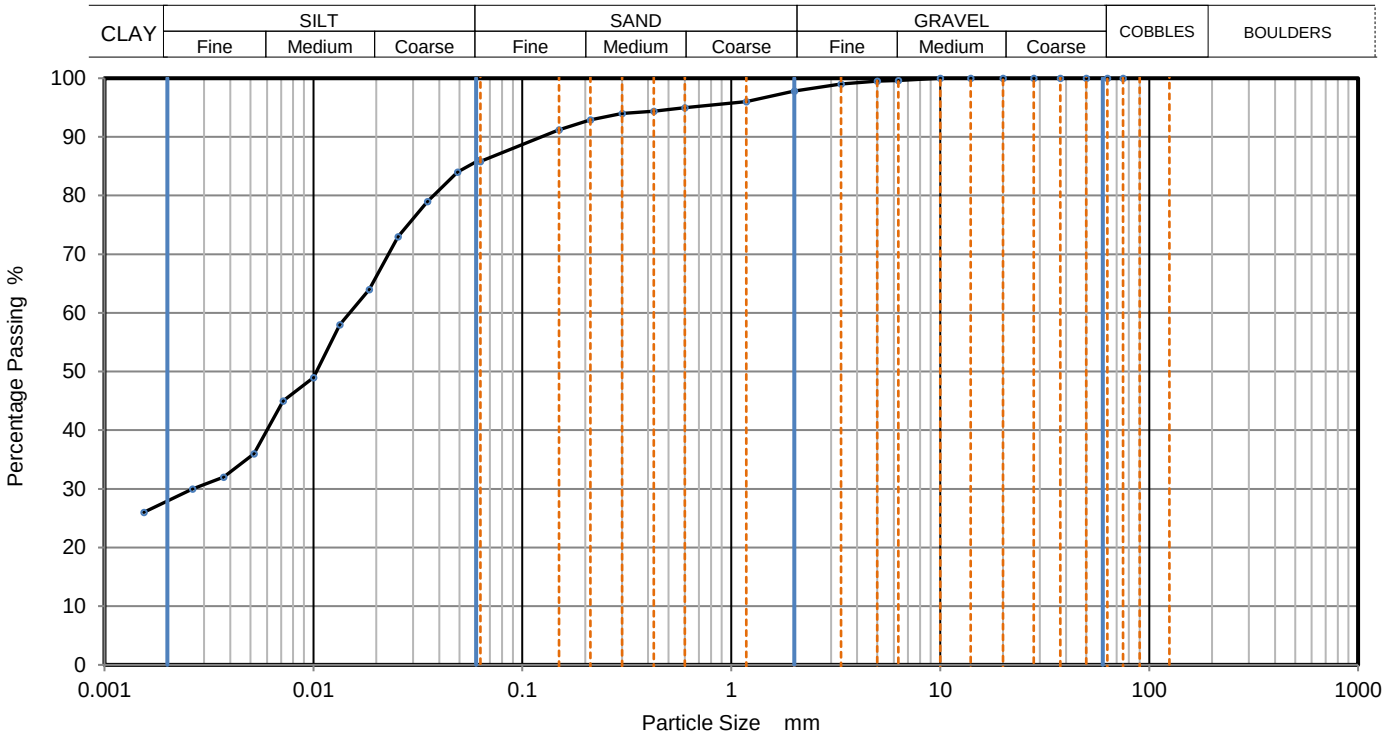
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPC06
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Black and greeenish-grey slightly gravelly slightly sandy SILT.	Depth, m	2.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060957



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0616	86
		0.0490	84
75	100	0.0352	79
63	100	0.0254	73
50	100	0.0185	64
37.5	100	0.0134	58
28	100	0.0100	49
20	100	0.0072	45
14	100	0.0052	36
10	100	0.0037	32
6.3	100	0.0026	30
5	100	0.0015	26
3.35	99		
2	98		
1.18	96		
0.6	95	Particle density	(assumed)
0.425	94	2.65	Mg/m3
0.3	94		
0.212	93		
0.15	91		
0.063	86		

Dry Mass of sample, g: 555

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	12
Silt	58
Clay	28

Grading Analysis		
D100	mm	
D60	mm	0.0148
D30	mm	0.00263
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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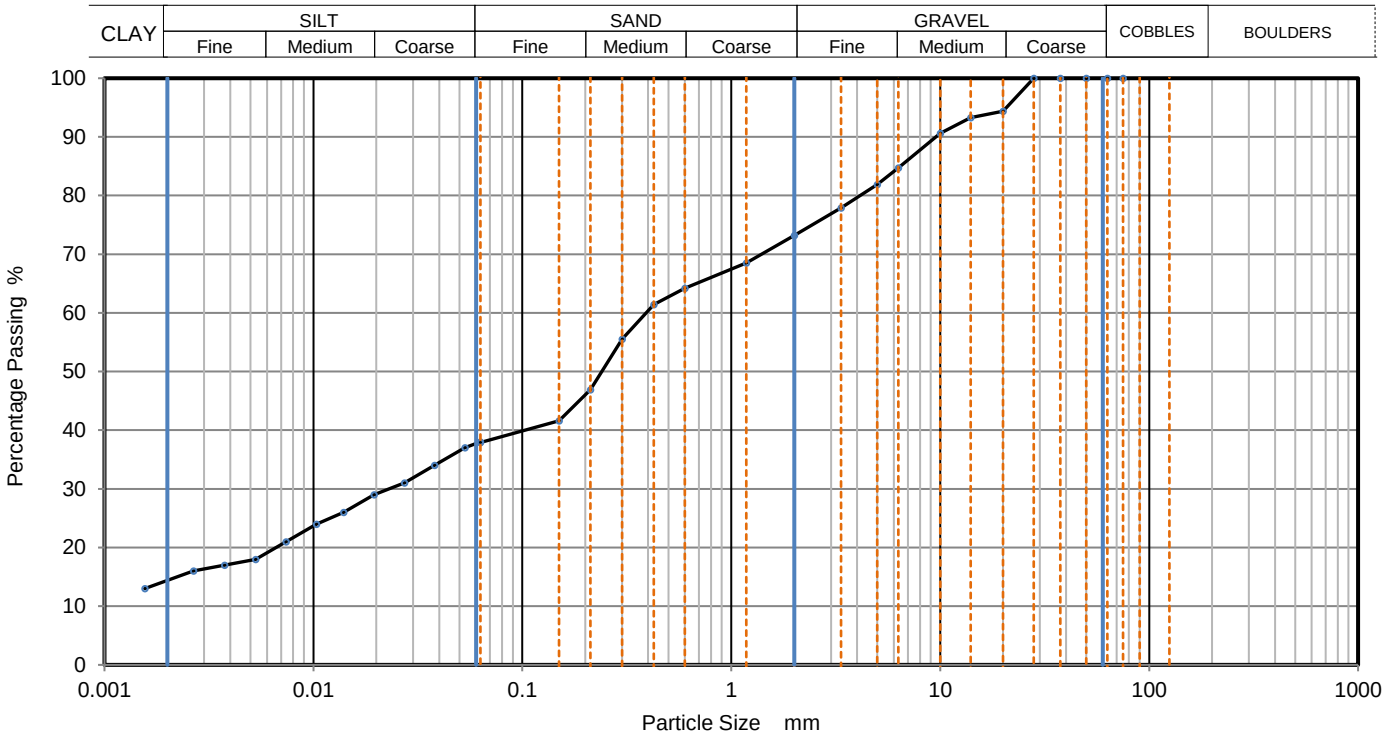
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPC08
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Brownish-grey slightly gravelly sandy SILT.	Depth, m	0.80
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081613



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	38
		0.0531	37
75	100	0.0380	34
63	100	0.0272	31
50	100	0.0195	29
37.5	100	0.0140	26
28	100	0.0103	24
20	94	0.0074	21
14	93	0.0053	18
10	91	0.0038	17
6.3	85	0.0027	16
5	82	0.0016	13
3.35	78		
2	73		
1.18	69		
0.6	64	Particle density	(assumed)
0.425	61	2.65	Mg/m3
0.3	56		
0.212	47		
0.15	42		
0.063	38		

Dry Mass of sample, g: 577

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	35
Silt	24
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.391
D30	mm	0.0229
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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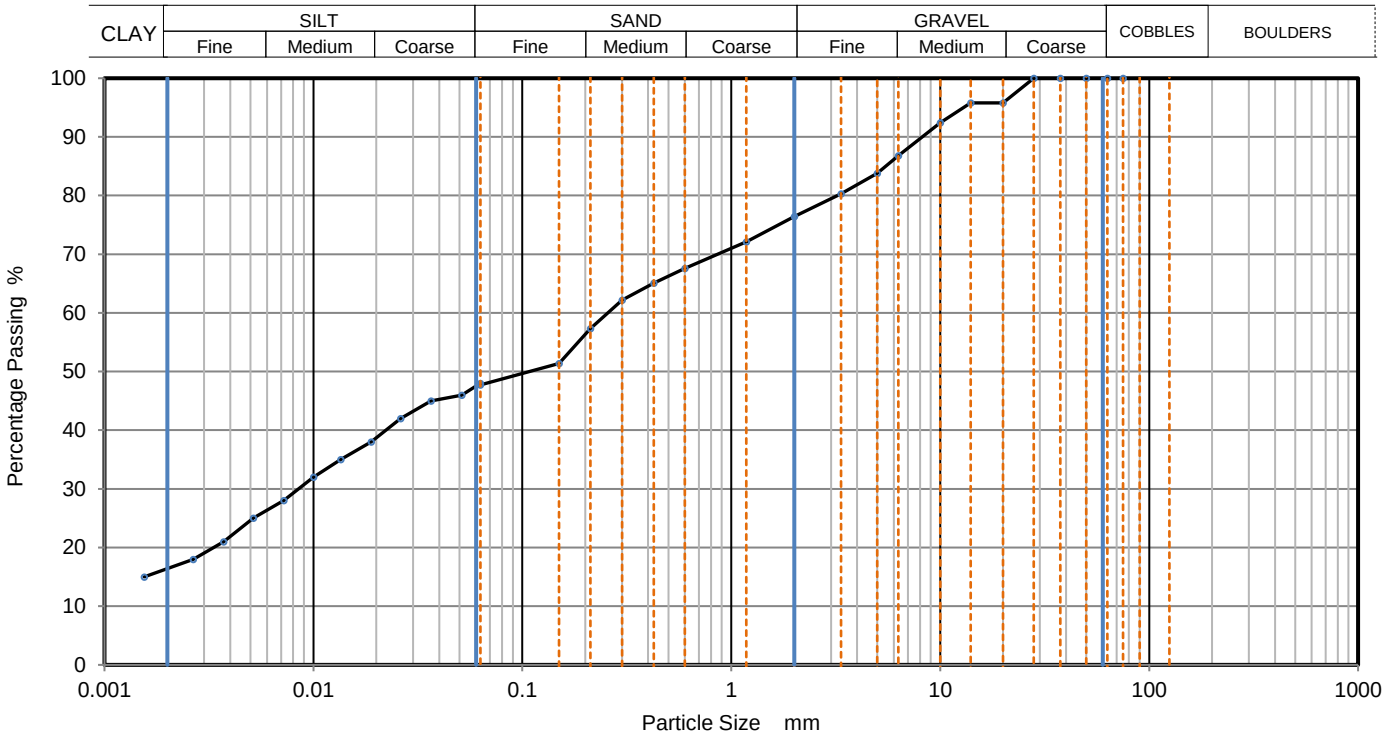
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	TPC08
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description	Brownish-grey slightly gravelly slightly sandy SILT.			Depth, m	2.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL12023081616



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	48
		0.0512	46
75	100	0.0365	45
63	100	0.0262	42
50	100	0.0189	38
37.5	100	0.0135	35
28	100	0.0100	32
20	96	0.0072	28
14	96	0.0052	25
10	92	0.0037	21
6.3	87	0.0027	18
5	84	0.0015	15
3.35	80		
2	76		
1.18	72		
0.6	68	Particle density	(assumed)
0.425	65	2.65	Mg/m3
0.3	62		
0.212	57		
0.15	51		
0.063	48		

Dry Mass of sample, g	827

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	29
Silt	31
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.257
D30	mm	0.00839
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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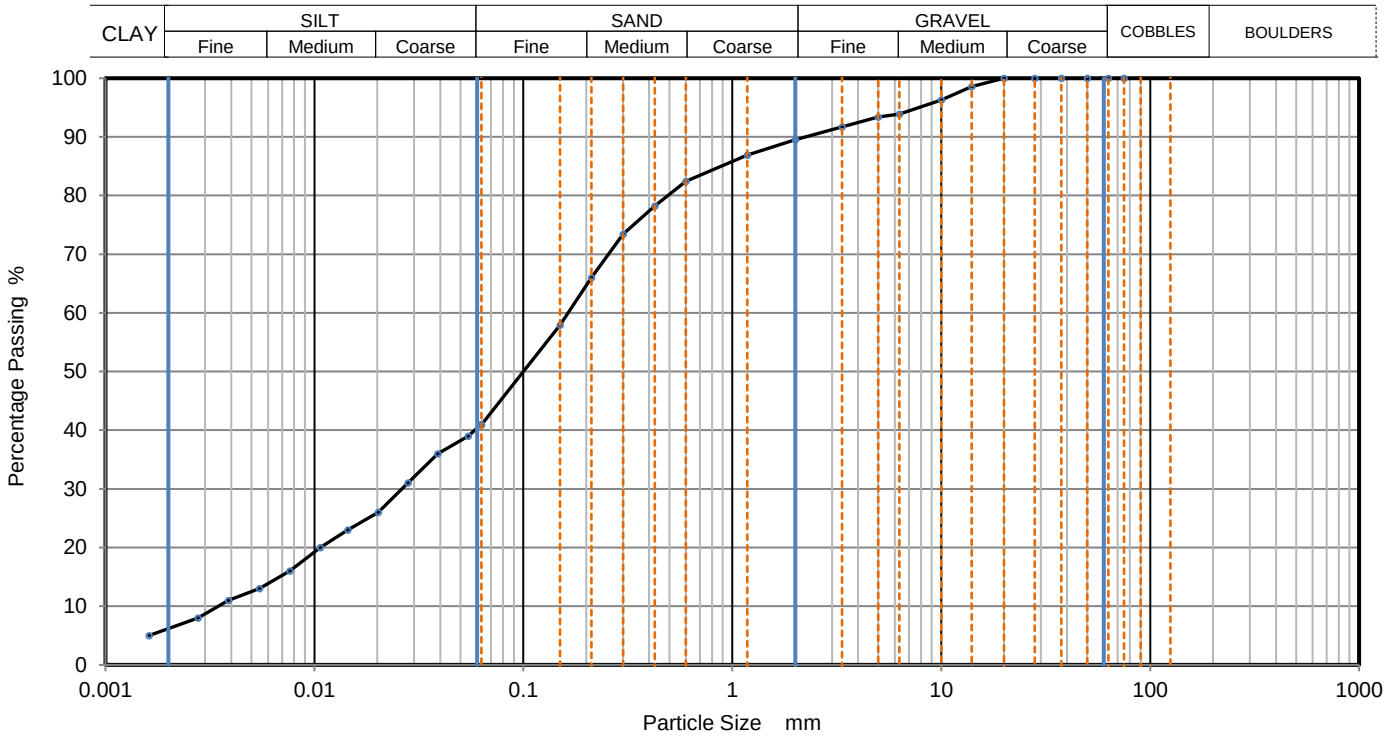
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPC09
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Dark grey slightly gravelly sandy SILT. Sand is fine and medium.	Depth, m	1.30
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081622



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0545	39
75	100	0.0390	36
63	100	0.0281	31
50	100	0.0202	26
37.5	100	0.0145	23
28	100	0.0107	20
20	100	0.0076	16
14	99	0.0055	13
10	96	0.0039	11
6.3	94	0.0028	8
5	93	0.0016	5
3.35	92		
2	90		
1.18	87		
0.6	82	Particle density (assumed)	
0.425	78	2.65 Mg/m3	
0.3	73		
0.212	66		
0.15	58		
0.063	41		

Dry Mass of sample, g	761

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	49
Silt	35
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.164
D30	mm	0.0261
D10	mm	0.00334
Uniformity Coefficient		49
Curvature Coefficient		1.2

Remarks

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Operator	Checked	Approved	Sheet printed	
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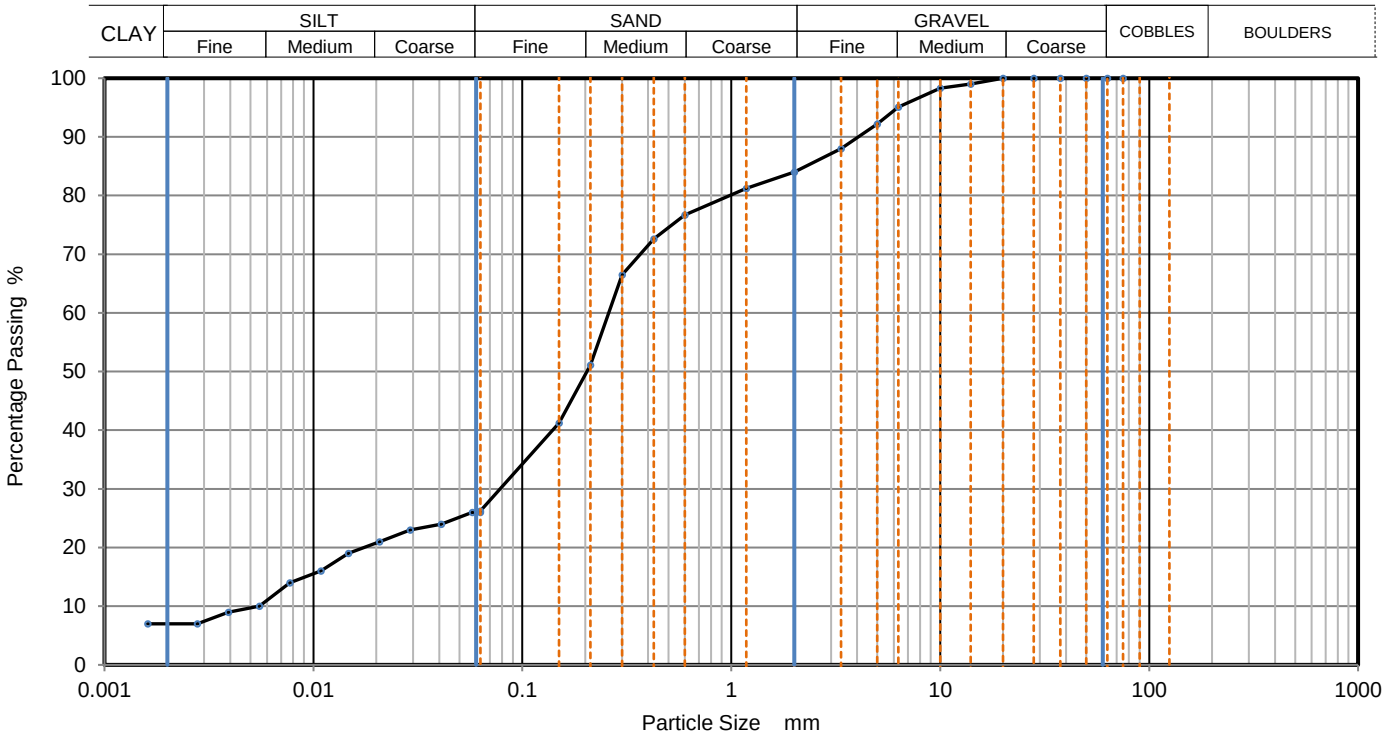
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPCC01
Site Name	Derrygreenagh Power	Sample No.	5
Soil Description	Black and greeenish-grey gravelly very silty fine and medium SAND.	Depth, m	2.90
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023060973



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	26
		0.0575	26
75	100	0.0409	24
63	100	0.0291	23
50	100	0.0207	21
37.5	100	0.0147	19
28	100	0.0109	16
20	100	0.0077	14
14	99	0.0055	10
10	98	0.0039	9
6.3	95	0.0028	7
5	92	0.0016	7
3.35	88		
2	84		
1.18	81		
0.6	77	Particle density	(assumed)
0.425	73	2.65	Mg/m3
0.3	67		
0.212	51		
0.15	41		
0.063	26		

Dry Mass of sample, g	350

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	58
Silt	19
Clay	7

Grading Analysis		
D100	mm	
D60	mm	0.259
D30	mm	0.0785
D10	mm	0.00502
Uniformity Coefficient		52
Curvature Coefficient		4.7

Remarks

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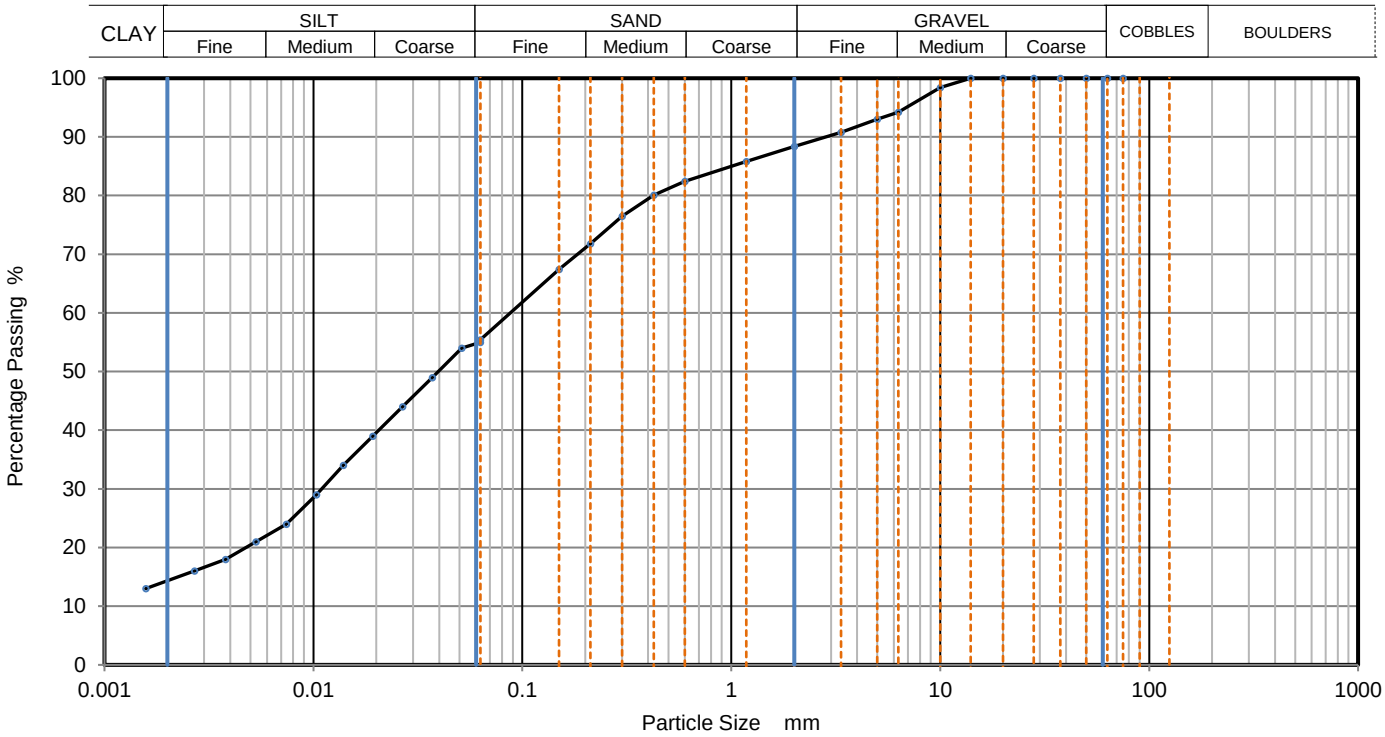
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS02
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown slightly gravelly sandy SILT.	Depth, m	1.90
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023052320



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	55
		0.0512	54
75	100	0.0370	49
63	100	0.0267	44
50	100	0.0193	39
37.5	100	0.0139	34
28	100	0.0103	29
20	100	0.0074	24
14	100	0.0053	21
10	98	0.0038	18
6.3	94	0.0027	16
5	93	0.0016	13
3.35	91		
2	88		
1.18	86		
0.6	82	Particle density	(assumed)
0.425	80	2.65	Mg/m3
0.3	77		
0.212	72		
0.15	67		
0.063	55		

Dry Mass of sample, g	697

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	33
Silt	41
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.0876
D30	mm	0.0107
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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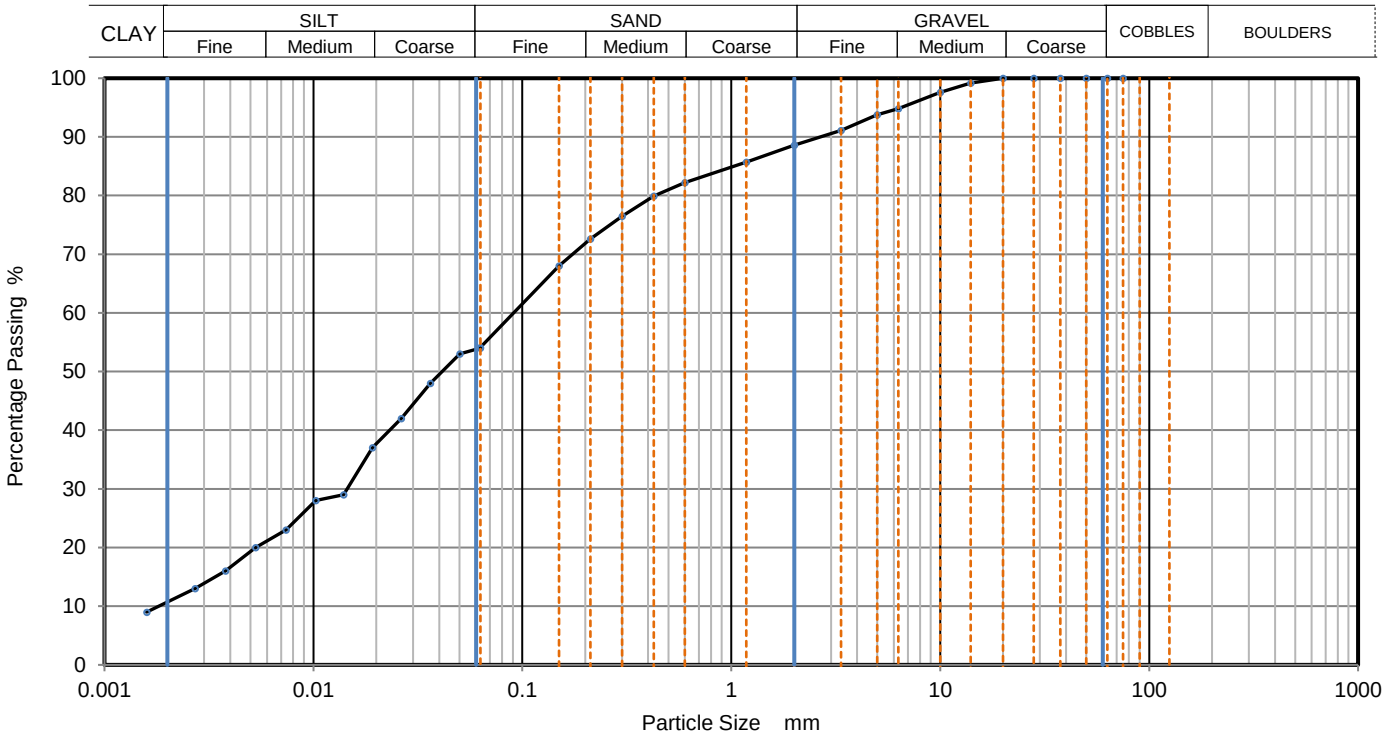
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS04
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brownish-grey slighlty gravelly sandy SILT.	Depth, m	2.10
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023052335



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	54
		0.0501	53
75	100	0.0362	48
63	100	0.0264	42
50	100	0.0191	37
37.5	100	0.0140	29
28	100	0.0103	28
20	100	0.0074	23
14	99	0.0053	20
10	98	0.0038	16
6.3	95	0.0027	13
5	94	0.0016	9
3.35	91		
2	89		
1.18	86		
0.6	82	Particle density (assumed)	
0.425	80	2.65 Mg/m3	
0.3	77		
0.212	73		
0.15	68		
0.063	54		

Dry Mass of sample, g	893

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	35
Silt	44
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.0909
D30	mm	0.0144
D10	mm	0.00185
Uniformity Coefficient		49
Curvature Coefficient		1.2

Remarks

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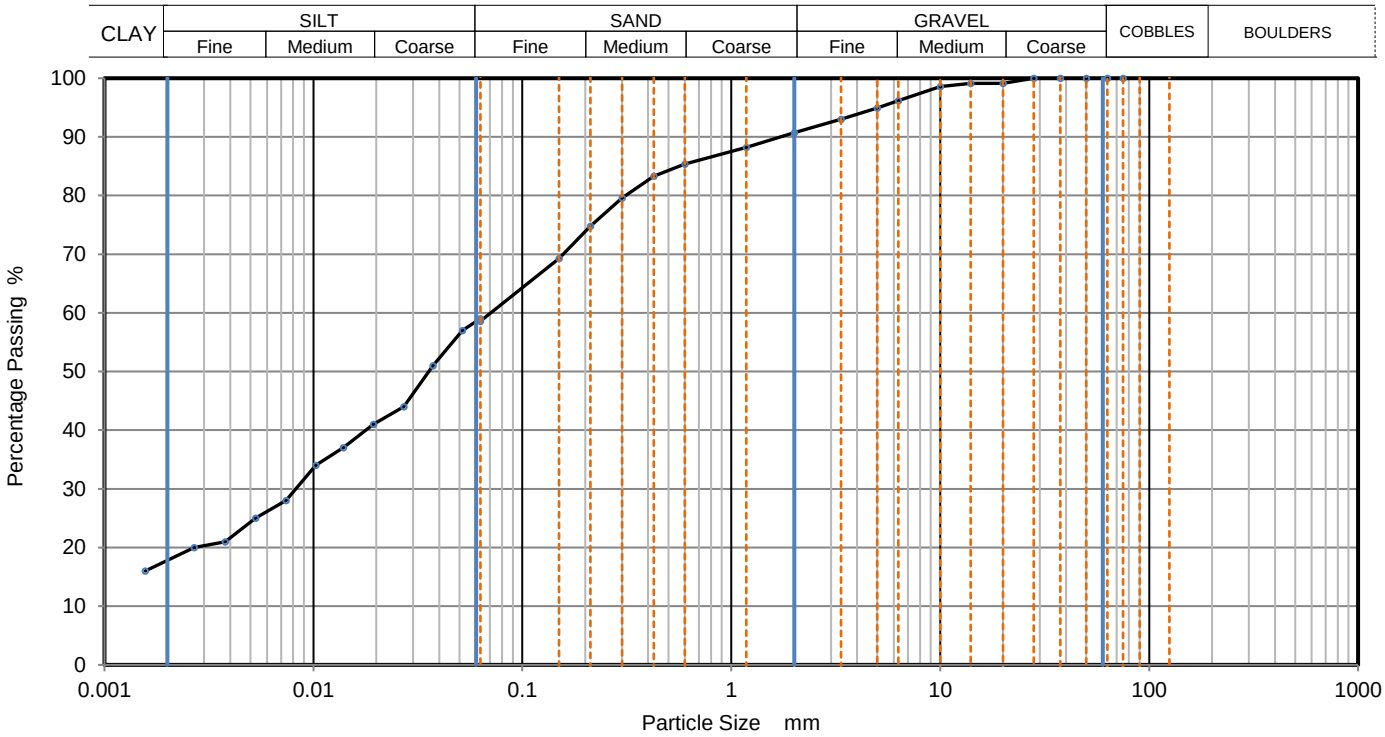
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS06
Site Name	Derrygreenagh Power	Sample No.	2
Soil Description	Greenish-grey slightly gravelly slightly sandy SILT.	Depth, m	2.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023052349



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	59
		0.0516	57
75	100	0.0373	51
63	100	0.0271	44
50	100	0.0194	41
37.5	100	0.0139	37
28	100	0.0103	34
20	99	0.0074	28
14	99	0.0053	25
10	99	0.0038	21
6.3	96	0.0027	20
5	95	0.0016	16
3.35	93		
2	91		
1.18	88		
0.6	85	Particle density	(assumed)
0.425	83	2.65	Mg/m3
0.3	80		
0.212	75		
0.15	69		
0.063	59		

Dry Mass of sample, g	764

Sample Proportions	% dry mass
Very coarse	0
Gravel	9
Sand	32
Silt	41
Clay	18

Grading Analysis		
D100	mm	
D60	mm	0.0706
D30	mm	0.00814
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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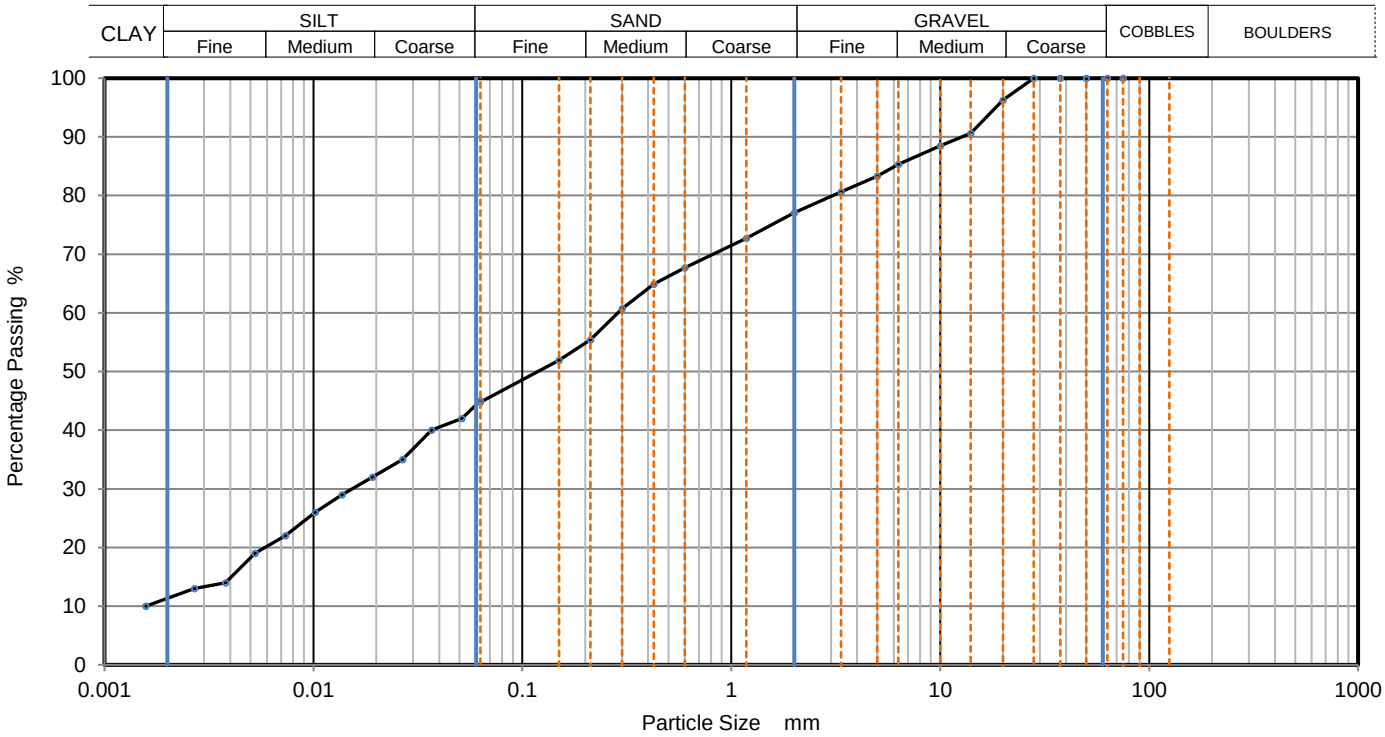
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS101
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brownish-grey slightly gravelly slightly sandy SILT.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081628



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0512	42
75	100	0.0368	40
63	100	0.0267	35
50	100	0.0191	32
37.5	100	0.0137	29
28	100	0.0102	26
20	96	0.0073	22
14	91	0.0053	19
10	89	0.0038	14
6.3	85	0.0027	13
5	83	0.0016	10
3.35	81		
2	77		
1.18	73		
0.6	68	Particle density	(assumed)
0.425	65	2.65	Mg/m3
0.3	61		
0.212	55		
0.15	52		
0.063	45		

Dry Mass of sample, g	863

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	32
Silt	33
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.286
D30	mm	0.0147
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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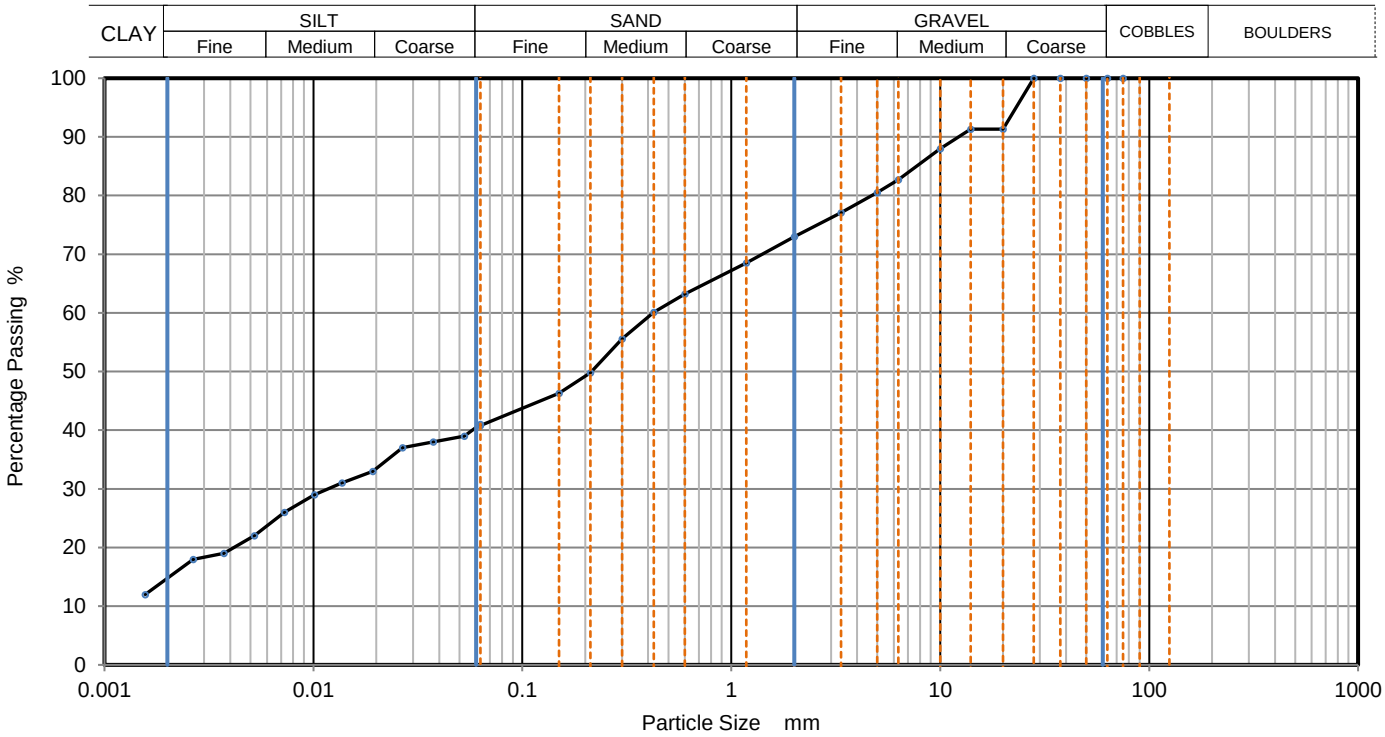
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS101
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Light greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	1.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081631



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0527	39
75	100	0.0375	38
63	100	0.0267	37
50	100	0.0193	33
37.5	100	0.0137	31
28	100	0.0101	29
20	91	0.0073	26
14	91	0.0052	22
10	88	0.0037	19
6.3	83	0.0027	18
5	81	0.0016	12
3.35	77		
2	73		
1.18	69		
0.6	63	Particle density	(assumed)
0.425	60	2.65	Mg/m3
0.3	56		
0.212	50		
0.15	46		
0.063	41		

Dry Mass of sample, g	973

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	32
Silt	26
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.42
D30	mm	0.0119
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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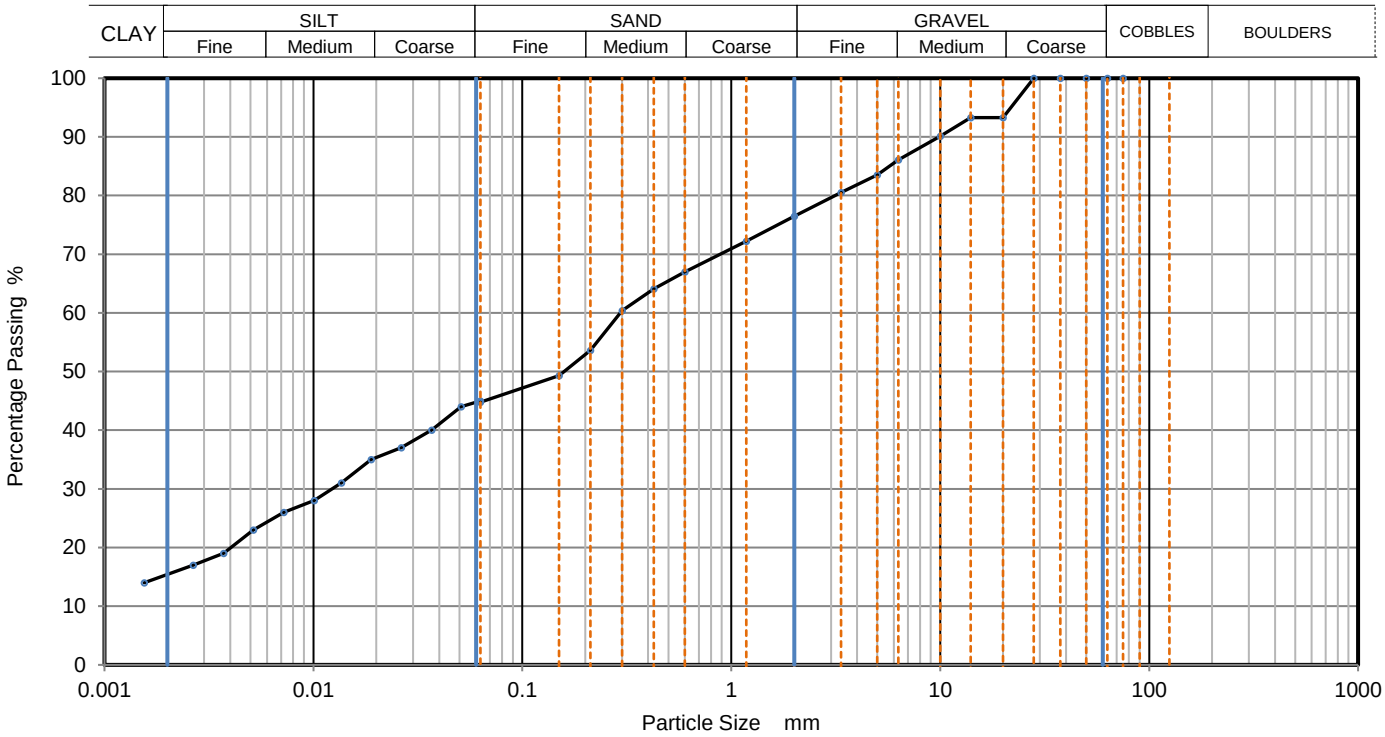
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS101
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Light grey slightly gravelly slightly sandy SILT.	Depth, m	2.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081633



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0509	44
75	100	0.0368	40
63	100	0.0264	37
50	100	0.0189	35
37.5	100	0.0136	31
28	100	0.0101	28
20	93	0.0072	26
14	93	0.0052	23
10	90	0.0037	19
6.3	86	0.0027	17
5	84	0.0015	14
3.35	81		
2	77		
1.18	72		
0.6	67	Particle density	(assumed)
0.425	64	2.65	Mg/m3
0.3	60		
0.212	54		
0.15	49		
0.063	45		

Dry Mass of sample, g	806

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	32
Silt	30
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.294
D30	mm	0.0125
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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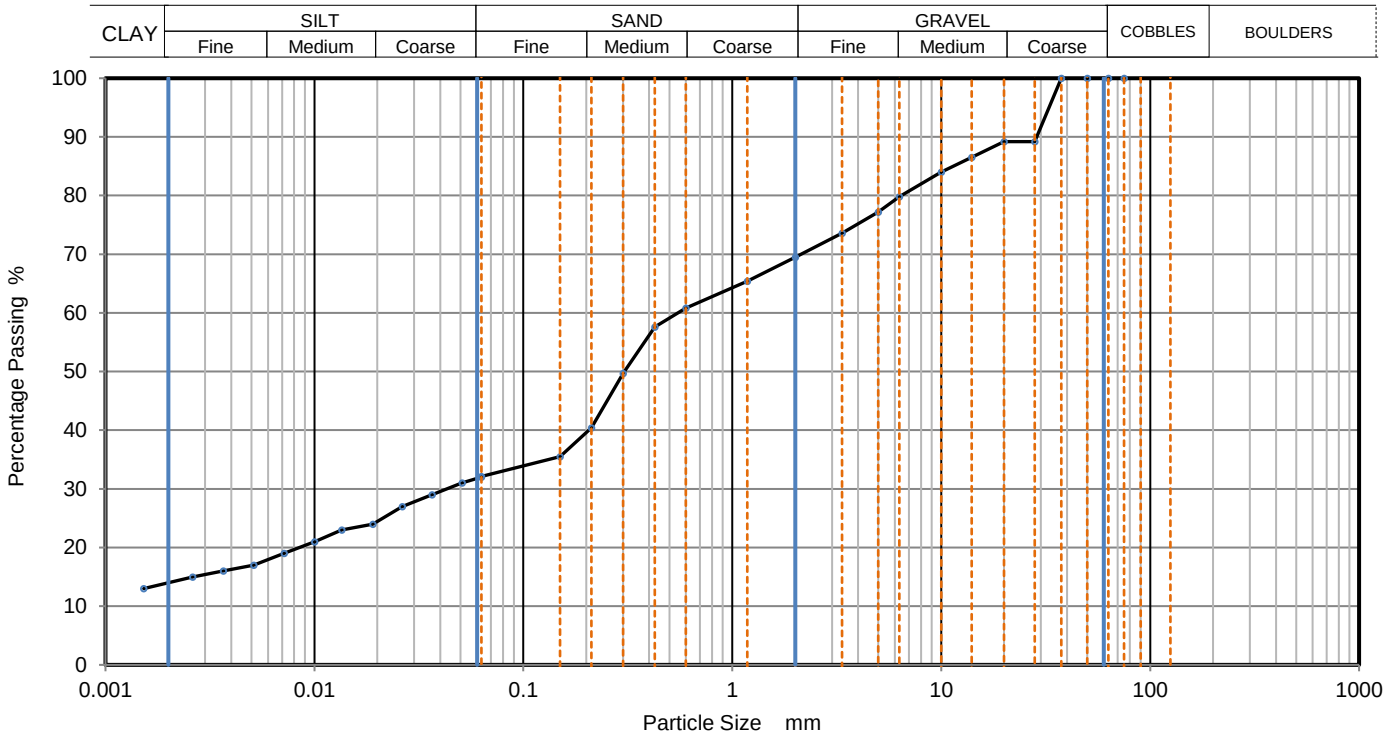
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS102
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown very gravelly very silty medium SAND.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081636



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	32
		0.0509	31
75	100	0.0365	29
63	100	0.0264	27
50	100	0.0190	24
37.5	100	0.0135	23
28	89	0.0100	21
20	89	0.0072	19
14	87	0.0051	17
10	84	0.0037	16
6.3	80	0.0026	15
5	77	0.0015	13
3.35	74		
2	70		
1.18	65		
0.6	61	Particle density	(assumed)
0.425	58	2.65	Mg/m3
0.3	50		
0.212	40		
0.15	36		
0.063	32		

Dry Mass of sample, g: 602

Sample Proportions	% dry mass
Very coarse	0
Gravel	31
Sand	38
Silt	18
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.552
D30	mm	0.0411
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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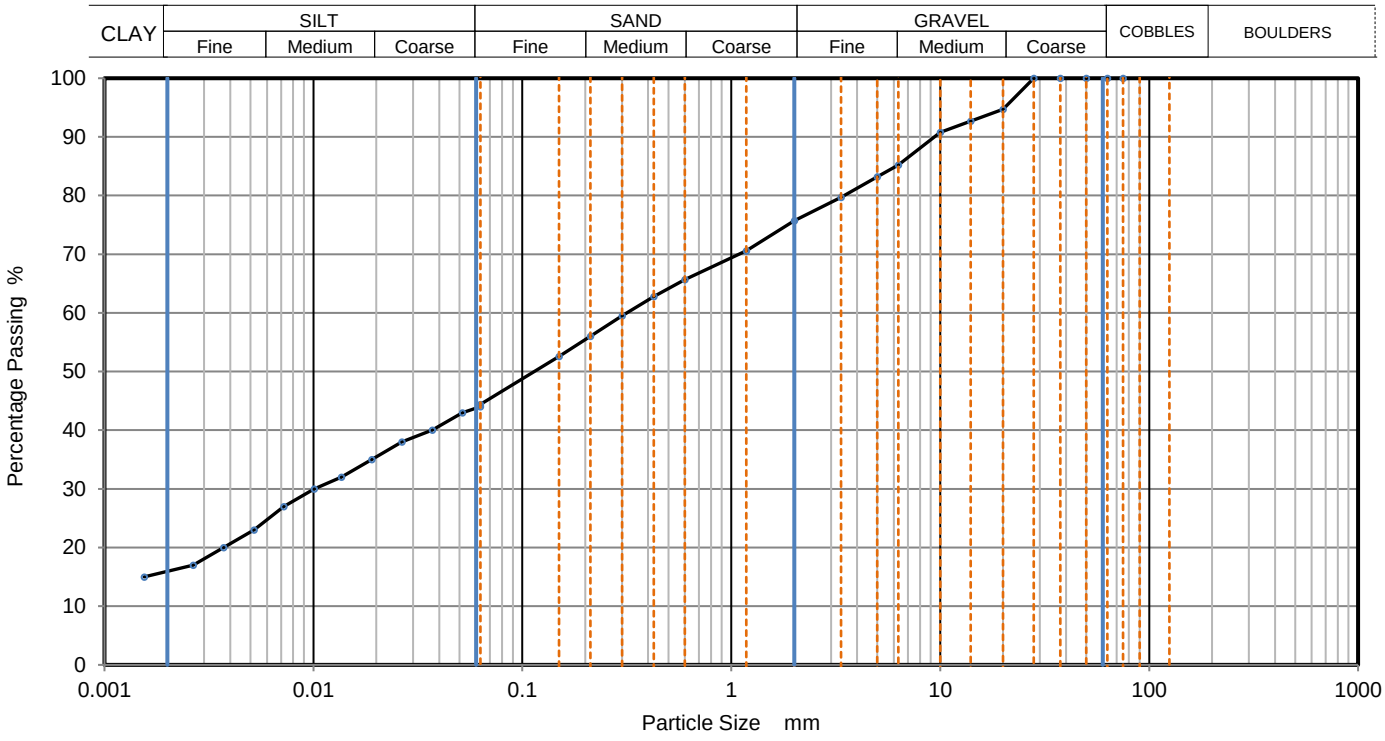
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS102
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Greyish-brown slightly gravelly slightly sandy SILT.	Depth, m	1.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081639



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	44
		0.0516	43
75	100	0.0370	40
63	100	0.0265	38
50	100	0.0190	35
37.5	100	0.0136	32
28	100	0.0101	30
20	95	0.0072	27
14	93	0.0052	23
10	91	0.0037	20
6.3	85	0.0027	17
5	83	0.0015	15
3.35	80		
2	76		
1.18	71		
0.6	66	Particle density (assumed)	
0.425	63	2.65 Mg/m3	
0.3	60		
0.212	56		
0.15	53		
0.063	44		

Dry Mass of sample, g	968

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	31
Silt	28
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.315
D30	mm	0.0105
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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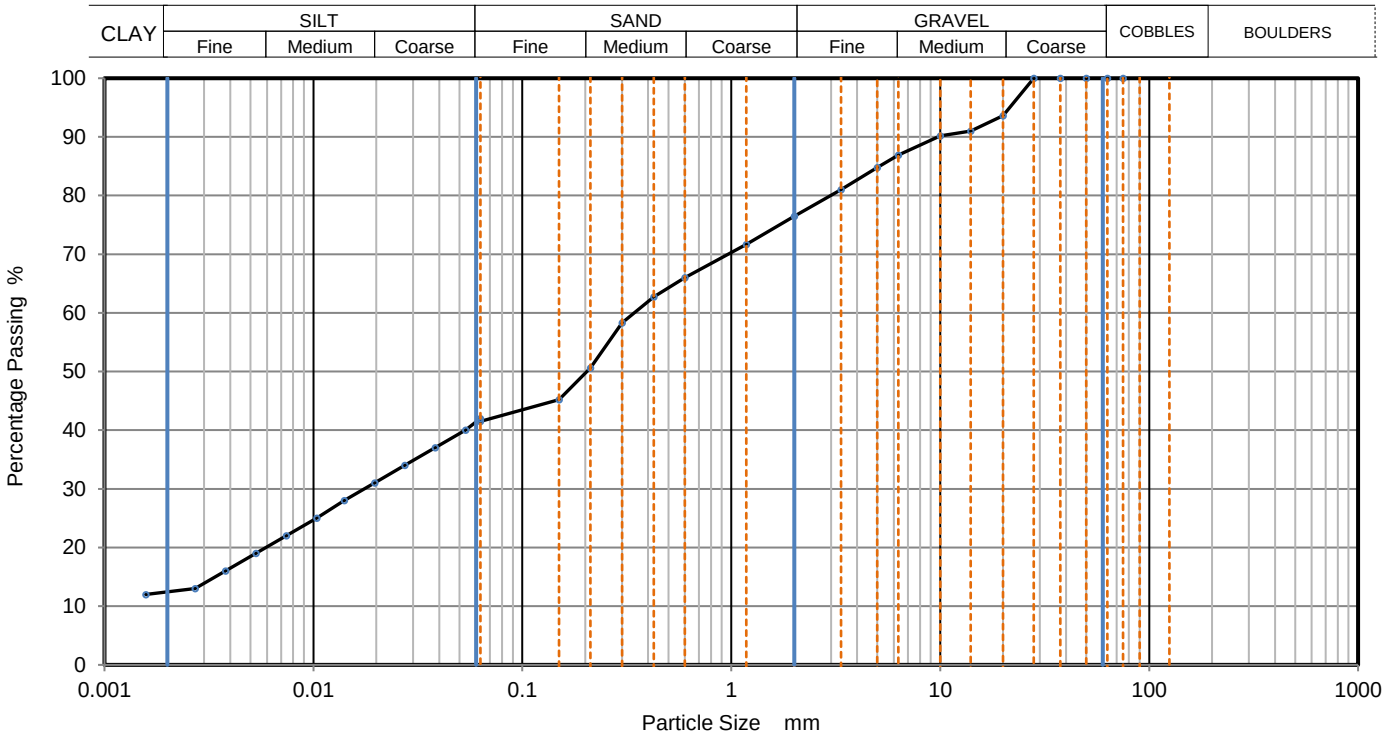
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS103
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greenish-brown slightly gravelly sandy SILT.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081644



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	42
		0.0534	40
75	100	0.0383	37
63	100	0.0274	34
50	100	0.0196	31
37.5	100	0.0140	28
28	100	0.0104	25
20	94	0.0074	22
14	91	0.0053	19
10	90	0.0038	16
6.3	87	0.0027	13
5	85	0.0016	12
3.35	81		
2	77		
1.18	72		
0.6	66	Particle density	(assumed)
0.425	63	2.65	Mg/m3
0.3	58		
0.212	51		
0.15	45		
0.063	42		

Dry Mass of sample, g: 887

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	35
Silt	29
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.344
D30	mm	0.0173
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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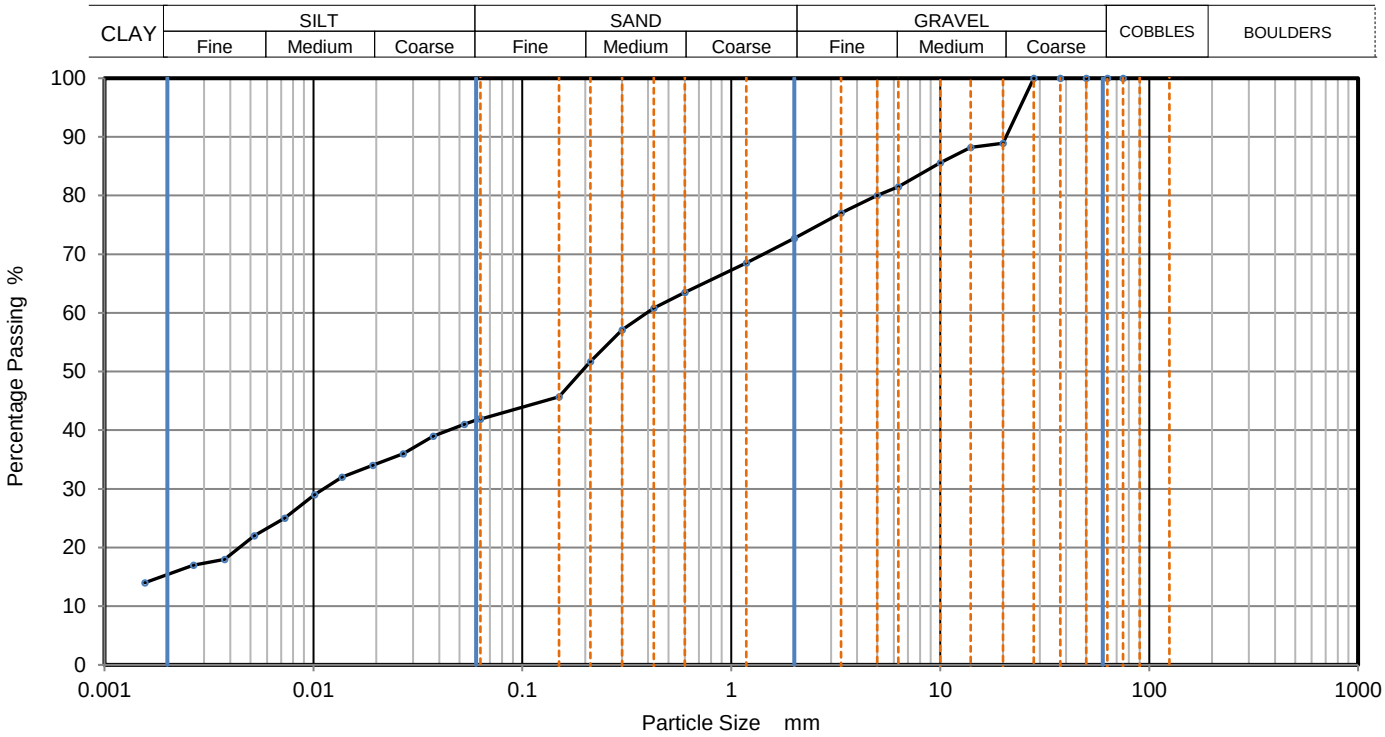
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS103
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Light grey slightly gravelly slightly sandy SILT.	Depth, m	1.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081647



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	42
		0.0527	41
75	100	0.0375	39
63	100	0.0269	36
50	100	0.0193	34
37.5	100	0.0137	32
28	100	0.0101	29
20	89	0.0073	25
14	88	0.0052	22
10	86	0.0038	18
6.3	82	0.0027	17
5	80	0.0016	14
3.35	77		
2	73		
1.18	69		
0.6	64	Particle density (assumed)	
0.425	61	2.65 Mg/m3	
0.3	57		
0.212	52		
0.15	46		
0.063	42		

Dry Mass of sample, g	1136

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	31
Silt	27
Clay	15

Grading Analysis		
D100	mm	
D60	mm	0.393
D30	mm	0.0109
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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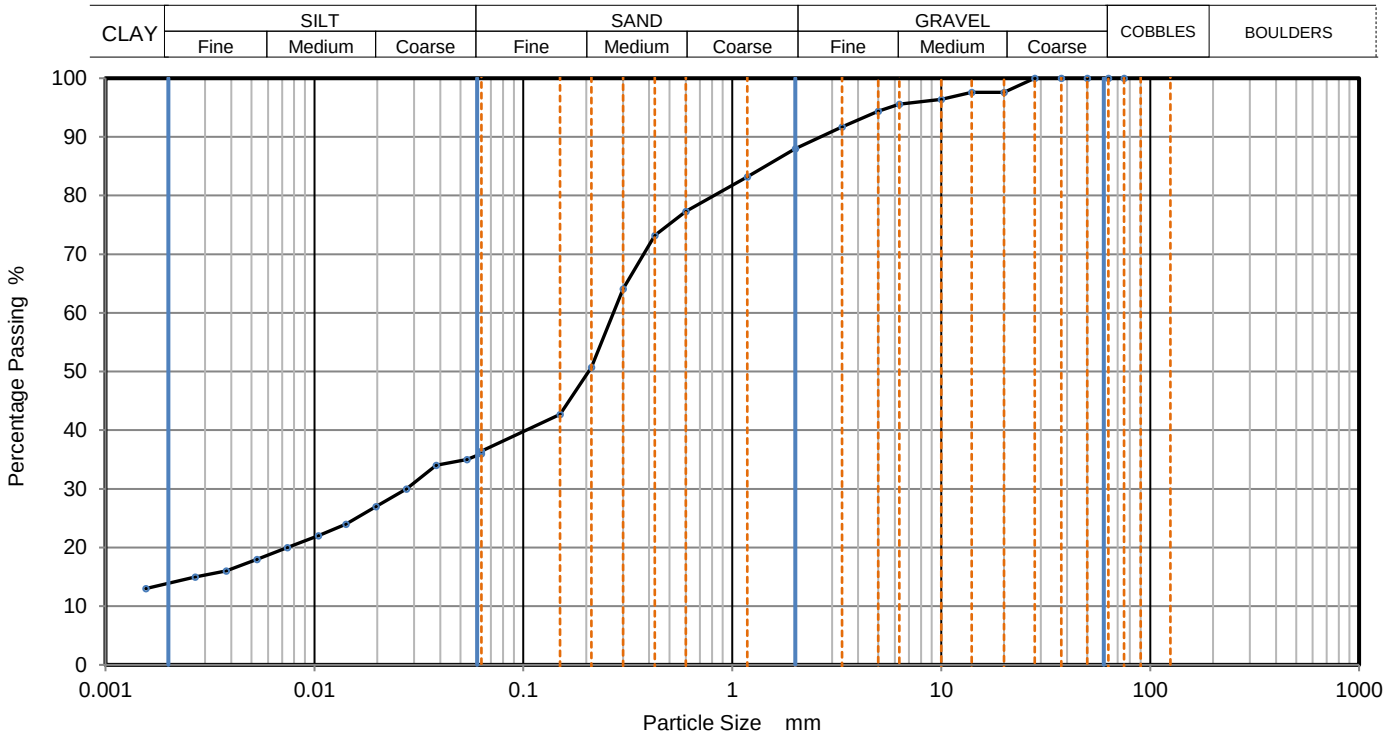
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS104
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Greyish-brown slightly gravelly sandy SILT. Sand is medium.	Depth, m	0.70
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081655



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	36
		0.0538	35
75	100	0.0383	34
63	100	0.0276	30
50	100	0.0197	27
37.5	100	0.0141	24
28	100	0.0104	22
20	98	0.0074	20
14	98	0.0053	18
10	96	0.0038	16
6.3	96	0.0027	15
5	94	0.0016	13
3.35	92		
2	88		
1.18	83		
0.6	77	Particle density	(assumed)
0.425	73	2.65	Mg/m3
0.3	64		
0.212	51		
0.15	43		
0.063	36		

Dry Mass of sample, g	549

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	52
Silt	22
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.27
D30	mm	0.0284
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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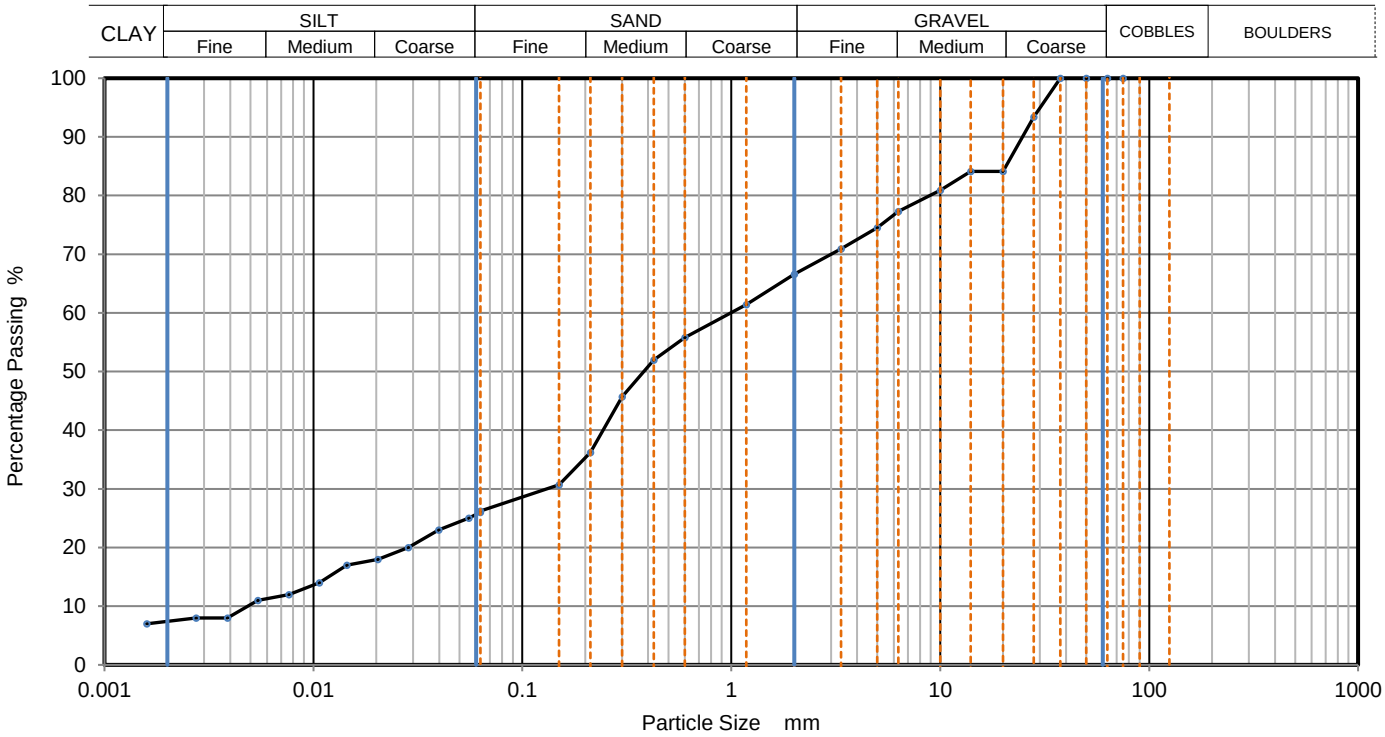
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS105
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Brownish-grey very silty very gravelly medium SAND.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081661



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	26
		0.0555	25
75	100	0.0397	23
63	100	0.0284	20
50	100	0.0203	18
37.5	100	0.0145	17
28	93	0.0107	14
20	84	0.0076	12
14	84	0.0054	11
10	81	0.0039	8
6.3	77	0.0027	8
5	75	0.0016	7
3.35	71		
2	67		
1.18	61		
0.6	56	Particle density	(assumed)
0.425	52	2.65	Mg/m3
0.3	46		
0.212	36		
0.15	31		
0.063	26		

Dry Mass of sample, g	918

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	41
Silt	19
Clay	8

Grading Analysis		
D100	mm	
D60	mm	0.994
D30	mm	0.131
D10	mm	0.0049
Uniformity Coefficient		200
Curvature Coefficient		3.5

Remarks

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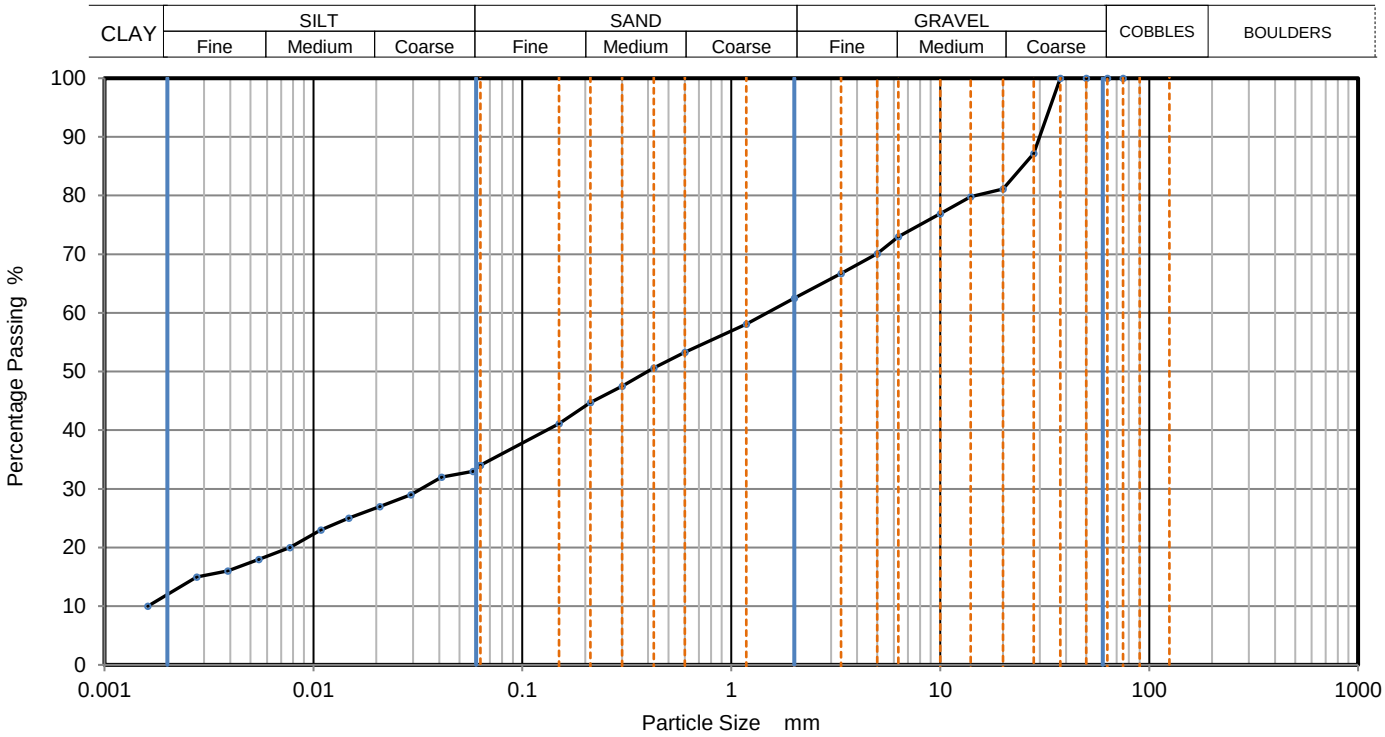
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS105
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Light brownish-grey very sandy very silty GRAVEL.	Depth, m	1.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081664



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	34
		0.0579	33
75	100	0.0411	32
63	100	0.0292	29
50	100	0.0208	27
37.5	100	0.0148	25
28	87	0.0108	23
20	81	0.0077	20
14	80	0.0055	18
10	77	0.0039	16
6.3	73	0.0028	15
5	70	0.0016	10
3.35	67		
2	63		
1.18	58		
0.6	53	Particle density	(assumed)
0.425	51	2.65	Mg/m3
0.3	48		
0.212	45		
0.15	41		
0.063	34		

Dry Mass of sample, g	1006

Sample Proportions	% dry mass
Very coarse	0
Gravel	38
Sand	29
Silt	22
Clay	12

Grading Analysis		
D100	mm	
D60	mm	1.48
D30	mm	0.0316
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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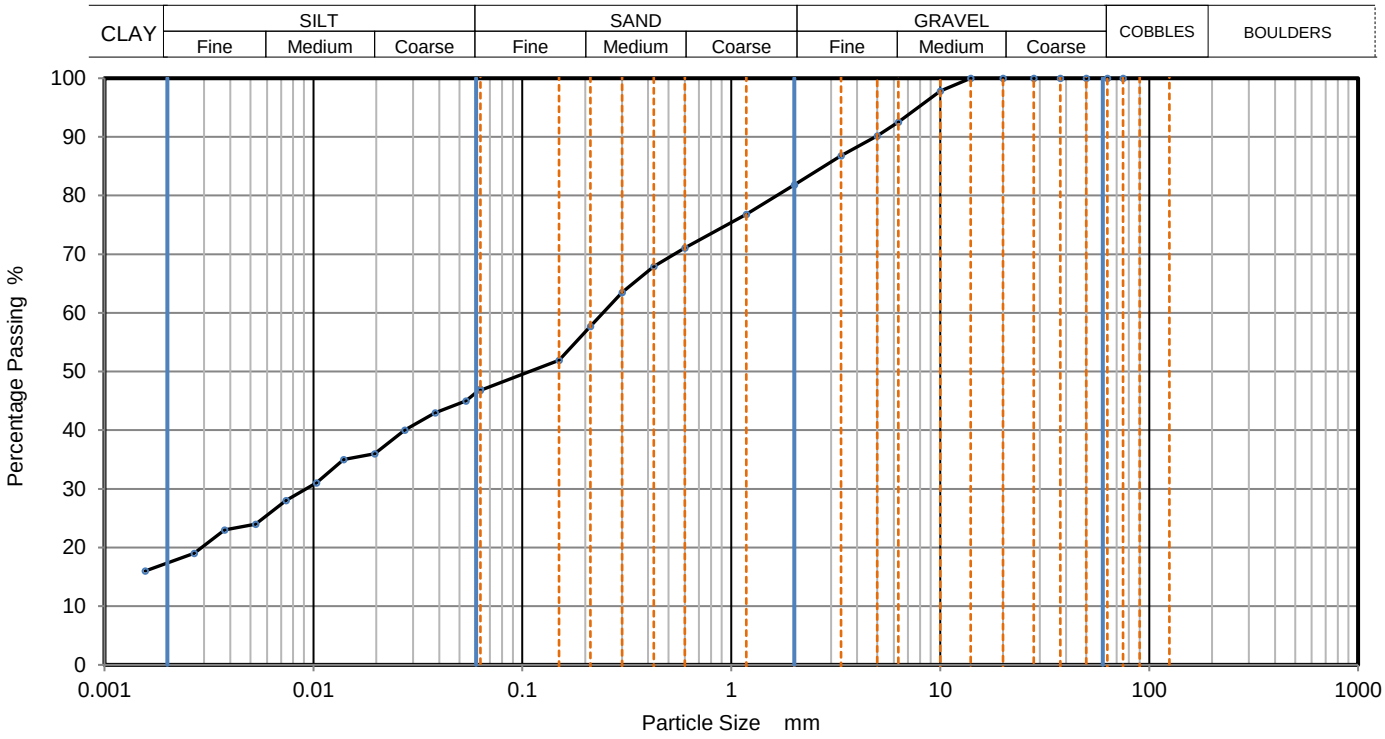
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS105
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Light grey slightly gravelly sandy SILT.	Depth, m	2.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081666



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	47
		0.0538	45
75	100	0.0383	43
63	100	0.0274	40
50	100	0.0196	36
37.5	100	0.0140	35
28	100	0.0103	31
20	100	0.0074	28
14	100	0.0053	24
10	98	0.0038	23
6.3	93	0.0027	19
5	90	0.0016	16
3.35	87		
2	82		
1.18	77		
0.6	71	Particle density	(assumed)
0.425	68	2.65	Mg/m3
0.3	64		
0.212	58		
0.15	52		
0.063	47		

Dry Mass of sample, g	794

Sample Proportions	% dry mass
Very coarse	0
Gravel	18
Sand	35
Silt	30
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.243
D30	mm	0.00919
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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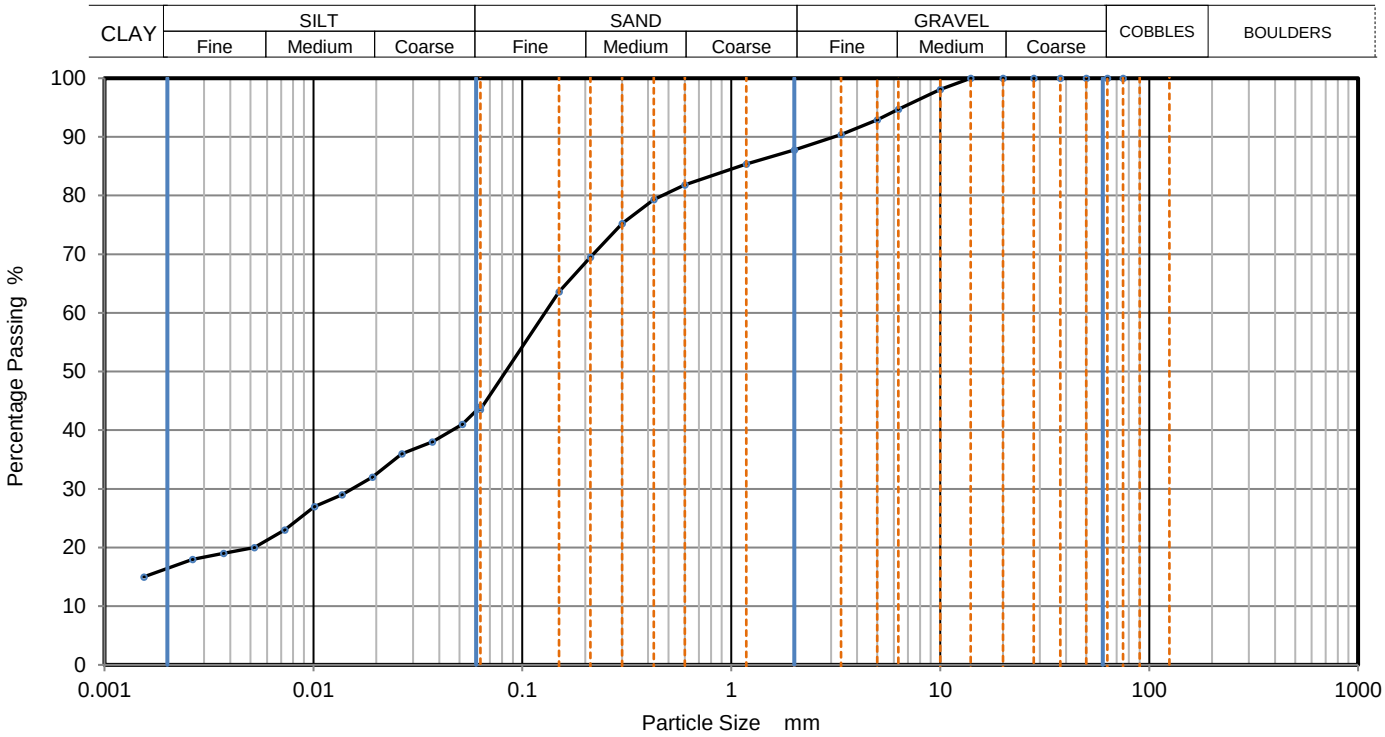
IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS106
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown slighlty gravelly sandy SILT. Sand is fine.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081669



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	44
		0.0516	41
75	100	0.0370	38
63	100	0.0265	36
50	100	0.0191	32
37.5	100	0.0137	29
28	100	0.0101	27
20	100	0.0073	23
14	100	0.0052	20
10	98	0.0037	19
6.3	95	0.0026	18
5	93	0.0015	15
3.35	90		
2	88		
1.18	85		
0.6	82	Particle density (assumed)	
0.425	79	2.65 Mg/m3	
0.3	75		
0.212	70		
0.15	64		
0.063	44		

Dry Mass of sample, g	739

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	44
Silt	27
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.128
D30	mm	0.0148
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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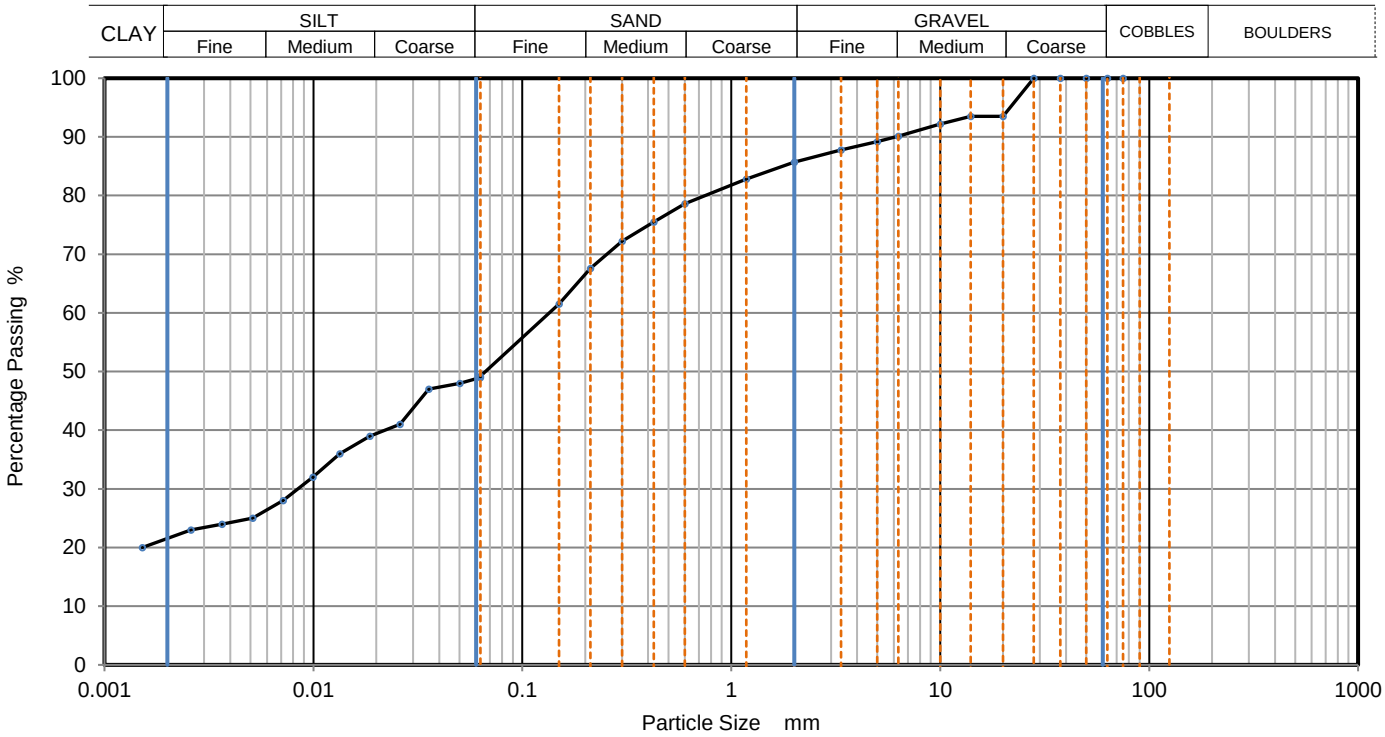
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Greyish-brown slightly gravelly sandy SILT. Sand is fine.	Depth, m	0.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023081677



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	49
		0.0501	48
75	100	0.0357	47
63	100	0.0260	41
50	100	0.0186	39
37.5	100	0.0134	36
28	100	0.0099	32
20	94	0.0072	28
14	94	0.0051	25
10	92	0.0036	24
6.3	90	0.0026	23
5	89	0.0015	20
3.35	88		
2	86		
1.18	83		
0.6	79	Particle density	(assumed)
0.425	76	2.65	Mg/m3
0.3	72		
0.212	68		
0.15	62		
0.063	49		

Dry Mass of sample, g	802

Sample Proportions	% dry mass
Very coarse	0
Gravel	14
Sand	37
Silt	28
Clay	21

Grading Analysis		
D100	mm	
D60	mm	0.135
D30	mm	0.0085
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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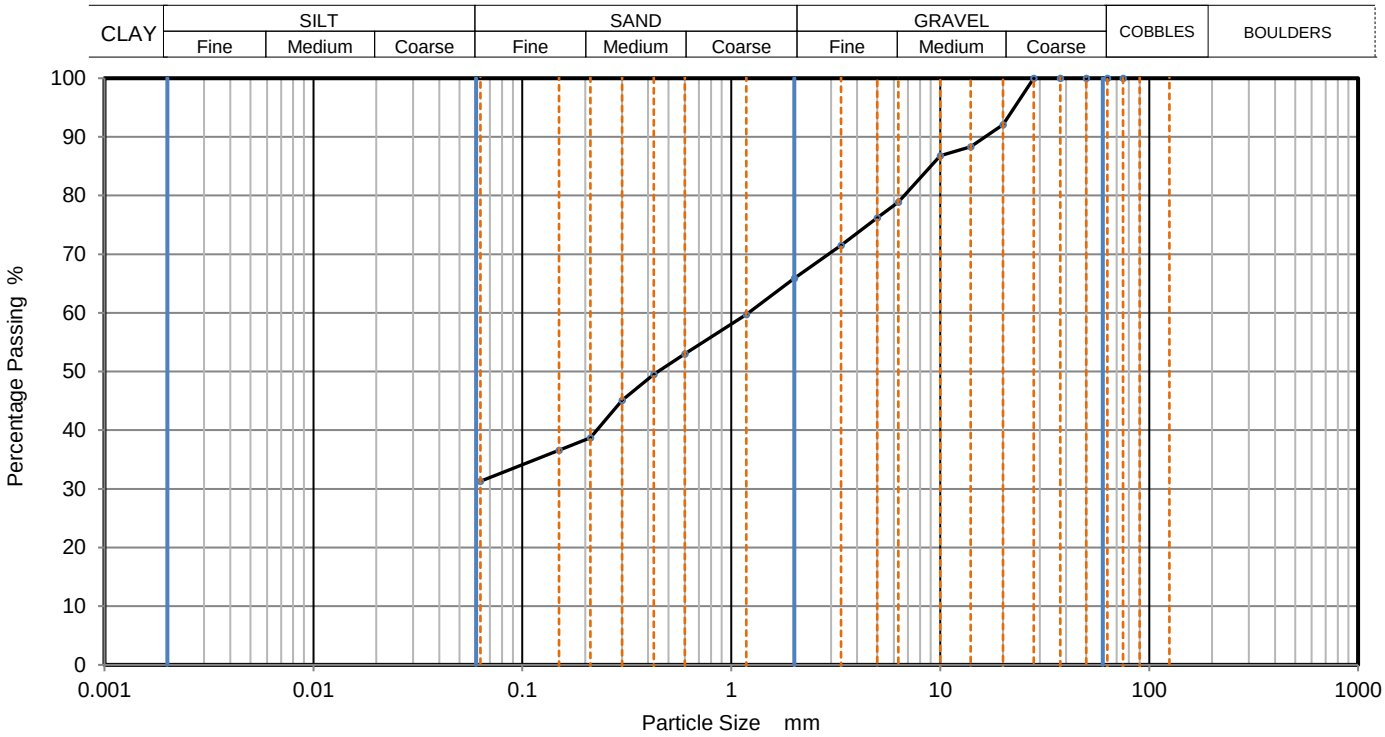
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Light grey very silty SAND and GRAVEL.			Depth, m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12023081680



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	92		
14	88		
10	87		
6.3	79		
5	76		
3.35	72		
2	66		
1.18	60		
0.6	53		
0.425	50		
0.3	45		
0.212	39		
0.15	37		
0.063	31		

Dry Mass of sample, g	1016

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	35
Fines <0.063mm	31

Grading Analysis		
D100	mm	
D60	mm	1.21
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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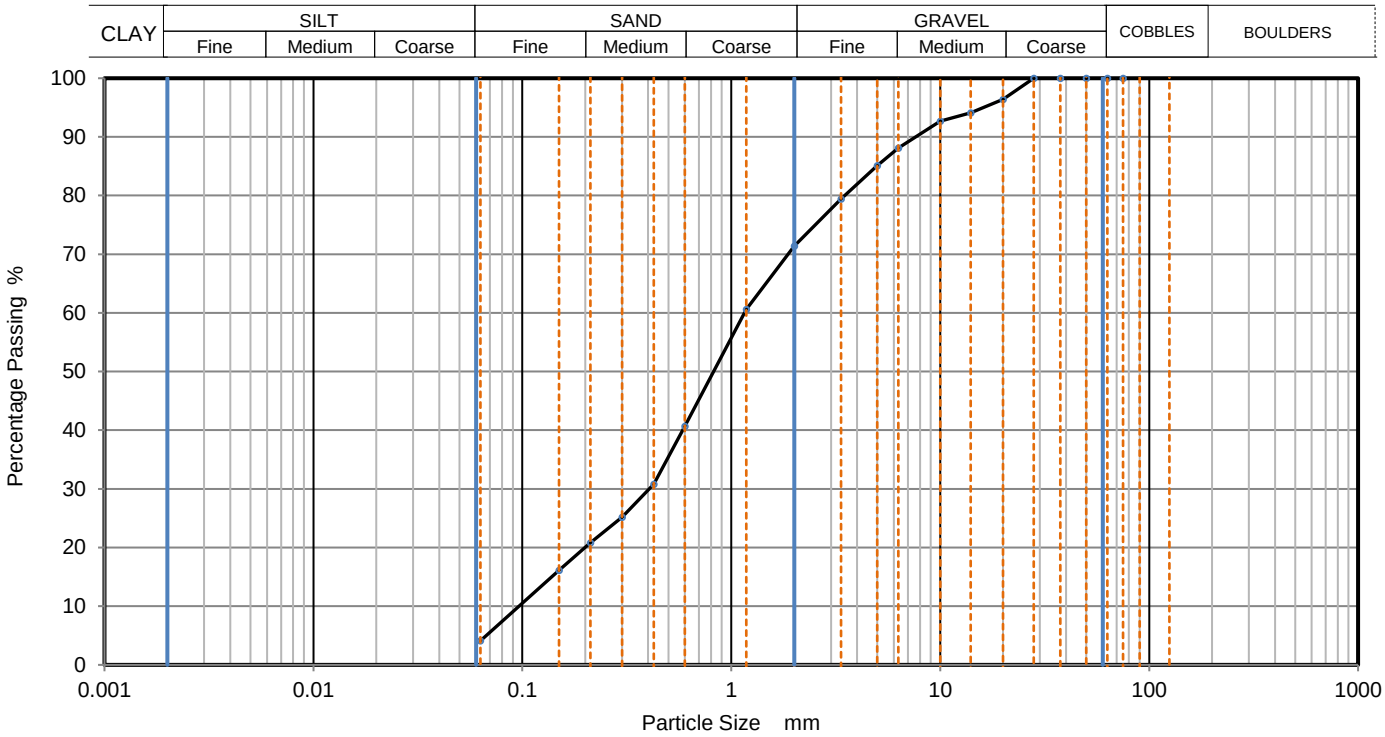
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT01
Site Name	Derrygreenagh Power	Sample No.	6
Soil Description	Dark grey slightly silty very gravelly coarse SAND.	Depth, m	3.40
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023060983



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	94		
10	93		
6.3	88		
5	85		
3.35	79		
2	71		
1.18	61		
0.6	41		
0.425	31		
0.3	25		
0.212	21		
0.15	16		
0.063	4		

Dry Mass of sample, g	800

Sample Proportions	% dry mass
Very coarse	0
Gravel	29
Sand	67
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	1.16
D30	mm	0.404
D10	mm	0.0965
Uniformity Coefficient		12
Curvature Coefficient		1.5

Remarks

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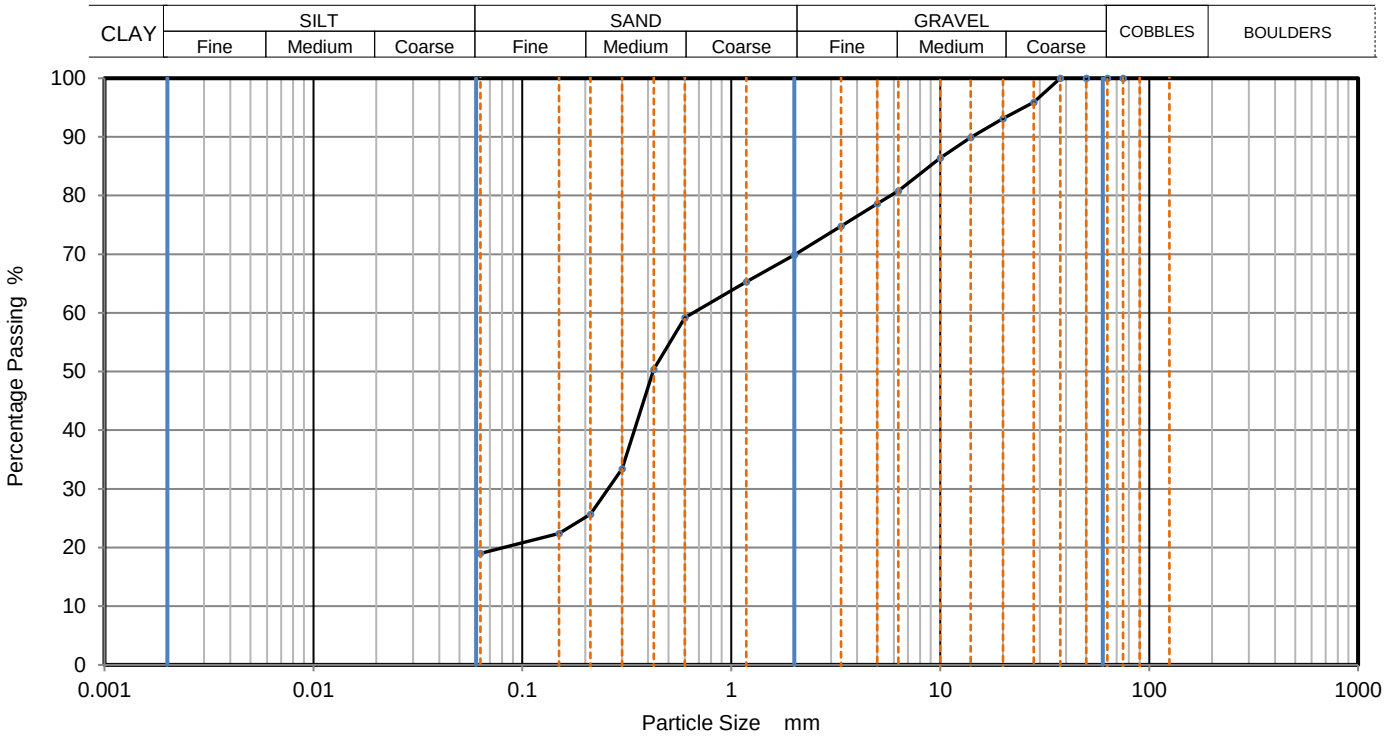
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT03
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Dark grey silty very gravelly medium SAND.	Depth, m	1.50
Specimen Reference	Specimen Depth: m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023060995



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	93		
14	90		
10	86		
6.3	81		
5	79		
3.35	75		
2	70		
1.18	65		
0.6	59		
0.425	50		
0.3	33		
0.212	26		
0.15	22		
0.063	19		

Dry Mass of sample, g	910

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	51
Fines <0.063mm	19

Grading Analysis		
D100	mm	
D60	mm	0.655
D30	mm	0.257
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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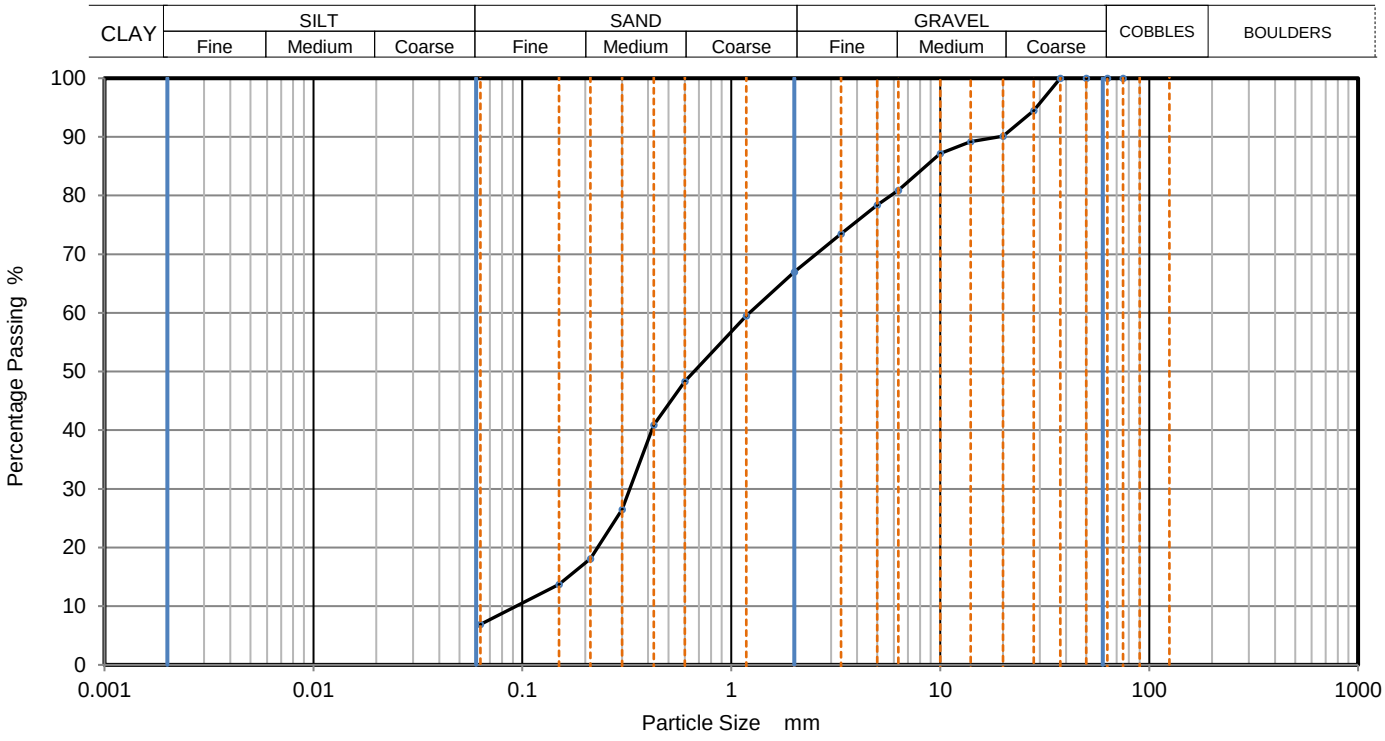
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2023OY104**
				Borehole/Pit No.	TPT04
Site Name	Derrygreenagh Power			Sample No.	5
Soil Description	Dark grey silty very gravelly medium SAND.			Depth, m	2.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120230609103



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	95		
20	90		
14	89		
10	87		
6.3	81		
5	78		
3.35	74		
2	67		
1.18	60		
0.6	48		
0.425	41		
0.3	27		
0.212	18		
0.15	14		
0.063	7		

Dry Mass of sample, g	982

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	60
Fines <0.063mm	7

Grading Analysis		
D100	mm	
D60	mm	1.23
D30	mm	0.326
D10	mm	0.0931
Uniformity Coefficient		13
Curvature Coefficient		0.93

Remarks

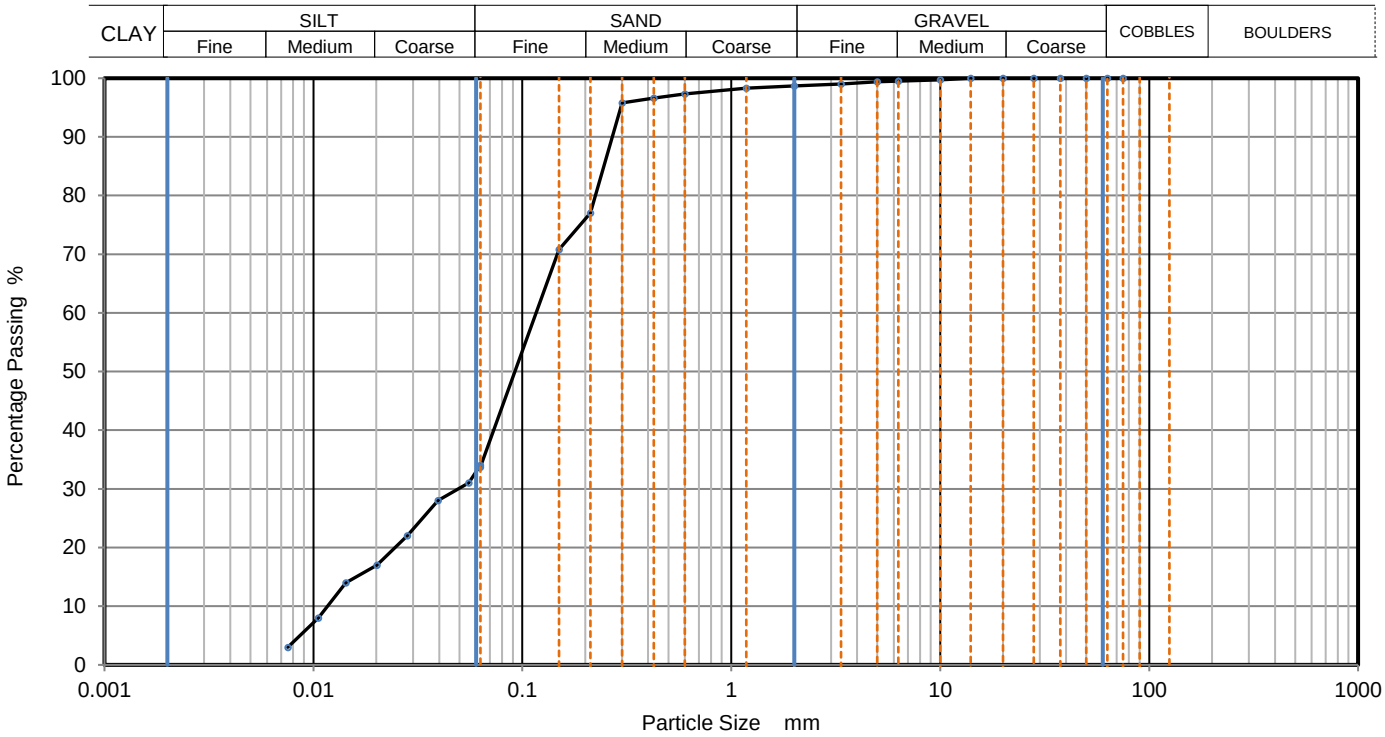
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:40	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT05
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Dark grey very silty fine SAND.	Depth, m	1.00
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230602102



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	34
		0.0554	31
75	100	0.0394	28
63	100	0.0282	22
50	100	0.0201	17
37.5	100	0.0143	14
28	100	0.0106	8
20	100	0.0075	3
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	99		
1.18	98		
0.6	97	Particle density	(assumed)
0.425	97	2.65	Mg/m3
0.3	96		
0.212	77		
0.15	71		
0.063	34		

Dry Mass of sample, g	930

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	65
Fines <0.063mm	34

Grading Analysis		
D100	mm	
D60	mm	0.116
D30	mm	0.0498
D10	mm	0.0115
Uniformity Coefficient		10
Curvature Coefficient		1.8

Remarks

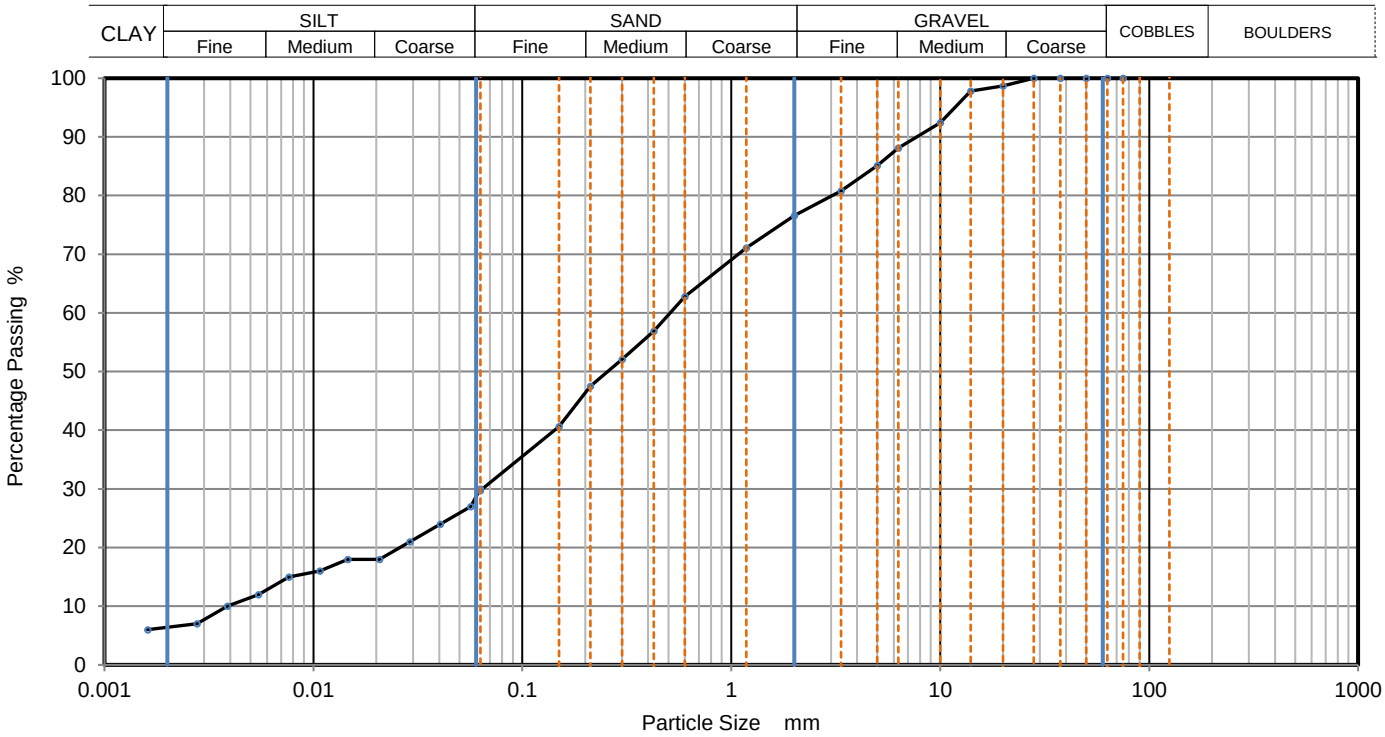
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:40	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT09
Site Name	Derrygreenagh Power	Sample No.	1
Soil Description	Dark grey very silty very silty (peaty) SAND.	Depth, m	0.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL120230602120



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	30
		0.0565	27
75	100	0.0404	24
63	100	0.0289	21
50	100	0.0207	18
37.5	100	0.0146	18
28	100	0.0107	16
20	99	0.0076	15
14	98	0.0055	12
10	92	0.0039	10
6.3	88	0.0028	7
5	85	0.0016	6
3.35	81		
2	77		
1.18	71		
0.6	63	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	52		
0.212	48		
0.15	41		
0.063	30		

Dry Mass of sample, g	843

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	47
Silt	23
Clay	7

Grading Analysis		
D100	mm	
D60	mm	0.509
D30	mm	0.0644
D10	mm	0.00371
Uniformity Coefficient		140
Curvature Coefficient		2.2

Remarks

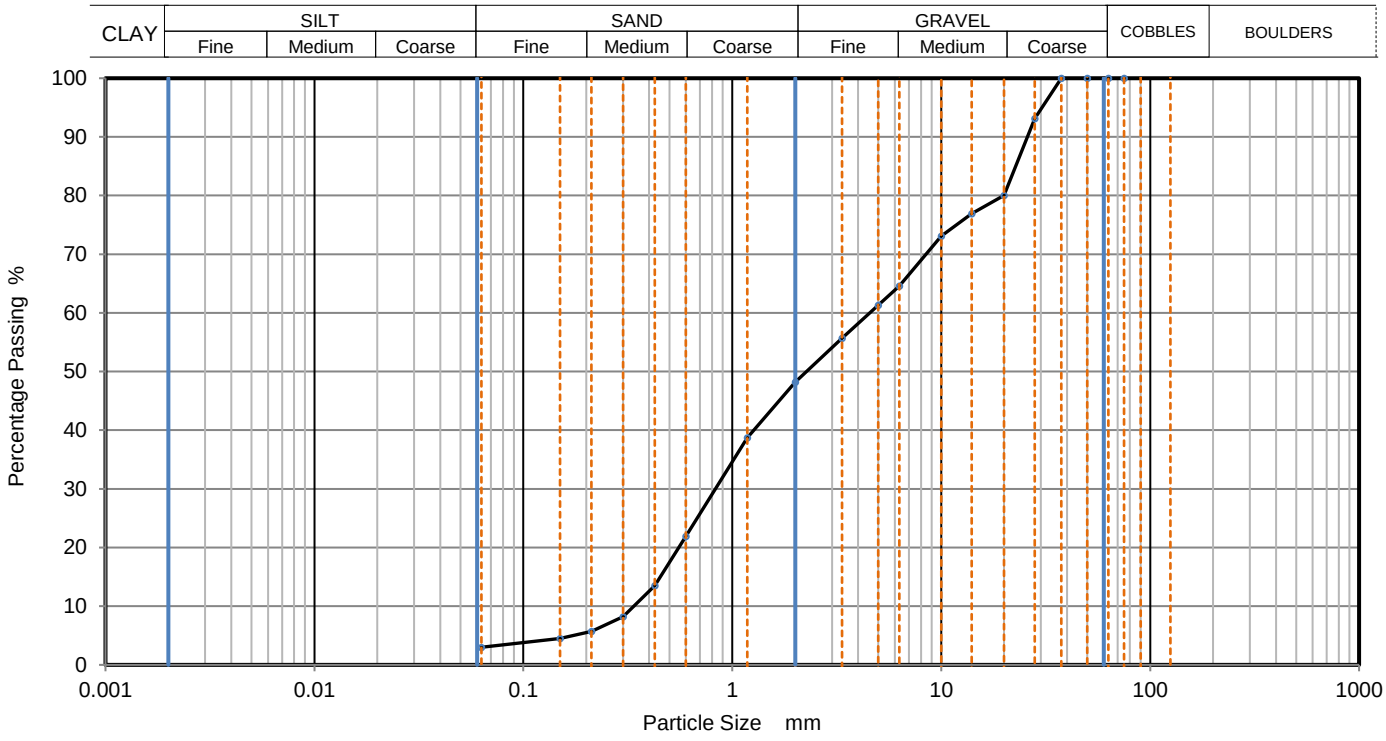
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:40	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT14
Site Name	Derrygreenagh Power	Sample No.	4
Soil Description	Bluish-grey slightly silty SAND and GRAVEL.	Depth, m	1.50
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2	KeyLAB ID	IDL12023062913



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	80		
14	77		
10	73		
6.3	65		
5	61		
3.35	56		
2	48		
1.18	39		
0.6	22	Particle density	(assumed)
0.425	14	2.65	Mg/m3
0.3	8		
0.212	6		
0.15	5		
0.063	3		

Dry Mass of sample, g	975

Sample Proportions	% dry mass
Very coarse	0
Gravel	52
Sand	45
Fines <0.063mm	3

Grading Analysis		
D100	mm	
D60	mm	4.56
D30	mm	0.83
D10	mm	0.338
Uniformity Coefficient		13
Curvature Coefficient		0.45

Remarks

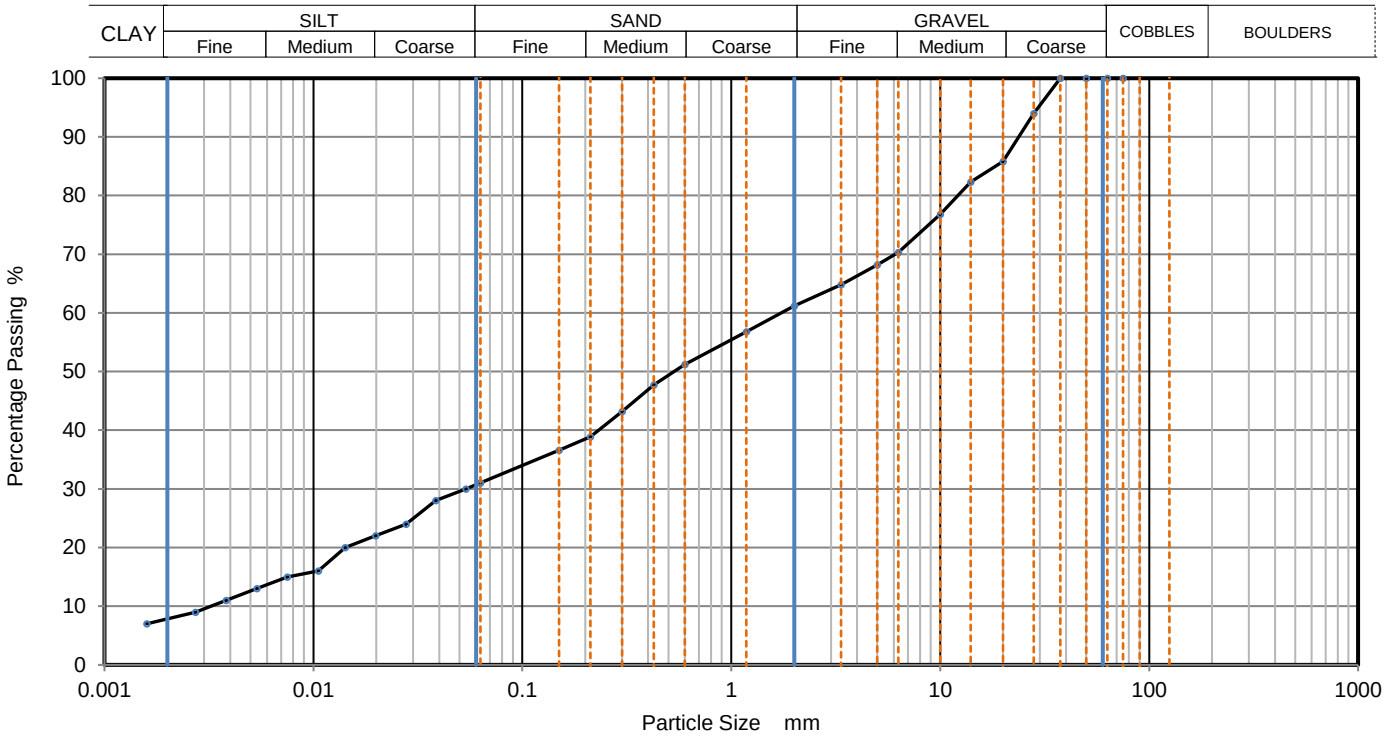
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:40	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT16
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Blackish-brown very silty SAND and GRAVEL.	Depth, m	0.80
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023053066



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	31
		0.0538	30
75	100	0.0385	28
63	100	0.0278	24
50	100	0.0199	22
37.5	100	0.0142	20
28	94	0.0106	16
20	86	0.0075	15
14	82	0.0054	13
10	77	0.0038	11
6.3	70	0.0027	9
5	68	0.0016	7
3.35	65		
2	61		
1.18	57		
0.6	51	Particle density	(assumed)
0.425	48	2.65	Mg/m3
0.3	43		
0.212	39		
0.15	37		
0.063	31		

Dry Mass of sample, g	560

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	30
Silt	23
Clay	8

Grading Analysis		
D100	mm	
D60	mm	1.73
D30	mm	0.0549
D10	mm	0.00307
Uniformity Coefficient		560
Curvature Coefficient		0.57

Remarks

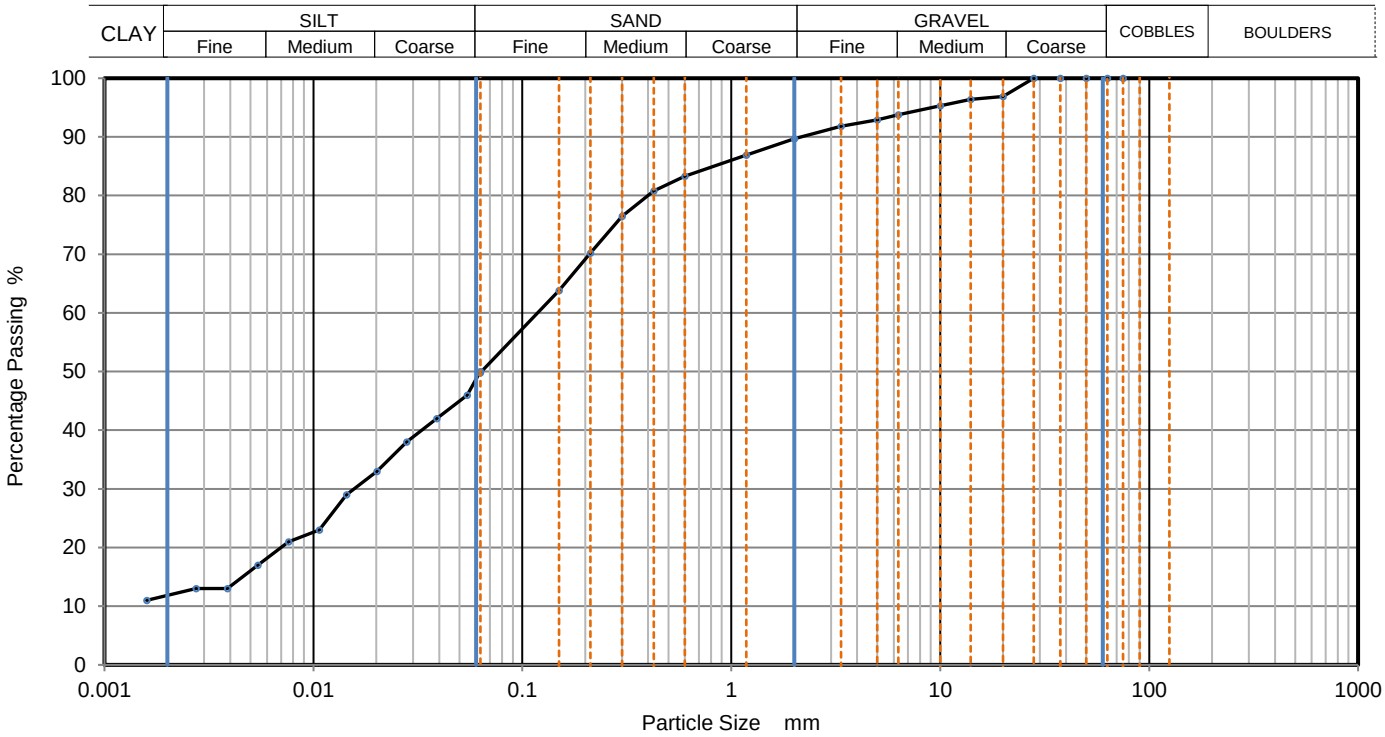
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:40	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**	Job Ref	**2023OY104**
		Borehole/Pit No.	TPT18
Site Name	Derrygreenagh Power	Sample No.	3
Soil Description	Greenish-brown slightly gravelly sandy SILT.	Depth, m	1.30
Specimen Reference	Specimen Depth m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	IDL12023053080



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	50
		0.0545	46
75	100	0.0390	42
63	100	0.0279	38
50	100	0.0201	33
37.5	100	0.0144	29
28	100	0.0107	23
20	97	0.0076	21
14	96	0.0054	17
10	95	0.0039	13
6.3	94	0.0027	13
5	93	0.0016	11
3.35	92		
2	90		
1.18	87		
0.6	83	Particle density	(assumed)
0.425	81	2.65	Mg/m3
0.3	77		
0.212	70		
0.15	64		
0.063	50		

Dry Mass of sample, g	919

Sample Proportions	% dry mass
Very coarse	0
Gravel	10
Sand	40
Silt	37
Clay	12

Grading Analysis		
D100	mm	
D60	mm	0.119
D30	mm	0.0161
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	01/11/2023 09:40	1 QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	25 September 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230915-61
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	705162
Order Number:	12380

We received 25 samples on Friday September 15, 2023 and 25 of these samples were scheduled for analysis which was completed on Friday September 22, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28634491	BH101	B4	1.00 - 1.50	13/04/2023
28634521	BH104	B7	2.00 - 2.50	18/04/2023
28634539	BH110	B4	1.00 - 1.50	27/04/2023
28634541	BH115	B10	3.00 - 3.50	21/04/2023
28634544	BHPW301	B9	3.00 - 3.50	19/04/2023
28634547	BHSS05	B10	3.00 - 3.50	03/05/2023
28634551	BHT03	B6	2.00 - 2.50	07/06/2023
28634553	BHT04	B4	1.00 - 1.50	06/06/2023
28634555	TP201	B2	2.80 - 3.00	02/05/2023
28634493	TP202	B2	3.00 - 3.20	02/05/2023
28634497	TP203	B2	2.80 - 3.00	03/05/2023
28634499	TP204	D6	2.50 - 2.70	02/05/2023
28634501	TP205	B2	2.50 - 2.70	03/05/2023
28634508	TP207	B3	1.40 - 1.60	03/05/2023
28634511	TP209	B2	1.30 - 1.50	03/05/2023
28634513	TP210	B1	0.50 - 0.70	08/05/2023
28634515	TP211	B3	1.00 - 1.20	09/05/2023
28634517	TP216	B1	0.50 - 0.70	05/05/2023
28634524	TP217	B4	1.60 - 1.80	05/05/2023
28634528	TP218	B1	0.60 - 0.80	04/05/2023
28634530	TP219	B1	0.60 - 0.80	04/05/2023
28634532	TP221	B1	3.00 - 3.20	14/06/2023
28634535	TP222	B2	2.70 - 3.00	14/06/2023
28634537	TP224	B2	2.30 - 2.50	14/06/2023
28634505	TP206A	B1	0.50 - 0.70	08/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230915-61 **Report Number:** 705162 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28634521	28634539	28634544	28634553	28634555	28634493	28634497	28634499	28634501	28634513	28634515	28634517	28634524	28634528	28634530
Customer Sample Reference			BH104	BH110	BHPW301	BHT04	TP201	TP202	TP203	TP204	TP205	TP210	TP211	TP216	TP217	TP218	TP219
AGS Reference			B7	B4	B9	B4	B2	B2	B2	D6	B2	B1	B3	B1	B4	B1	B1
Depth (m)			2.00 - 2.50	1.00 - 1.50	3.00 - 3.50	1.00 - 1.50	2.80 - 3.00	3.00 - 3.20	2.80 - 3.00	2.50 - 2.70	2.50 - 2.70	0.50 - 0.70	1.00 - 1.20	0.50 - 0.70	1.60 - 1.80	0.60 - 0.80	0.60 - 0.80
Container			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Anions by Kone (soil)	All	NDPs: 2 Tests: 9	X	X	X	X	X	N	N	X	X	X	X	X	X	X	X
Magnesium (BRE)	All	NDPs: 2 Tests: 9	X	X	X	X	X	N	N	X	X	X	X	X	X	X	X
NO3, NO2 and TON by KONE (s)	All	NDPs: 2 Tests: 9	X	X	X	X	X	N	N	X	X	X	X	X	X	X	X
pH	All	NDPs: 0 Tests: 11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Sulphate	All	NDPs: 0 Tests: 11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Sulphur	All	NDPs: 0 Tests: 11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28634521	BH104	2.00 - 2.50	Dark Brown	Silt Loam	Vegetation	None
28634539	BH110	1.00 - 1.50	Dark Brown	Sandy Loam	Stones	None
28634544	BHPW301	3.00 - 3.50	Dark Brown	Peat	Vegetation	None
28634553	BHT04	1.00 - 1.50	Dark Brown	Loamy Sand	Stones	Vegetation
28634555	TP201	2.80 - 3.00	Grey	Sandy Silt Loam	Stones	Vegetation
28634493	TP202	3.00 - 3.20	Dark Brown	Silt Loam	Vegetation	None
28634497	TP203	2.80 - 3.00	Dark Brown	Peat	Vegetation	None
28634499	TP204	2.50 - 2.70	Light Brown	Loamy Sand	Stones	None
28634501	TP205	2.50 - 2.70	Light Brown	Sandy Clay Loam	Stones	None
28634513	TP210	0.50 - 0.70	Light Brown	Sandy Clay Loam	Stones	None
28634515	TP211	1.00 - 1.20	Light Brown	Sandy Loam	Stones	None
28634517	TP216	0.50 - 0.70	Light Brown	Sandy Clay Loam	Stones	None
28634524	TP217	1.60 - 1.80	Dark Brown	Sandy Loam	Stones	None
28634528	TP218	0.60 - 0.80	Light Brown	Sandy Loam	Stones	None
28634530	TP219	0.60 - 0.80	Light Brown	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230915-61 **Report Number:** 705162 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH104	BH110	BHPW301	BHT04	TP201	TP202
Customer Sample Ref.			BH104	BH110	BHPW301	BHT04	TP201	TP202
Depth (m)			2.00 - 2.50	1.00 - 1.50	3.00 - 3.50	1.00 - 1.50	2.80 - 3.00	3.00 - 3.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			18/04/2023	27/04/2023	19/04/2023	06/06/2023	02/05/2023	02/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/09/2023	15/09/2023	15/09/2023	15/09/2023	15/09/2023	15/09/2023
SDG Ref			230915-61	230915-61	230915-61	230915-61	230915-61	230915-61
Lab Sample No.(s)			28634521	28634539	28634544	28634553	28634555	28634493
AGS Reference			B7	B4	B9	B4	B2	B2
Moisture Content Ratio (% of as received sample)	%	PM024	72	11	81	6.4	21	88
Sulphur, Total	<0.02 %	TM132					0.031 @ #	0.277 @ #
Soil Organic Matter (SOM)	<0.35 %	TM132	54.1 @ #	<0.35 @ #	74.5 @ #	1.76 @ #	1.33 @ #	89.3 @ #
pH	1 pH Units	TM133					8.07 @ M	4.89 @ M
Sulphate, acid soluble (total)	<0.0048 %	TM221					0.0437 M	0.0549 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243					0.0639 @ M	
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243					0.0062 @ M	
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243					0.0366	
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248					0.00192	0.00622
Magnesium (BRE)	<0.008 g/l	TM282					<0.008	

12:57:33 25/09/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230915-61 **Report Number:** 705162 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP203	TP204	TP205	TP210	TP211	TP216
Customer Sample Ref.			TP203	TP204	TP205	TP210	TP211	TP216
Depth (m)			2.80 - 3.00	2.50 - 2.70	2.50 - 2.70	0.50 - 0.70	1.00 - 1.20	0.50 - 0.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			03/05/2023	02/05/2023	03/05/2023	08/05/2023	09/05/2023	05/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/09/2023	15/09/2023	15/09/2023	15/09/2023	15/09/2023	15/09/2023
SDG Ref			230915-61	230915-61	230915-61	230915-61	230915-61	230915-61
Lab Sample No.(s)			28634497	28634499	28634501	28634513	28634515	28634517
AGS Reference			B2	D6	B2	B1	B3	B1
Moisture Content Ratio (% of as received sample)	%	PM024	88	5.4	15	14	9.9	19
Sulphur, Total	<0.02 %	TM132	0.202 @ #	0.0246 @ #	0.0311 @ #	0.0237 @ #	<0.02 @ #	<0.02 @ #
Soil Organic Matter (SOM)	<0.35 %	TM132	87.6 @ #	2.21 @ #	1.4 @ #	<0.35 @ #	<0.35 @ #	0.86 @ #
pH	1 pH Units	TM133	4.9 @ #	8.11 @ M	5.32 @ M	8.75 @ M	8.87 @ M	8.44 @ M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0443 #	0.021 M	0.024 M	<0.0048 M	0.0122 M	0.0156 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243		0.0394 @ M	0.0603 @ M	<0.004 @ M	<0.004 @ M	<0.004 @ M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243		0.0076 @ M	0.0029 @ M	0.0028 @ M	0.0043 @ M	0.0033 @ M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243		0.0755	0.00388	0.00388	0.00271	0.00507
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.00552	0.00639	0.0065	0.00319	0.0025	0.00129
Magnesium (BRE)	<0.008 g/l	TM282		<0.008	<0.008	<0.008	<0.008	<0.008

12:57:33 25/09/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230915-61 **Report Number:** 705162 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217	TP218	TP219			
Depth (m)			1.60 - 1.80	0.60 - 0.80	0.60 - 0.80			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			05/05/2023	04/05/2023	04/05/2023			
Sample Time			.	.	.			
Date Received			15/09/2023	15/09/2023	15/09/2023			
SDG Ref			230915-61	230915-61	230915-61			
Lab Sample No.(s)			28634524	28634528	28634530			
AGS Reference			B4	B1	B1			
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	8.6	9.7	12			
Sulphur, Total	<0.02 %	TM132	<0.02 @ #	<0.02 @ #	<0.02 @ #			
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 @ #	<0.35 @ #	0.702 @ #			
pH	1 pH Units	TM133	8.81 @ M	8.8 @ M	8.55 @ M			
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.025 M	0.0103 M	0.0179 M			
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243	0.0115 @ M	<0.004 @ M	0.01 @ M			
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0029 @ M	0.0028 @ M	0.0035 @ M			
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.0143	0.00157	0.0143			
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.0025	0.00269	0.00262			
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008			

12:57:33 25/09/2023

Notification of NDPs (No determination possible)

Date Received : 15/09/2023 10:40:09

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
28634493	TP202 B2	3.00 - 3.20	Anions by Kone (soil)	Sample unsuitable for extraction
28634493	TP202 B2	3.00 - 3.20	Magnesium (BRE)	Sample unsuitable for extraction
28634493	TP202 B2	3.00 - 3.20	NO3, NO2 and TON by KONE (s)	Sample unsuitable for extraction
28634497	TP203 B2	2.80 - 3.00	Anions by Kone (soil)	Sample unsuitable for extraction
28634497	TP203	2.80 - 3.00	Magnesium (BRE)	Sample unsuitable for analysis
28634497	TP203 B2	2.80 - 3.00	NO3, NO2 and TON by KONE (s)	Sample unsuitable for extraction

Table of Results - Appendix

Method No	Description
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM248	Determination of Ammonium BRE (2:1 Extract) on solids
TM282	Extraction of Magnesium by BRE Method
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28634521	28634539	28634544	28634553	28634555	28634493	28634497	28634499	28634501	28634513
Customer Sample Ref.	BH104	BH110	BHPW301	BHT04	TP201	TP202	TP203	TP204	TP205	TP210
AGS Ref.	B7	B4	B9	B4	B2	B2	B2	D6	B2	B1
Depth	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50	1.00 - 1.50	2.80 - 3.00	3.00 - 3.20	2.80 - 3.00	2.50 - 2.70	2.50 - 2.70	0.50 - 0.70
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract					19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023
Anions by Kone (soil)					18-Sep-2023			18-Sep-2023	19-Sep-2023	19-Sep-2023
Magnesium (BRE)					18-Sep-2023			18-Sep-2023	19-Sep-2023	19-Sep-2023
NO3, NO2 and TON by KONE (s)					21-Sep-2023			21-Sep-2023	21-Sep-2023	21-Sep-2023
pH					21-Sep-2023	21-Sep-2023	20-Sep-2023	21-Sep-2023	21-Sep-2023	20-Sep-2023
Sample description	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023
Total Organic Carbon	22-Sep-2023	21-Sep-2023	22-Sep-2023	21-Sep-2023	21-Sep-2023	22-Sep-2023	22-Sep-2023	21-Sep-2023	21-Sep-2023	22-Sep-2023
Total Sulphate					19-Sep-2023	21-Sep-2023	21-Sep-2023	19-Sep-2023	20-Sep-2023	20-Sep-2023
Total Sulphur					19-Sep-2023	20-Sep-2023	20-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023

Lab Sample No(s)	28634515	28634517	28634524	28634528	28634530
Customer Sample Ref.	TP211	TP216	TP217	TP218	TP219
AGS Ref.	B3	B1	B4	B1	B1
Depth	1.00 - 1.20	0.50 - 0.70	1.60 - 1.80	0.60 - 0.80	0.60 - 0.80
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023
Anions by Kone (soil)	19-Sep-2023	19-Sep-2023	18-Sep-2023	19-Sep-2023	19-Sep-2023
Magnesium (BRE)	19-Sep-2023	19-Sep-2023	18-Sep-2023	19-Sep-2023	19-Sep-2023
NO3, NO2 and TON by KONE (s)	21-Sep-2023	21-Sep-2023	21-Sep-2023	21-Sep-2023	21-Sep-2023
pH	20-Sep-2023	20-Sep-2023	20-Sep-2023	20-Sep-2023	21-Sep-2023
Sample description	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023	15-Sep-2023
Total Organic Carbon	21-Sep-2023	22-Sep-2023	21-Sep-2023	21-Sep-2023	22-Sep-2023
Total Sulphate	20-Sep-2023	20-Sep-2023	19-Sep-2023	20-Sep-2023	20-Sep-2023
Total Sulphur	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALS Environmental Analytical Services

Sample Descriptions

SDG Number	230925-27	**Location**	Derrygreenagh
Client Reference	2023OY104	**Order No.**	12380
Attention	Dympna Darcy	**Date Received**	25/09/2023 10:00:00

Grain

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusion 1)	Inclusion 2)
28679633	TPC04	**1.60 - 1.70**	**Dark Brown**	**Silt Loam**	**Stones**	**Fibres**

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

ALS Life Sciences Limited

Notification of NDPs (No determination possible)

SDG Number	230925-27	**Location**	Derrygreenagh
Client	D_DRILL_LGA	**Order No.**	12380
Client Reference	2023OY104		
Attention	Dympna Darcy	**Date Received**	25/09/2023 11:13:24

Sample No	Sample Identity	Depth (m)	Test	Comment
28685220	TPC01	0.50 - 0.60	Anions by Kone (soil)	Sample unsuitable for extraction
28685220	TPC01	0.50 - 0.60	Kone Anions prep (s)	Sample unsuitable for extraction
28685220	TPC01	0.50 - 0.60	NO3, NO2 and TON by KONE (s)	Sample unsuitable for extraction
28712885	TPC01	0.50 - 0.60	Magnesium (BRE)	Sample unsuitable for extraction

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	02 October 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230925-27
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	706013
Order Number:	12380

We received 8 samples on Monday September 25, 2023 and 8 of these samples were scheduled for analysis which was completed on Monday October 02, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28679629	TPC01	B1	0.50 - 0.60	29/05/2023
28679631	TPC02	B5	2.50 - 3.00	29/05/2023
28679633	TPC04	B3	1.60 - 1.70	30/05/2023
28679635	TPCC01	B5	2.90 - 3.00	29/05/2023
28679637	TPT01	B6	3.40 - 3.50	26/05/2023
28679639	TPT03	B3	1.50 - 1.60	26/05/2023
28679641	TPT04	B5	2.10 - 2.20	26/05/2023
28679644	TPT09	B1	0.50 - 0.60	25/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230925-27 **Report Number:** 706013 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

		Lab Sample No(s)	28679629	28679631	28679633	28679635	28679637	28679639	28679641	28679644
		Customer Sample Reference	TPC01	TPC02	TPC04	TPCC01	TPT01	TPT03	TPT04	TPT09
		AGS Reference	B1	B5	B3	B5	B6	B3	B5	B1
		Depth (m)	0.50 - 0.60	2.50 - 3.00	1.60 - 1.70	2.90 - 3.00	3.40 - 3.50	1.50 - 1.60	2.10 - 2.20	0.50 - 0.60
		Container	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
		Sample Type	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 8	X	X	X	X	X	X	X	X
Anions by Kone (soil)	All	NDPs: 1 Tests: 7	N	X	X	X	X	X	X	X
Magnesium (BRE)	All	NDPs: 1 Tests: 7	N	X	X	X	X	X	X	X
NO3, NO2 and TON by KONE (s)	All	NDPs: 1 Tests: 7	N	X	X	X	X	X	X	X
pH	All	NDPs: 0 Tests: 8	X	X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 8	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 5	X	X	X	X				X
Total Sulphate	All	NDPs: 0 Tests: 8	X	X	X	X	X	X	X	X
Total Sulphur	All	NDPs: 0 Tests: 8	X	X	X	X	X	X	X	X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28679629	TPC01	0.50 - 0.60	Dark Brown	Silt Loam	Vegetation	None
28679631	TPC02	2.50 - 3.00	Dark Brown	Silty Clay Loam	Stones	Vegetation
28679633	TPC04	1.60 - 1.70	Dark Brown	Silt Loam	Stones	Fibres
28679635	TPCC01	2.90 - 3.00	Dark Brown	Sandy Silt Loam	Stones	None
28679637	TPT01	3.40 - 3.50	Grey	Loamy Sand	Stones	None
28679639	TPT03	1.50 - 1.60	Dark Brown	Sandy Loam	Stones	None
28679641	TPT04	2.10 - 2.20	Dark Brown	Loamy Sand	Stones	None
28679644	TPT09	0.50 - 0.60	Dark Brown	Sandy Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

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Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230925-27 **Report Number:** 706013 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPC01	TPC02	TPC04	TPCC01	TPT01	TPT03
Customer Sample Ref.			TPC01	TPC02	TPC04	TPCC01	TPT01	TPT03
Depth (m)			0.50 - 0.60	2.50 - 3.00	1.60 - 1.70	2.90 - 3.00	3.40 - 3.50	1.50 - 1.60
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	29/05/2023	30/05/2023	29/05/2023	26/05/2023	26/05/2023
Sample Time			-	-	-	-	-	-
Date Received			25/09/2023	25/09/2023	25/09/2023	25/09/2023	25/09/2023	25/09/2023
SDG Ref			230925-27	230925-27	230925-27	230925-27	230925-27	230925-27
Lab Sample No.(s)			28679629	28679631	28679633	28679635	28679637	28679639
AGS Reference			B1	B5	B3	B5	B6	B3
Moisture Content Ratio (% of as received sample)	%	PM024	87	22	24	56	11	18
Sulphur, Total	<0.02 %	TM132	0.167 @ #	<0.02 @ #	0.0363 @ #	1.37 @ #	0.403 @ #	<0.02 @ #
Soil Organic Matter (SOM)	<0.35 %	TM132	76.2 @ #	1.27 @ #	2.17 @ #	10.3 @ #		
pH	1 pH Units	TM133	5.93 @ M	8.21 @ M	6.12 @ M	7.54 @ M	7.87 @ M	8.23 @ M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0542 M	0.0399 M	0.0259 M	0.64 M	0.115 M	0.0636 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243		0.11 @ M	0.0462 @ M	0.964 @ M	0.319 @ M	0.2 @ M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243		0.0074 @ M	0.0058 @ M	0.0085 @ M	0.0119 @ M	0.0126 @ M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243		0.0736	0.00641	0.000516	0.000481	0.000827
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.00613	0.00311	0.00245	0.00361	0.00326	0.00346
Magnesium (BRE)	<0.008 g/l	TM282		<0.008	<0.008	<0.008	<0.008	<0.008

13:41:47 02/10/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230925-27 **Report Number:** 706013 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT04	TPT09				
Depth (m)			2.10 - 2.20	0.50 - 0.60				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			26/05/2023	25/05/2023				
Sample Time			.	.				
Date Received			25/09/2023	25/09/2023				
SDG Ref			230925-27	230925-27				
Lab Sample No.(s)			28679641	28679644				
AGS Reference			B5	B1				
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	9.3	20				
Sulphur, Total	<0.02 %	TM132	<0.02 @ #	<0.02 @ #				
Soil Organic Matter (SOM)	<0.35 %	TM132		1.79 @ #				
pH	1 pH Units	TM133	8.83 @ M	8.24 @ M				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0382 M	0.0543 M				
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243	0.0218 @ M	0.116 @ M				
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0104 @ M	0.0117 @ M				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.00148	0.000328				
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.00392	0.00318				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				

13:41:47 02/10/2023

CERTIFICATE OF ANALYSIS

SDG: 230925-27 **Report Number:** 706013 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Notification of NDPs (No determination possible)

Date Received : 25/09/2023 11:13:24

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
28679629	TPC01 B1	0.50 - 0.60	Anions by Kone (soil)	Sample unsuitable for extraction
28679629	TPC01	0.50 - 0.60	Magnesium (BRE)	Sample unsuitable for extraction
28679629	TPC01 B1	0.50 - 0.60	NO3, NO2 and TON by KONE (s)	Sample unsuitable for extraction

Table of Results - Appendix

Method No	Description
TM248	Determination of Ammonium BRE (2:1 Extract) on solids
TM282	Extraction of Magnesium by BRE Method
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230925-27 **Report Number:** 706013 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	28679629	28679631	28679633	28679635	28679637	28679639	28679641	28679644
Customer Sample Ref.	TPC01	TPC02	TPC04	TPCC01	TPT01	TPT03	TPT04	TPT09
AGS Ref.	B1	B5	B3	B5	B6	B3	B5	B1
Depth	0.50 - 0.60	2.50 - 3.00	1.60 - 1.70	2.90 - 3.00	3.40 - 3.50	1.50 - 1.60	2.10 - 2.20	0.50 - 0.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	28-Sep-2023	28-Sep-2023	02-Oct-2023	28-Sep-2023	28-Sep-2023	28-Sep-2023	28-Sep-2023	28-Sep-2023
Anions by Kone (soil)		29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023
Magnesium (BRE)		29-Sep-2023	02-Oct-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023
NO3, NO2 and TON by KONE (s)		02-Oct-2023	02-Oct-2023	02-Oct-2023	02-Oct-2023	02-Oct-2023	02-Oct-2023	02-Oct-2023
pH	27-Sep-2023	27-Sep-2023	27-Sep-2023	27-Sep-2023	27-Sep-2023	27-Sep-2023	27-Sep-2023	27-Sep-2023
Sample description	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023	26-Sep-2023
Total Organic Carbon	02-Oct-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023				29-Sep-2023
Total Sulphate	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023
Total Sulphur	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023	29-Sep-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	12 October 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	231005-93
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	707132
Order Number:	12380

We received 22 samples on Thursday October 05, 2023 and 22 of these samples were scheduled for analysis which was completed on Thursday October 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28734629	BH117	B6	2.00 - 2.50	10/05/2023
28734656	BHSS01	B11	4.00 - 4.50	16/05/2023
28734666	BHSS02	B9	3.00 - 3.50	05/05/2023
28734671	BHSS03	B4	1.00 - 1.50	08/05/2023
28734678	TP214	B2	1.70 - 1.90	10/05/2023
28734681	TP215	B3	1.60 - 1.80	10/05/2023
28734684	TP302	B3	0.90 - 1.00	16/05/2023
28734687	TP303	B3	2.20 - 2.30	16/05/2023
28734689	TP305	B1	0.80 - 0.80	17/05/2023
28734632	TP308	B3	1.30 - 1.40	22/05/2023
28734634	TP312	B2	1.20 - 1.30	31/05/2023
28734636	TPBP01	B3	1.40 - 1.50	23/05/2023
28734639	TPBP06	B4	1.20 - 1.30	24/05/2023
28734641	TPBP08	B1	0.40 - 0.50	24/05/2023
28734643	TPC06	B3	2.50 - 2.60	30/05/2023
28734645	TPSS02	B1	1.90 - 2.10	10/05/2023
28734647	TPSS04	B1	2.10 - 2.20	11/05/2023
28734649	TPSS06	B2	2.00 - 2.20	11/05/2023
28734653	TPT05	B3	1.00 - 1.10	25/05/2023
28734658	TPT14	B4	1.50 - 1.60	16/05/2023
28734660	TPT16	B3	0.80 - 0.90	15/05/2023
28734662	TPT18	B3	1.30 - 1.40	15/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 231005-93 **Report Number:** 707132 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28734629	28734656	28734666	28734671	28734678	28734681	28734684	28734687	28734689	28734632	28734634	28734636	28734639	28734641	28734643	28734645	28734647	28734649	28734653
Customer Sample Reference			BH117	BHSS01	BHSS02	BHSS03	TP214	TP215	TP302	TP303	TP305	TP308	TP312	TPBP01	TPBP06	TPBP08	TPC06	TPSS02	TPSS04	TPSS06	TPT05
AGS Reference			B6	B11	B9	B4	B2	B3	B3	B3	B1	B3	B2	B3	B4	B1	B3	B1	B1	B2	B3
Depth (m)			2.00 - 2.50	4.00 - 4.50	3.00 - 3.50	1.00 - 1.50	1.70 - 1.90	1.60 - 1.80	0.90 - 1.00	2.20 - 2.30	0.80 - 0.80	1.30 - 1.40	1.20 - 1.30	1.40 - 1.50	1.20 - 1.30	0.40 - 0.50	2.50 - 2.60	1.90 - 2.10	2.10 - 2.20	2.00 - 2.20	1.00 - 1.10
Container			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Anions by Kone (soil)	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Magnesium (BRE)	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
pH	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 22	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 21	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
Total Sulphate	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Sulphur	All	NDPs: 0 Tests: 18					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

28734662	TPT18	B3	1.30 - 1.40	250g Amber Jar (ALE210)	S		X		X		X		X		X		X		X		X
28734660	TPT16	B3	0.80 - 0.90	250g Amber Jar (ALE210)	S		X		X		X		X		X		X		X		X
28734658	TPT14	B4	1.50 - 1.60	250g Amber Jar (ALE210)	S		X		X		X		X		X		X		X		X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28734629	BH117	2.00 - 2.50	Light Brown	Silty Clay Loam	Stones	Vegetation
28734656	BHSS01	4.00 - 4.50	Dark Brown	Sandy Silt Loam	Stones	None
28734666	BHSS02	3.00 - 3.50	Grey	Sandy Clay	Stones	None
28734671	BHSS03	1.00 - 1.50	Dark Brown	Sandy Loam	Stones	Vegetation
28734678	TP214	1.70 - 1.90	Grey	Clay	Stones	None
28734681	TP215	1.60 - 1.80	Light Brown	Sandy Clay Loam	Stones	None
28734684	TP302	0.90 - 1.00	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28734687	TP303	2.20 - 2.30	Dark Brown	Silt Loam	Stones	None
28734689	TP305	0.80 - 0.80	Dark Brown	Sandy Clay Loam	Stones	None
28734632	TP308	1.30 - 1.40	Dark Brown	Loamy Sand	Stones	None
28734634	TP312	1.20 - 1.30	Dark Brown	Loamy Sand	Stones	None
28734636	TPBP01	1.40 - 1.50	Dark Brown	Silt Loam	None	None
28734639	TPBP06	1.20 - 1.30	Dark Brown	Sandy Clay Loam	Stones	None
28734641	TPBP08	0.40 - 0.50	Dark Brown	Sandy Loam	Stones	None
28734643	TPC06	2.50 - 2.60	Dark Brown	Silt Loam	None	None
28734645	TPSS02	1.90 - 2.10	Light Brown	Sandy Clay Loam	Stones	None
28734647	TPSS04	2.10 - 2.20	Dark Brown	Loamy Sand	Stones	None
28734649	TPSS06	2.00 - 2.20	Light Brown	Sandy Clay Loam	Stones	None
28734653	TPT05	1.00 - 1.10	Dark Brown	Silty Sand	None	None
28734658	TPT14	1.50 - 1.60	Dark Brown	Sand	Stones	None
28734660	TPT16	0.80 - 0.90	Dark Brown	Silt Loam	Stones	None
28734662	TPT18	1.30 - 1.40	Dark Brown	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 231005-93 **Report Number:** 707132 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH117	BHSS01	BHSS02	BHSS03	TP214	TP215
Customer Sample Ref.			BH117	BHSS01	BHSS02	BHSS03	TP214	TP215
Depth (m)			2.00 - 2.50	4.00 - 4.50	3.00 - 3.50	1.00 - 1.50	1.70 - 1.90	1.60 - 1.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	16/05/2023	05/05/2023	08/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023
SDG Ref			231005-93	231005-93	231005-93	231005-93	231005-93	231005-93
Lab Sample No.(s)			28734629	28734656	28734666	28734671	28734678	28734681
AGS Reference			B6	B11	B9	B4	B2	B3
Moisture Content Ratio (% of as received sample)	%	PM024	9.2	20	10	36	9.4	23
Sulphur, Total	<0.02 %	TM132					<0.02 @ #	0.0401 @ #
Soil Organic Matter (SOM)	<0.35 %	TM132	0.398 @ #	2.95 @ #	<0.35 @ #	10.8 @ #	0.4 @ #	0.612 @ #
pH	1 pH Units	TM133					8.71 @ M	8.66 @ M
Sulphate, acid soluble (total)	<0.0048 %	TM221					0.0275 M	<0.0048 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243					0.0162 @ M	0.0144 @ M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243					0.0066 @ M	0.0178 @ M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243					0.00395	0.000863
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248					0.00264	0.00305
Magnesium (BRE)	<0.008 g/l	TM282					<0.008	<0.008

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Validated

CERTIFICATE OF ANALYSIS

SDG: 231005-93 **Report Number:** 707132 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP302	TP303	TP305	TP308	TP312	TPBP01
Customer Sample Ref.			TP302	TP303	TP305	TP308	TP312	TPBP01
Depth (m)			0.90 - 1.00	2.20 - 2.30	0.80 - 0.80	1.30 - 1.40	1.20 - 1.30	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			16/05/2023	16/05/2023	17/05/2023	22/05/2023	31/05/2023	23/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023
SDG Ref			231005-93	231005-93	231005-93	231005-93	231005-93	231005-93
Lab Sample No.(s)			28734684	28734687	28734689	28734632	28734634	28734636
AGS Reference			B3	B3	B1	B3	B2	B3
Moisture Content Ratio (% of as received sample)	%	PM024	38	52	22	25	8.3	58
Sulphur, Total	<0.02 %	TM132	0.084 @ #	0.439 @ #	<0.02 @ #	0.0374 @ #	0.0348 @ #	2.3 @ #
Soil Organic Matter (SOM)	<0.35 %	TM132	6.02 @ #	12.7 @ #	2.43 @ #	2.41 @ #		24.5 @ #
pH	1 pH Units	TM133	7.84 @ M	7.12 @ M	8.03 @ M	8.07 @ M	8.52 @ M	4.42 @ M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.049 M	0.353 M	0.014 M	0.0485 M	0.0211 M	1.34 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243	0.135 @ M	0.655 @ M	<0.004 @ M	0.107 @ M	0.0353 @ M	1.87 @ M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0086 @ M	0.0083 @ M	0.0049 @ M	0.0096 @ M	0.0065 @ M	0.0525 @ M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.0288	0.085	0.0446	0.0154	0.00102	<0.0003
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.00165	0.00345	0.00175	0.00252	0.00289	0.00966
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	0.0162	<0.008	<0.008	<0.008	0.123

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Validated

CERTIFICATE OF ANALYSIS

SDG: 231005-93 **Report Number:** 707132 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPBP06	TPBP08	TPC06	TPSS02	TPSS04	TPSS06
Depth (m)			1.20 - 1.30	0.40 - 0.50	2.50 - 2.60	1.90 - 2.10	2.10 - 2.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			24/05/2023	24/05/2023	30/05/2023	10/05/2023	11/05/2023	11/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023
SDG Ref			231005-93	231005-93	231005-93	231005-93	231005-93	231005-93
Lab Sample No.(s)			28734639	28734641	28734643	28734645	28734647	28734649
AGS Reference			B4	B1	B3	B1	B1	B2
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	7.6	27	42	27	13	17
Sulphur, Total	<0.02 %	TM132	0.0225 @ #	0.09 @ #	0.409 @ #	0.0287 @ #	<0.02 @ #	<0.02 @ #
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 @ #	16.3 @ #	7.45 @ #	2.93 @ #	1.13 @ #	0.783 @ #
pH	1 pH Units	TM133	8.56 @ M	8.05 @ M	5.98 @ M	5.39 @ M	6.16 @ M	5.87 @ M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0456 M	0.0495 M	0.302 M	0.0209 M	0.00913 M	0.00609 M
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243	0.106 @ M	0.0098 @ M	1.31 @ M	0.0381 @ M	0.0711 @ M	0.026 @ M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.01 @ M	0.0071 @ M	0.0106 @ M	0.0052 @ M	0.0293 @ M	0.006 @ M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.000496	0.115	0.00395	0.0208	0.033	0.00345
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.00304	0.00241	0.00536	0.00478	0.0041	0.00521
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	0.016	<0.008	<0.008	<0.008

Validated

CERTIFICATE OF ANALYSIS

SDG: 231005-93 **Report Number:** 707132 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT05	TPT14	TPT16	TPT18		
Depth (m)			1.00 - 1.10	1.50 - 1.60	0.80 - 0.90	1.30 - 1.40		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			25/05/2023	16/05/2023	15/05/2023	15/05/2023		
Sample Time			.	.	.	.		
Date Received			05/10/2023	05/10/2023	05/10/2023	05/10/2023		
SDG Ref			231005-93	231005-93	231005-93	231005-93		
Lab Sample No.(s)			28734653	28734658	28734660	28734662		
AGS Reference			B3	B4	B3	B3		
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	21	5.7	41	22		
Sulphur, Total	<0.02 %	TM132	<0.02 @ #	<0.02 @ #	0.0957 @ #	0.0238 @ #		
Soil Organic Matter (SOM)	<0.35 %	TM132	0.722 @ #	4.43 @ #	9.28 @ #	2.52 @ #		
pH	1 pH Units	TM133	8.46 @ M	9.26 @ M	6.67 @ M	7.75 @ M		
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0238 M	0.0388 M	0.0649 M	0.0179 M		
Soluble Sulphate 2:1 extract as SO4 BRE	<0.004 g/l	TM243	0.0542 @ M	0.0114 @ M	0.0853 @ M	0.0174 @ M		
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0118 @ M	0.0064 @ M	0.0073 @ M	0.0108 @ M		
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.00361	0.00154	0.0753	0.0454		
Ammoniacal N as NH4 in 2:1 extract BRE	<0.0003 g/l	TM248	0.00329	0.00398	0.00247	0.00202		
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008		

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Table of Results - Appendix

Method No	Description
TM248	Determination of Ammonium BRE (2:1 Extract) on solids
TM282	Extraction of Magnesium by BRE Method
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28734629	28734656	28734666	28734671	28734678	28734681	28734684	28734687	28734689	28734632
Customer Sample Ref.	BH117	BHSS01	BHSS02	BHSS03	TP214	TP215	TP302	TP303	TP305	TP308
AGS Ref.	B6	B11	B9	B4	B2	B3	B3	B3	B1	B3
Depth	2.00 - 2.50	4.00 - 4.50	3.00 - 3.50	1.00 - 1.50	1.70 - 1.90	1.60 - 1.80	0.90 - 1.00	2.20 - 2.30	0.80 - 0.80	1.30 - 1.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract					10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023
Anions by Kone (soil)					11-Oct-2023	11-Oct-2023	12-Oct-2023	12-Oct-2023	11-Oct-2023	11-Oct-2023
Magnesium (BRE)					09-Oct-2023	09-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	09-Oct-2023
NO3, NO2 and TON by KONE (s)					10-Oct-2023	10-Oct-2023	12-Oct-2023	12-Oct-2023	10-Oct-2023	10-Oct-2023
pH					09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023
Sample description	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023
Total Organic Carbon	10-Oct-2023	11-Oct-2023	12-Oct-2023	11-Oct-2023	10-Oct-2023	10-Oct-2023	11-Oct-2023	11-Oct-2023	12-Oct-2023	10-Oct-2023
Total Sulphate					10-Oct-2023	10-Oct-2023	12-Oct-2023	12-Oct-2023	10-Oct-2023	10-Oct-2023
Total Sulphur					11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023

Lab Sample No(s)	28734634	28734636	28734639	28734641	28734643	28734645	28734647	28734649	28734653	28734658
Customer Sample Ref.	TP312	TPBP01	TPBP06	TPBP08	TPC06	TPSS02	TPSS04	TPSS06	TPT05	TPT14
AGS Ref.	B2	B3	B4	B1	B3	B1	B1	B2	B3	B4
Depth	1.20 - 1.30	1.40 - 1.50	1.20 - 1.30	0.40 - 0.50	2.50 - 2.60	1.90 - 2.10	2.10 - 2.20	2.00 - 2.20	1.00 - 1.10	1.50 - 1.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023
Anions by Kone (soil)	11-Oct-2023	12-Oct-2023	11-Oct-2023	11-Oct-2023	12-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023
Magnesium (BRE)	11-Oct-2023	11-Oct-2023	09-Oct-2023	09-Oct-2023	11-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023
NO3, NO2 and TON by KONE (s)	10-Oct-2023	12-Oct-2023	10-Oct-2023	10-Oct-2023	12-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023
pH	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023	09-Oct-2023
Sample description	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023	06-Oct-2023
Total Organic Carbon		11-Oct-2023	10-Oct-2023	10-Oct-2023	11-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023
Total Sulphate	10-Oct-2023	12-Oct-2023	10-Oct-2023	10-Oct-2023	12-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023	10-Oct-2023
Total Sulphur	10-Oct-2023	12-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	11-Oct-2023	10-Oct-2023	10-Oct-2023

Lab Sample No(s)	28734660	28734662
Customer Sample Ref.	TPT16	TPT18
AGS Ref.	B3	B3
Depth	0.80 - 0.90	1.30 - 1.40
Type	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	10-Oct-2023	10-Oct-2023
Anions by Kone (soil)	12-Oct-2023	11-Oct-2023
Magnesium (BRE)	11-Oct-2023	09-Oct-2023
NO3, NO2 and TON by KONE (s)	12-Oct-2023	10-Oct-2023
pH	09-Oct-2023	09-Oct-2023
Sample description	06-Oct-2023	06-Oct-2023
Total Organic Carbon	11-Oct-2023	10-Oct-2023
Total Sulphate	12-Oct-2023	10-Oct-2023
Total Sulphur	11-Oct-2023	10-Oct-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	25 October 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	231017-51
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	708637
Order Number:	12380

We received 53 samples on Tuesday October 17, 2023 and 53 of these samples were scheduled for analysis which was completed on Wednesday October 25, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28795401	BH17A	B1	0.00 - 1.00	31/07/2023
28795403	BH17A	B7	2.00 - 2.50	31/07/2023
28795407	BH17A	B10	3.00 - 3.50	31/07/2023
28795350	BHCC01	B1	0.00 - 1.00	14/06/2023
28795376	BHSS06	B1	0.00 - 1.00	13/06/2023
28795399	BHSS06	B9	3.00 - 3.50	14/06/2023
28795430	BHSS101	B1	0.00 - 1.00	17/07/2023
28795475	BHSS101	B7	2.00 - 2.50	17/07/2023
28795494	BHSS102	B1	0.00 - 1.00	18/07/2023
28795498	BHSS102	B4	1.00 - 1.50	18/07/2023
28795501	BHSS103	B1	0.00 - 1.00	17/07/2023
28795507	BHSS103	B4	1.00 - 1.50	17/07/2023
28795353	BHSS104	B4	1.00 - 1.50	19/07/2023
28795356	BHSS104	B10	3.00 - 3.50	19/07/2023
28795358	BHSS105	B1	0.00 - 1.00	14/07/2023
28795360	BHSS105	B4	1.00 - 1.50	14/07/2023
28795363	BHSS106	B1	0.00 - 1.00	01/07/2023
28795366	BHSS106	B4	1.00 - 1.50	20/07/2023
28795368	BHSS107	B1	0.00 - 1.00	20/07/2023
28795370	BHSS107	B4	1.00 - 1.50	20/07/2023
28795372	BHSS1M08	B1	0.00 - 1.00	19/07/2023
28795374	BHSS1M08	B4	1.00 - 1.50	19/07/2023
28795378	BHT01	B9	3.00 - 3.50	13/06/2023
28795380	BHT02	B1	0.00 - 1.00	08/06/2023
28795382	BHT02	B10	3.00 - 3.50	08/06/2023
28795384	BHT08	B1	0.00 - 1.00	16/06/2023
28795386	BHT08	B7	2.00 - 2.50	19/06/2023
28795389	BHT08	B10	3.00 - 3.50	19/06/2023
28795391	BHT16	B1	0.00 - 1.00	22/06/2023
28795393	BHT16	B7	2.00 - 2.50	22/06/2023
28795395	BHT16A	B1	0.00 - 1.00	01/08/2023
28795397	BHT16A	B4	1.00 - 1.50	01/08/2023
28795410	BHT18A	B1	0.00 - 1.00	02/08/2023
28795412	BHT18A	B10	3.00 - 3.50	03/08/2023
28795415	BHT18A	B16	5.00 - 5.50	03/08/2023
28795418	TP208	B1	0.50 - 0.60	29/06/2023
28795421	TP208	B3	2.00 - 2.10	29/06/2023
28795424	TPC08	B3	0.80 - 0.90	28/06/2023
28795427	TPC09	B1	0.40 - 0.50	28/06/2023
28795432	TPC09	B3	1.30 - 1.40	28/06/2023
28795437	TPSS101	B1	0.40 - 0.50	27/06/2023
28795441	TPSS101	B4	1.40 - 1.50	27/06/2023
28795445	TPSS101	B6	2.40 - 2.50	27/06/2023
28795450	TPSS102	B1	0.40 - 0.50	27/06/2023
28795454	TPSS102	B4	1.40 - 1.50	27/06/2023
28795459	TPSS103	B1	0.40 - 0.50	27/06/2023
28795464	TPSS103	B4	1.40 - 1.50	27/06/2023
28795467	TPSS104	B1	0.30 - 0.40	28/06/2023
28795471	TPSS104	B3	0.70 - 0.80	28/06/2023
28795478	TPSS105	B1	0.40 - 0.50	27/06/2023
28795482	TPSS106	B1	0.40 - 0.50	27/06/2023
28795486	TPSS106	B6	2.40 - 2.50	27/06/2023
28795492	TPSS107	B1	0.40 - 0.50	28/06/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28795401	28795403	28795407	28795350	28795376	28795399	28795430	28795475	28795494	28795498	28795501	28795507	28795353	28795356	28795358	28795360	28795363	28795366	28795368
Customer Sample Reference			BH17A	BH17A	BH17A	BHCC01	BHSS06	BHSS06	BHSS101	BHSS101	BHSS102	BHSS102	BHSS103	BHSS103	BHSS104	BHSS104	BHSS105	BHSS105	BHSS106	BHSS106	BHSS107
AGS Reference			B1	B7	B10	B1	B1	B9	B1	B7	B1	B4	B1	B4	B4	B10	B1	B4	B1	B4	B1
Depth (m)			0.00 - 1.00	2.00 - 2.50	3.00 - 3.50	0.00 - 1.00	0.00 - 1.00	3.00 - 3.50	0.00 - 1.00	2.00 - 2.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50	1.00 - 1.50	3.00 - 3.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00
Container			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by ion Chromatography	All	NDPs: 0 Tests: 2																			
Loss on Ignition in soils	All	NDPs: 0 Tests: 1									X										
pH	All	NDPs: 0 Tests: 24			X			X	X			X		X		X		X		X	
Sample description	All	NDPs: 0 Tests: 53	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 46	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
Total Sulphate	All	NDPs: 0 Tests: 24			X			X	X			X		X		X		X		X	

28795432	TPC09	B3	1.30 - 1.40	250g Amber Jar (ALE210)	S						X		X		X		X
28795427	TPC09	B1	0.40 - 0.50	250g Amber Jar (ALE210)	S								X		X		
28795424	TPC08	B3	0.80 - 0.90	250g Amber Jar (ALE210)	S						X		X		X		X
28795421	TP208	B3	2.00 - 2.10	250g Amber Jar (ALE210)	S						X		X		X		X
28795418	TP208	B1	0.50 - 0.60	250g Amber Jar (ALE210)	S								X		X		
28795415	BHT18A	B16	5.00 - 5.50	250g Amber Jar (ALE210)	S								X		X		
28795412	BHT18A	B10	3.00 - 3.50	250g Amber Jar (ALE210)	S						X		X		X		X
28795410	BHT18A	B1	0.00 - 1.00	250g Amber Jar (ALE210)	S								X		X		
28795397	BHT16A	B4	1.00 - 1.50	250g Amber Jar (ALE210)	S						X		X		X		X
28795395	BHT16A	B1	0.00 - 1.00	250g Amber Jar (ALE210)	S								X		X		
28795393	BHT16	B7	2.00 - 2.50	250g Amber Jar (ALE210)	S		X						X				
28795391	BHT16	B1	0.00 - 1.00	250g Amber Jar (ALE210)	S						X		X		X		X
28795389	BHT08	B10	3.00 - 3.50	250g Amber Jar (ALE210)	S		X						X				
28795386	BHT08	B7	2.00 - 2.50	250g Amber Jar (ALE210)	S						X		X		X		X
28795384	BHT08	B1	0.00 - 1.00	250g Amber Jar (ALE210)	S						X		X		X		X
28795382	BHT02	B10	3.00 - 3.50	250g Amber Jar (ALE210)	S								X		X		
28795380	BHT02	B1	0.00 - 1.00	250g Amber Jar (ALE210)	S						X		X				X
28795378	BHT01	B9	3.00 - 3.50	250g Amber Jar (ALE210)	S						X		X		X		X
28795374	BHSS1M08	B4	1.00 - 1.50	250g Amber Jar (ALE210)	S						X		X				X
28795372	BHSS1M08	B1	0.00 - 1.00	250g Amber Jar (ALE210)	S								X		X		
28795370	BHSS107	B4	1.00 - 1.50	250g Amber Jar (ALE210)	S						X		X				X

Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28795437	28795441	28795445	28795450	28795454	28795459	28795464	28795467	28795471	28795478	28795482	28795486	28795492
Customer Sample Reference			TPSS101	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103	TPSS104	TPSS104	TPSS105	TPSS106	TPSS106	TPSS107
AGS Reference			B1	B4	B6	B1	B4	B1	B4	B1	B3	B1	B1	B6	B1
Depth (m)			0.40 - 0.50	1.40 - 1.50	2.40 - 2.50	0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.40 - 1.50	0.30 - 0.40	0.70 - 0.80	0.40 - 0.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50
Container			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S
pH	All	NDPs: 0 Tests: 24		X				X			X	X			
Sample description	All	NDPs: 0 Tests: 53	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 46	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Sulphate	All	NDPs: 0 Tests: 24		X				X			X	X			

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28795401	BH17A	0.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None
28795403	BH17A	2.00 - 2.50	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28795407	BH17A	3.00 - 3.50	Grey	Silt Loam	None	None
28795350	BHCC01	0.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None
28795376	BHSS06	0.00 - 1.00	Black	Loamy Sand	None	Vegetation
28795399	BHSS06	3.00 - 3.50	Black	Loamy Sand	None	None
28795430	BHSS101	0.00 - 1.00	Dark Brown	Sandy Loam	Stones	Vegetation
28795475	BHSS101	2.00 - 2.50	Light Brown	Clay	None	None
28795494	BHSS102	0.00 - 1.00	Dark Brown	Clay Loam	Stones	None
28795498	BHSS102	1.00 - 1.50	Dark Brown	Clay Loam	Stones	None
28795501	BHSS103	0.00 - 1.00	Dark Brown	Sandy Silt Loam	Stones	None
28795507	BHSS103	1.00 - 1.50	Dark Brown	Sandy Clay Loam	Stones	None
28795353	BHSS104	1.00 - 1.50	Dark Brown	Sandy Clay Loam	Stones	None
28795356	BHSS104	3.00 - 3.50	Grey	Sandy Loam	Stones	None
28795358	BHSS105	0.00 - 1.00	Dark Brown	Loamy Sand	Stones	None
28795360	BHSS105	1.00 - 1.50	Light Brown	Sandy Clay Loam	Stones	None
28795363	BHSS106	0.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None
28795366	BHSS106	1.00 - 1.50	Dark Brown	Clay Loam	Stones	None
28795368	BHSS107	0.00 - 1.00	Dark Brown	Silt Loam	None	None
28795370	BHSS107	1.00 - 1.50	Light Brown	Clay	Stones	None
28795372	BHSS1M08	0.00 - 1.00	Dark Brown	Sandy Clay Loam	Vegetation	Stones
28795374	BHSS1M08	1.00 - 1.50	Light Brown	Sandy Clay Loam	Stones	None
28795378	BHT01	3.00 - 3.50	Dark Brown	Loamy Sand	Stones	None
28795380	BHT02	0.00 - 1.00	Black	Silt Loam	Vegetation	None
28795382	BHT02	3.00 - 3.50	Grey	Silt Loam	None	None
28795384	BHT08	0.00 - 1.00	Dark Brown	Loamy Sand	Stones	None
28795386	BHT08	2.00 - 2.50	Dark Brown	Sand	Stones	None
28795389	BHT08	3.00 - 3.50	Dark Brown	Sand	Stones	None
28795391	BHT16	0.00 - 1.00	Dark Brown	Loamy Sand	Stones	Vegetation
28795393	BHT16	2.00 - 2.50	Grey	Sand	Stones	None
28795395	BHT16A	0.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None
28795397	BHT16A	1.00 - 1.50	Dark Brown	Loamy Sand	Stones	Vegetation
28795410	BHT18A	0.00 - 1.00	Black	Silt Loam	Stones	Vegetation
28795412	BHT18A	3.00 - 3.50	Dark Brown	Sandy Loam	None	None
28795415	BHT18A	5.00 - 5.50	Dark Brown	Sandy Loam	Stones	None
28795418	TP208	0.50 - 0.60	Dark Brown	Silt Loam	Vegetation	None
28795421	TP208	2.00 - 2.10	Dark Brown	Clay	None	None
28795424	TPC08	0.80 - 0.90	Dark Brown	Clay	Stones	None
28795427	TPC09	0.40 - 0.50	Dark Brown	Silt Loam	Vegetation	None

			Colour	Description	Inclusions	Inclusions 2
28795432	TPC09	1.30 - 1.40	Dark Brown	Sandy Clay	Stones	None
28795437	TPSS101	0.40 - 0.50	Dark Brown	Sandy Clay Loam	Stones	Vegetation
28795441	TPSS101	1.40 - 1.50	Light Brown	Sandy Clay	Stones	None
28795445	TPSS101	2.40 - 2.50	Light Brown	Sandy Clay	Stones	None
28795450	TPSS102	0.40 - 0.50	Dark Brown	Clay	Stones	None
28795454	TPSS102	1.40 - 1.50	Grey	Sandy Clay Loam	None	None
28795459	TPSS103	0.40 - 0.50	Dark Brown	Sandy Clay	Stones	None
28795464	TPSS103	1.40 - 1.50	Light Brown	Sandy Clay	Stones	None
28795467	TPSS104	0.30 - 0.40	Black	Loamy Sand	None	None
28795471	TPSS104	0.70 - 0.80	Dark Brown	Sandy Clay	Stones	None
28795478	TPSS105	0.40 - 0.50	Dark Brown	Loamy Sand	Stones	None
28795482	TPSS106	0.40 - 0.50	Grey	Silty Clay Loam	None	None
28795486	TPSS106	2.40 - 2.50	Grey	Sandy Clay	Stones	None
28795492	TPSS107	0.40 - 0.50	Dark Brown	Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH17A BH T 17A	BH17A BH T 17A	BH17A BH T 17A	BHCC01	BHSS06	BHSS06
Depth (m)			0.00 - 1.00	2.00 - 2.50	3.00 - 3.50	0.00 - 1.00	0.00 - 1.00	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			31/07/2023	31/07/2023	31/07/2023	14/06/2023	13/06/2023	14/06/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795401	28795403	28795407	28795350	28795376	28795399
AGS Reference			B1	B7	B10	B1	B1	B9
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	83	24	22	88	82	39
Soil Organic Matter (SOM)	<0.35 %	TM132	72.1 @ #	2.29 @ #		82.8 @ #	81.4 @ #	8.5 @ #
pH	1 pH Units	TM133			8.38 @ M			6.47 @ M
Sulphate, Total	<48 mg/kg	TM221			316 M			1240 M

14:21:57 25/10/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS101	BHSS102	BHSS102	BHSS103	BHSS103
Depth (m)			0.00 - 1.00	2.00 - 2.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	17/07/2023	18/07/2023	18/07/2023	17/07/2023	17/07/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795430	28795475	28795494	28795498	28795501	28795507
AGS Reference			B1	B7	B1	B4	B1	B4
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	25	11	14	25	17	16
Loss on ignition	<0.7 %	TM018			4 @ M			
Soil Organic Matter (SOM)	<0.35 %	TM132	6.12 @ #	<0.35 @ #		4.83 @ #	2.14 @ #	5.19 @ #
pH	1 pH Units	TM133	7.91 @ M			8.17 @ M		8.36 @ M
Sulphate, Total	<48 mg/kg	TM221	784 M			385 M		301 M

14:21:57 25/10/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHSS104	BHSS104	BHSS105	BHSS105	BHSS106	BHSS106
Customer Sample Ref.			BHSS104	BHSS104	BHSS105	BHSS105	BHSS106	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/07/2023	19/07/2023	14/07/2023	14/07/2023	01/07/2023	20/07/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795353	28795356	28795358	28795360	28795363	28795366
AGS Reference			B4	B10	B1	B4	B1	B4
Moisture Content Ratio (% of as received sample)	%	PM024	13	11	15	13	60	21
Soil Organic Matter (SOM)	<0.35 %	TM132	0.719 @ #	0.443 @ #	2.48 @ #	0.588 @ #	41 @ #	3.86 @ #
pH	1 pH Units	TM133		8.61 @ M		8.49 @ M		8.33 @ M
Sulphate, Total	<48 mg/kg	TM221		198 M		244 M		432 M

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Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS107	BHSS1M08	BHSS1M08	BHT01	BHT02
Depth (m)			0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50	3.00 - 3.50	0.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			20/07/2023	20/07/2023	19/07/2023	19/07/2023	13/06/2023	08/06/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795368	28795370	28795372	28795374	28795378	28795380
AGS Reference			B1	B4	B1	B4	B9	B1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	23	12	18	12	25	81
Soil Organic Matter (SOM)	<0.35 %	TM132	1.98 @ #		1.95 @ #		5.91 @ #	
pH	1 pH Units	TM133		8.48 @ M		8.72 @ M	7.99 @ M	5.48 @ M
Sulphate, Total	<48 mg/kg	TM221		580 M		145 M	1360 M	2940 M

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Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT02	BHT08	BHT08	BHT08	BHT16	BHT16
Customer Sample Ref.			BHT02	BHT08	BHT08	BHT08	BHT16	BHT16
Depth (m)			3.00 - 3.50	0.00 - 1.00	2.00 - 2.50	3.00 - 3.50	0.00 - 1.00	2.00 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/06/2023	16/06/2023	19/06/2023	19/06/2023	22/06/2023	22/06/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795382	28795384	28795386	28795389	28795391	28795393
AGS Reference			B10	B1	B7	B10	B1	B7
Moisture Content Ratio (% of as received sample)	%	PM024	16	27	13	7.6	26	3.4
CHLORIDE 2:1 AS %	<0.0002	TM019				0.00234 @ M		0.00208 @ M
Soil Organic Matter (SOM)	<0.35 %	TM132	1.95 @ #	9.17 @ #	2.28 @ #		14.6 @ #	
pH	1 pH Units	TM133		7.91 @ M	8.66 @ M		7.69 @ M	
Sulphate, Total	<48 mg/kg	TM221		447 M	340 M		570 M	

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CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT16A	BHT16A	BHT18A	BHT18A	BHT18A	TP208
Customer Sample Ref.			BHT16A	BHT16A	BHT18A	BHT18A	BHT18A	TP208
Depth (m)			0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	3.00 - 3.50	5.00 - 5.50	0.50 - 0.60
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/08/2023	01/08/2023	02/08/2023	03/08/2023	03/08/2023	29/06/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795395	28795397	28795410	28795412	28795415	28795418
AGS Reference			B1	B4	B1	B10	B16	B1
Moisture Content Ratio (% of as received sample)	%	PM024	43	7.7	85	19	13	79
Soil Organic Matter (SOM)	<0.35 %	TM132	8.5 @ #	0.91 @ #	76 @ #	0.945 @ #	0.629 @ #	86.4 @ #
pH	1 pH Units	TM133		8.87 @ M		8.48 @ M		
Sulphate, Total	<48 mg/kg	TM221		282 M		271 M		

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CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TPC08	TPC09	TPC09	TPSS101	TPSS101
Depth (m)			2.00 - 2.10	0.80 - 0.90	0.40 - 0.50	1.30 - 1.40	0.40 - 0.50	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	28/06/2023	28/06/2023	28/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795421	28795424	28795427	28795432	28795437	28795441
AGS Reference			B3	B3	B1	B3	B1	B4
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	23	26	81	28	8.6	12
Soil Organic Matter (SOM)	<0.35 %	TM132	1.55 @ #	1.91 @ #	73.3 @ #	2.14 @ #	0.44 @ #	0.434 @ #
pH	1 pH Units	TM133	6.41 @ M	7.31 @ M		8.03 @ M		8.62 @ M
Sulphate, Total	<48 mg/kg	TM221	131 M	188 M		483 M		200 M

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Validated

CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS101	TPSS102	TPSS102	TPSS103	TPSS103	TPSS104
Depth (m)			2.40 - 2.50	0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.40 - 1.50	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	28/06/2023
Sample Time			.	.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795445	28795450	28795454	28795459	28795464	28795467
AGS Reference			B6	B1	B4	B1	B4	B1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	10	20	11	12	9.8	71
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 @ #	1.62 @ #	1.04 @ #	0.372 @ #	<0.35 @ #	61.4 @ #
pH	1 pH Units	TM133				8.62 @ M		
Sulphate, Total	<48 mg/kg	TM221				203 M		

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CERTIFICATE OF ANALYSIS

SDG: 231017-51 **Report Number:** 708637 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS105	TPSS106	TPSS106	TPSS107
Depth (m)			0.70 - 0.80	0.40 - 0.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			28/06/2023	27/06/2023	27/06/2023	27/06/2023	28/06/2023
Sample Time			.	.	.	.	.
Date Received			17/10/2023	17/10/2023	17/10/2023	17/10/2023	17/10/2023
SDG Ref			231017-51	231017-51	231017-51	231017-51	231017-51
Lab Sample No.(s)			28795471	28795478	28795482	28795486	28795492
AGS Reference			B3	B1	B1	B6	B1
Component	**LOD/Units**	**Method**					
Moisture Content Ratio (% of as received sample)	%	PM024	33	11	20	9.3	19
Soil Organic Matter (SOM)	<0.35 %	TM132	3.9 @ #	0.369 @ #	1.25 @ #	<0.35 @ #	1.51 @ #
pH	1 pH Units	TM133	8.21 @ M	8.93 @ M			
Sulphate, Total	<48 mg/kg	TM221	379 M	480 M			

Table of Results - Appendix

Method No	Description
TM018	Determination of Loss on Ignition
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM019	Determination of Anions in Soils using Ion Chromatography
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28795401	28795403	28795407	28795350	28795376	28795399	28795430	28795475	28795494	28795498
Customer Sample Ref.	BH17A	BH17A	BH17A	BHCC01	BHSS06	BHSS06	BHSS101	BHSS101	BHSS102	BHSS102
AGS Ref.	B1	B7	B10	B1	B1	B9	B1	B7	B1	B4
Depth	0.00 - 1.00	2.00 - 2.50	3.00 - 3.50	0.00 - 1.00	0.00 - 1.00	3.00 - 3.50	0.00 - 1.00	2.00 - 2.50	0.00 - 1.00	1.00 - 1.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Loss on Ignition in soils									23-Oct-2023	
pH			23-Oct-2023			23-Oct-2023	24-Oct-2023			24-Oct-2023
Sample description	19-Oct-2023	19-Oct-2023	18-Oct-2023	19-Oct-2023	18-Oct-2023	18-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023
Total Organic Carbon	24-Oct-2023	24-Oct-2023		24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023		24-Oct-2023
Total Sulphate			23-Oct-2023			23-Oct-2023	23-Oct-2023			23-Oct-2023

Lab Sample No(s)	28795501	28795507	28795353	28795356	28795358	28795360	28795363	28795366	28795368	28795370
Customer Sample Ref.	BHSS103	BHSS103	BHSS104	BHSS104	BHSS105	BHSS105	BHSS106	BHSS106	BHSS107	BHSS107
AGS Ref.	B1	B4	B4	B10	B1	B4	B1	B4	B1	B4
Depth	0.00 - 1.00	1.00 - 1.50	1.00 - 1.50	3.00 - 3.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	1.00 - 1.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
pH		24-Oct-2023		24-Oct-2023		24-Oct-2023		24-Oct-2023		24-Oct-2023
Sample description	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	18-Oct-2023	19-Oct-2023
Total Organic Carbon	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	
Total Sulphate		23-Oct-2023		23-Oct-2023		23-Oct-2023		23-Oct-2023		23-Oct-2023

Lab Sample No(s)	28795372	28795374	28795378	28795380	28795382	28795384	28795386	28795389	28795391	28795393
Customer Sample Ref.	BHSS1M08	BHSS1M08	BHT01	BHT02	BHT02	BHT08	BHT08	BHT08	BHT16	BHT16
AGS Ref.	B1	B4	B9	B1	B10	B1	B7	B10	B1	B7
Depth	0.00 - 1.00	1.00 - 1.50	3.00 - 3.50	0.00 - 1.00	3.00 - 3.50	0.00 - 1.00	2.00 - 2.50	3.00 - 3.50	0.00 - 1.00	2.00 - 2.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by ion Chromatography								25-Oct-2023		25-Oct-2023
pH		24-Oct-2023	24-Oct-2023	24-Oct-2023		24-Oct-2023	24-Oct-2023		24-Oct-2023	
Sample description	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	18-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023
Total Organic Carbon	24-Oct-2023		24-Oct-2023		24-Oct-2023	24-Oct-2023	24-Oct-2023		24-Oct-2023	
Total Sulphate		23-Oct-2023	23-Oct-2023	23-Oct-2023		23-Oct-2023	24-Oct-2023		23-Oct-2023	

Lab Sample No(s)	28795395	28795397	28795410	28795412	28795415	28795418	28795421	28795424	28795427	28795432
Customer Sample Ref.	BHT16A	BHT16A	BHT18A	BHT18A	BHT18A	TP208	TP208	TPC08	TPC09	TPC09
AGS Ref.	B1	B4	B1	B10	B16	B1	B3	B3	B1	B3
Depth	0.00 - 1.00	1.00 - 1.50	0.00 - 1.00	3.00 - 3.50	5.00 - 5.50	0.50 - 0.60	2.00 - 2.10	0.80 - 0.90	0.40 - 0.50	1.30 - 1.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
pH		24-Oct-2023		24-Oct-2023			24-Oct-2023	24-Oct-2023		24-Oct-2023
Sample description	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023
Total Organic Carbon	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023
Total Sulphate		23-Oct-2023		23-Oct-2023			23-Oct-2023	23-Oct-2023		23-Oct-2023

Lab Sample No(s)	28795437	28795441	28795445	28795450	28795454	28795459	28795464	28795467	28795471	28795478
Customer Sample Ref.	TPSS101	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103	TPSS104	TPSS104	TPSS105
AGS Ref.	B1	B4	B6	B1	B4	B1	B4	B1	B3	B1
Depth	0.40 - 0.50	1.40 - 1.50	2.40 - 2.50	0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.40 - 1.50	0.30 - 0.40	0.70 - 0.80	0.40 - 0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
pH		24-Oct-2023				24-Oct-2023			24-Oct-2023	24-Oct-2023
Sample description	19-Oct-2023	19-Oct-2023	19-Oct-2023	19-Oct-2023	18-Oct-2023	19-Oct-2023	19-Oct-2023	18-Oct-2023	19-Oct-2023	19-Oct-2023
Total Organic Carbon	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023	24-Oct-2023
Total Sulphate		24-Oct-2023				23-Oct-2023			23-Oct-2023	23-Oct-2023

Lab Sample No(s)	28795482	28795486	28795492
Customer Sample Ref.	TPSS106	TPSS106	TPSS107
AGS Ref.	B1	B6	B1
Depth	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Sample description	18-Oct-2023	19-Oct-2023	19-Oct-2023
Total Organic Carbon	24-Oct-2023	24-Oct-2023	24-Oct-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

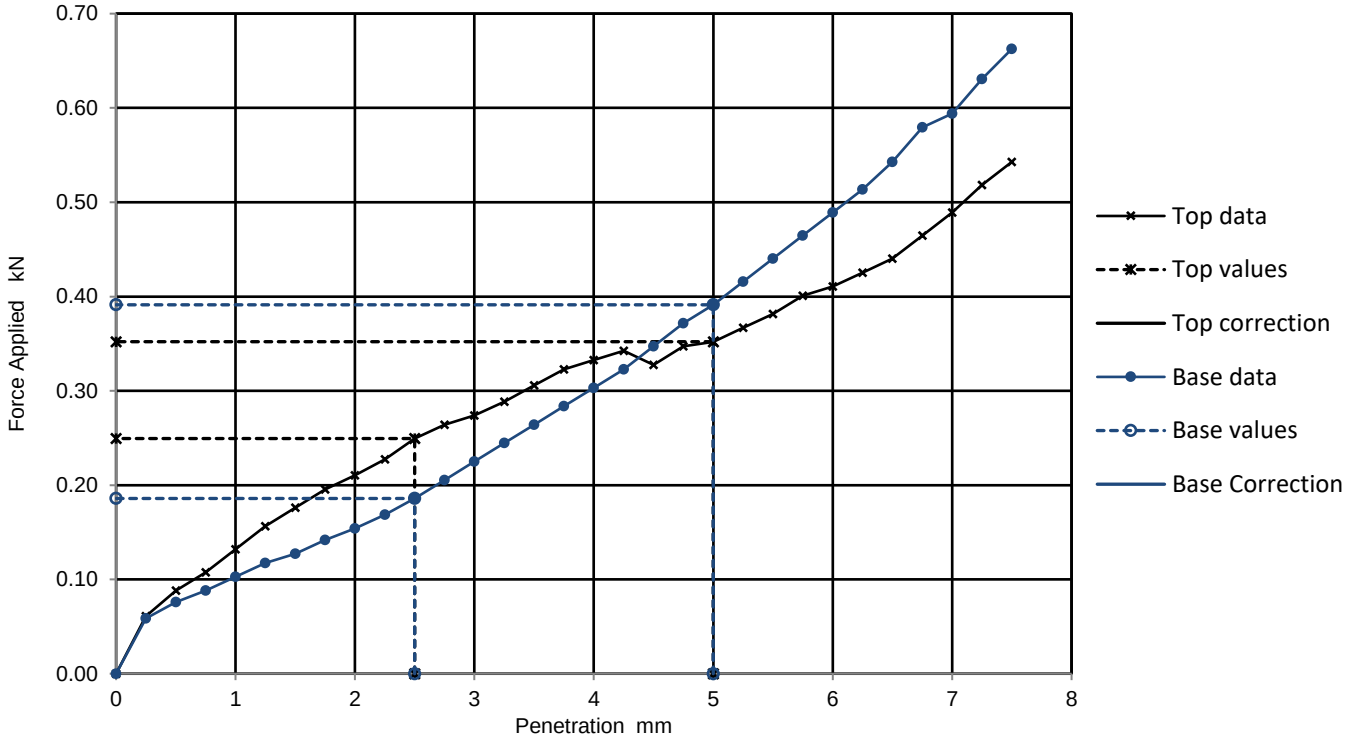
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH102
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description	Brown very silty very sandy fine and medium GRAVEL.			Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426195
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	13.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.9	1.8	1.9	1.9	
BASE		1.4	2.0	2.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	1

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

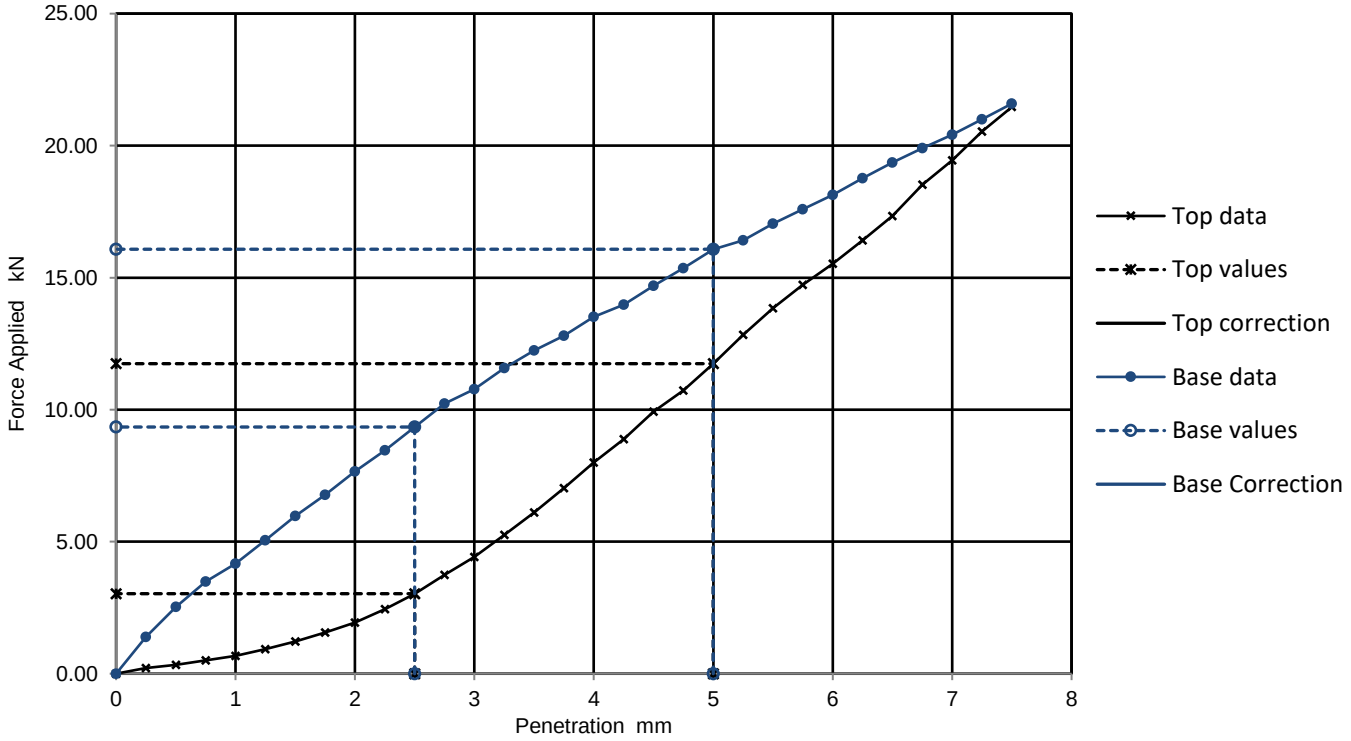
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH102
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426195
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	10.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		23.0	59.0	59.0		
BASE		71.0	80.0	80.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	2

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

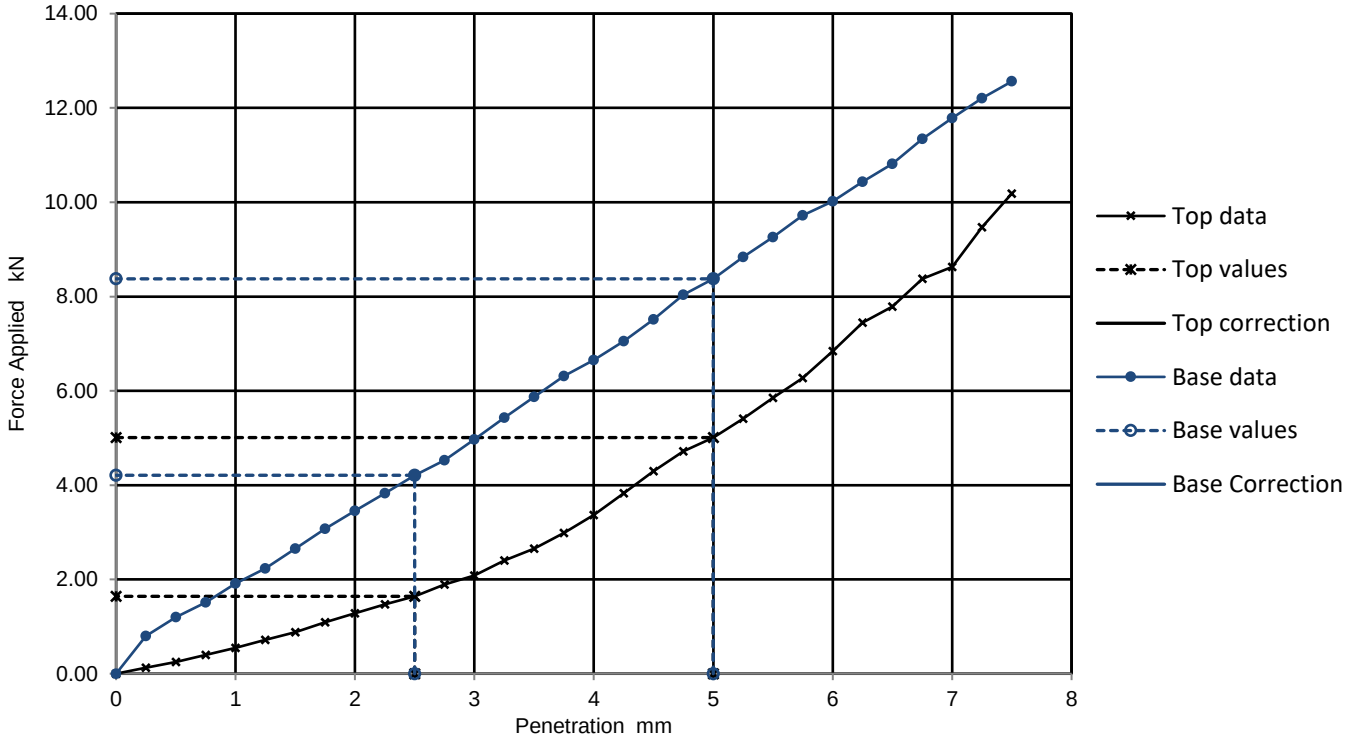
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH102
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426195
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.15	Mg/m3	Surcharge applied	2	kg
	Dry density	1.95	Mg/m3		1	kPa
	Moisture content	10.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		12.0	25.0	25.0		
BASE		32.0	42.0	42.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	3

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

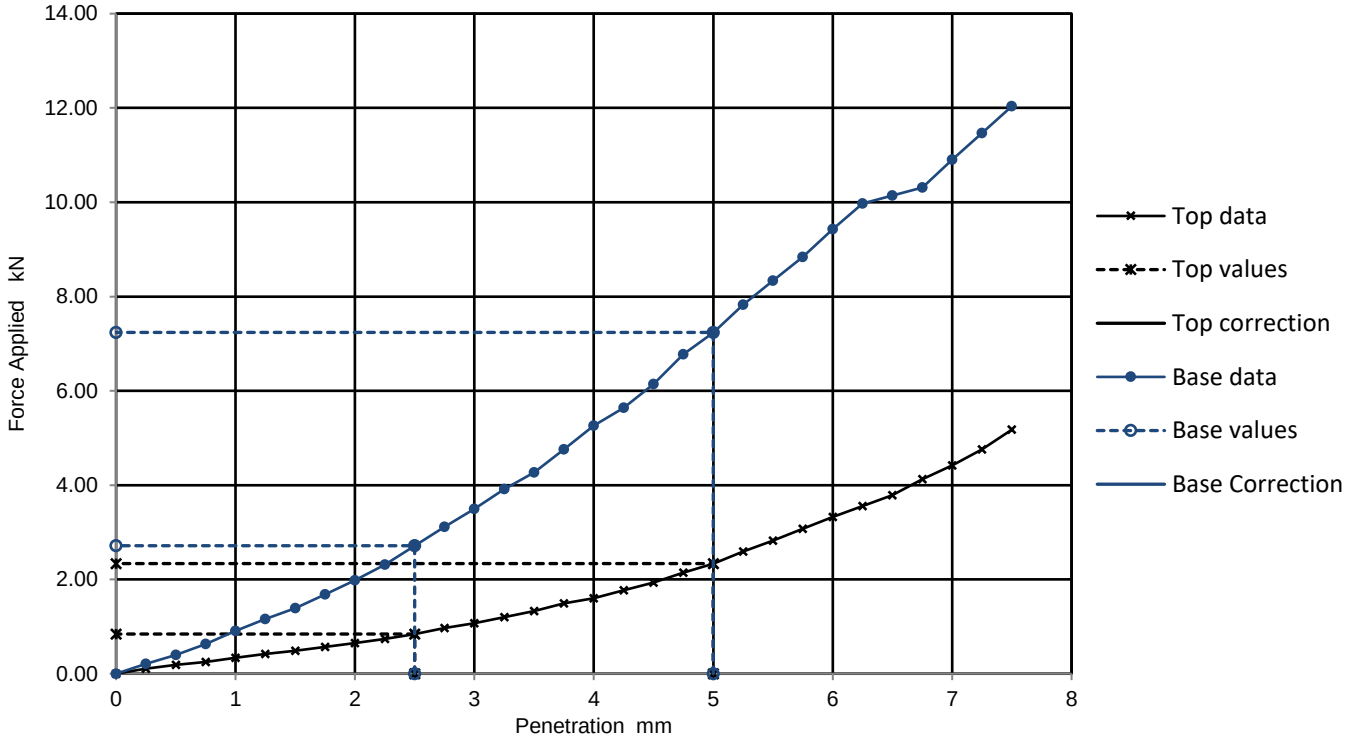
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH102
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426195
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	1.99	Mg/m3		1	kPa
	Moisture content	11.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		6.4	12.0	12.0		
BASE		21.0	36.0	36.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	4

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

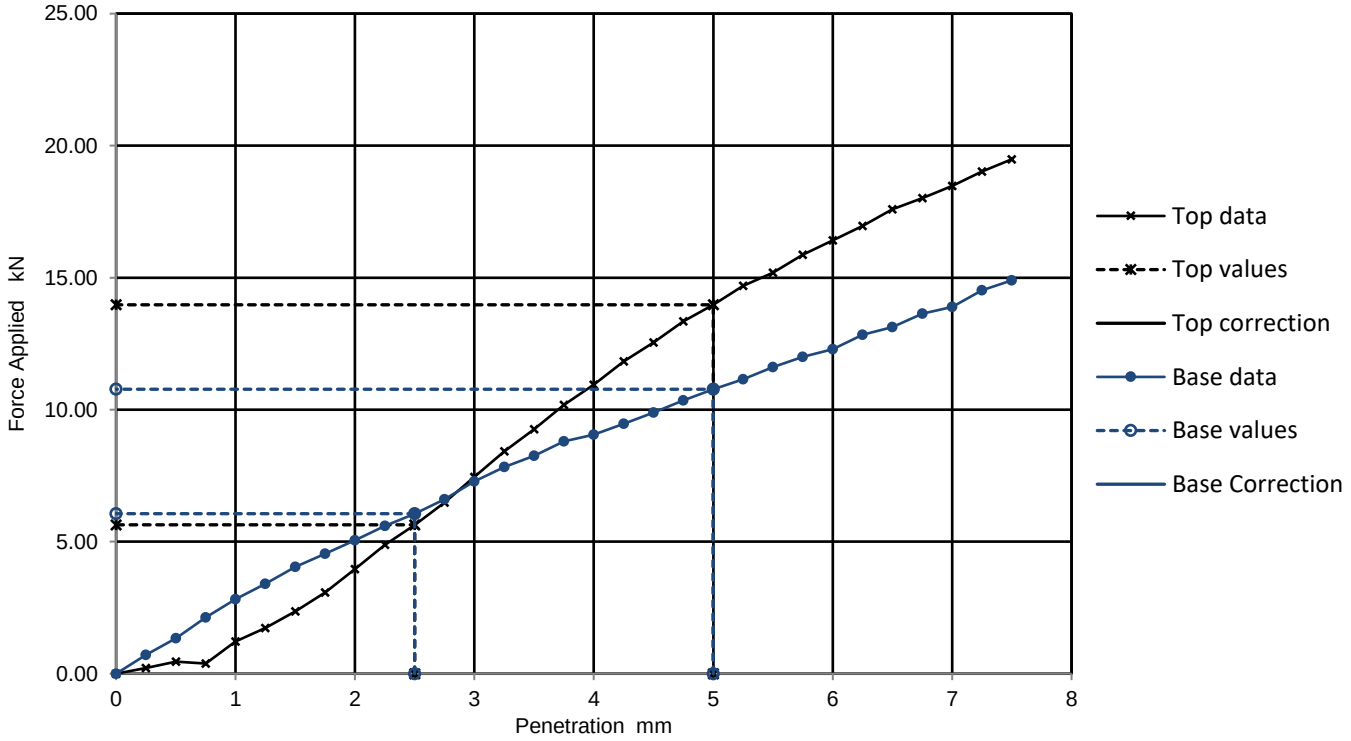
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH102
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426195
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	2	kg
	Dry density	1.88	Mg/m3		1	kPa
	Moisture content	9.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		43.0	70.0	70.0		
BASE		46.0	54.0	54.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	5

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

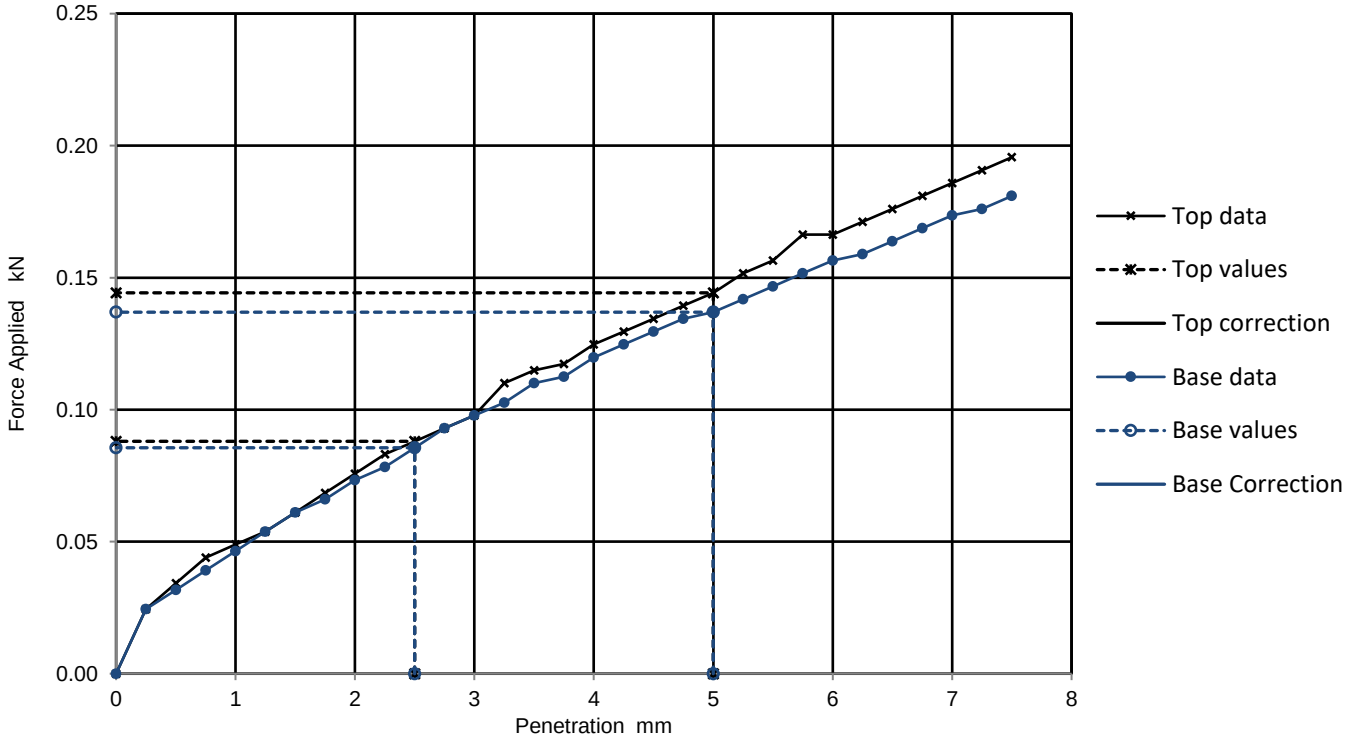
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305057
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	2	kg
	Dry density	1.83	Mg/m3		1	kPa
	Moisture content	16.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.7	0.7	0.7	0.7	
BASE		0.7	0.7	0.7		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	6

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

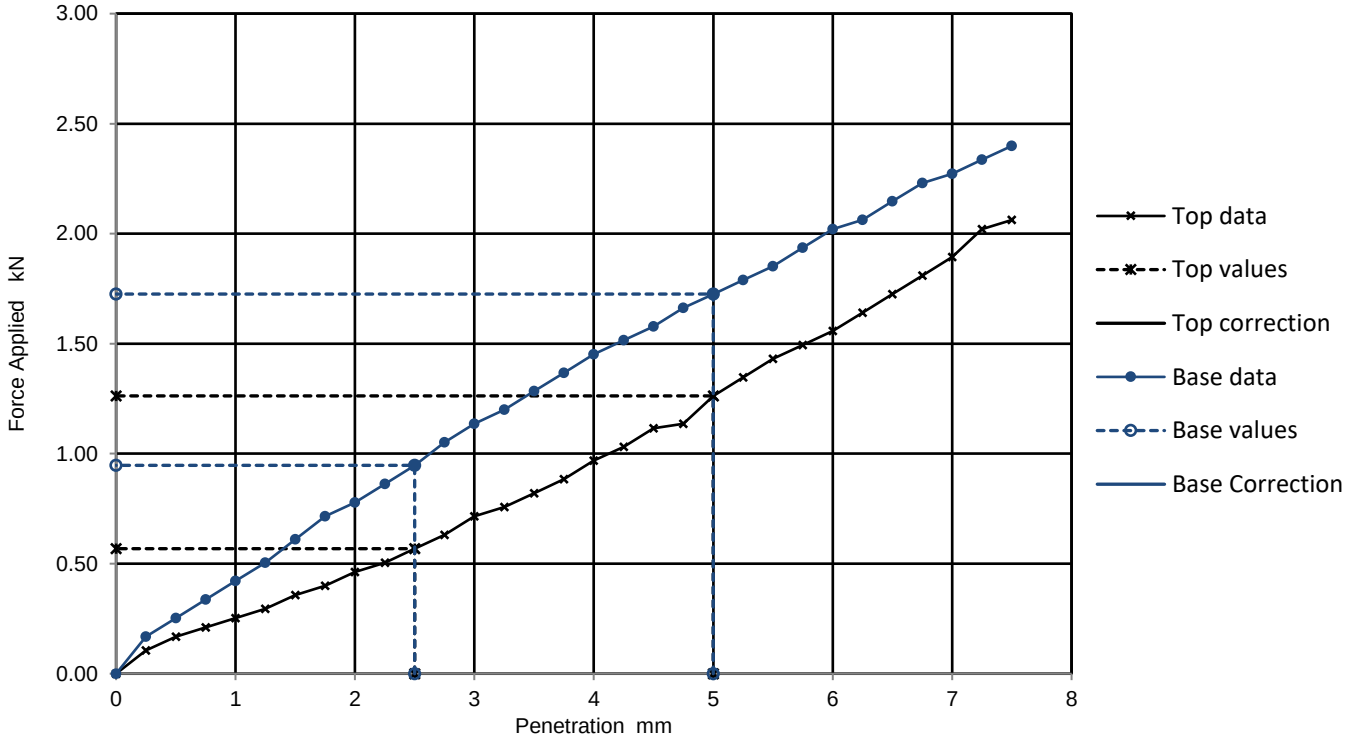
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305057
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	2	kg
	Dry density	1.87	Mg/m3		1	kPa
	Moisture content	15.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.3	6.3	6.3		
BASE		7.2	8.6	8.6		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	7

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

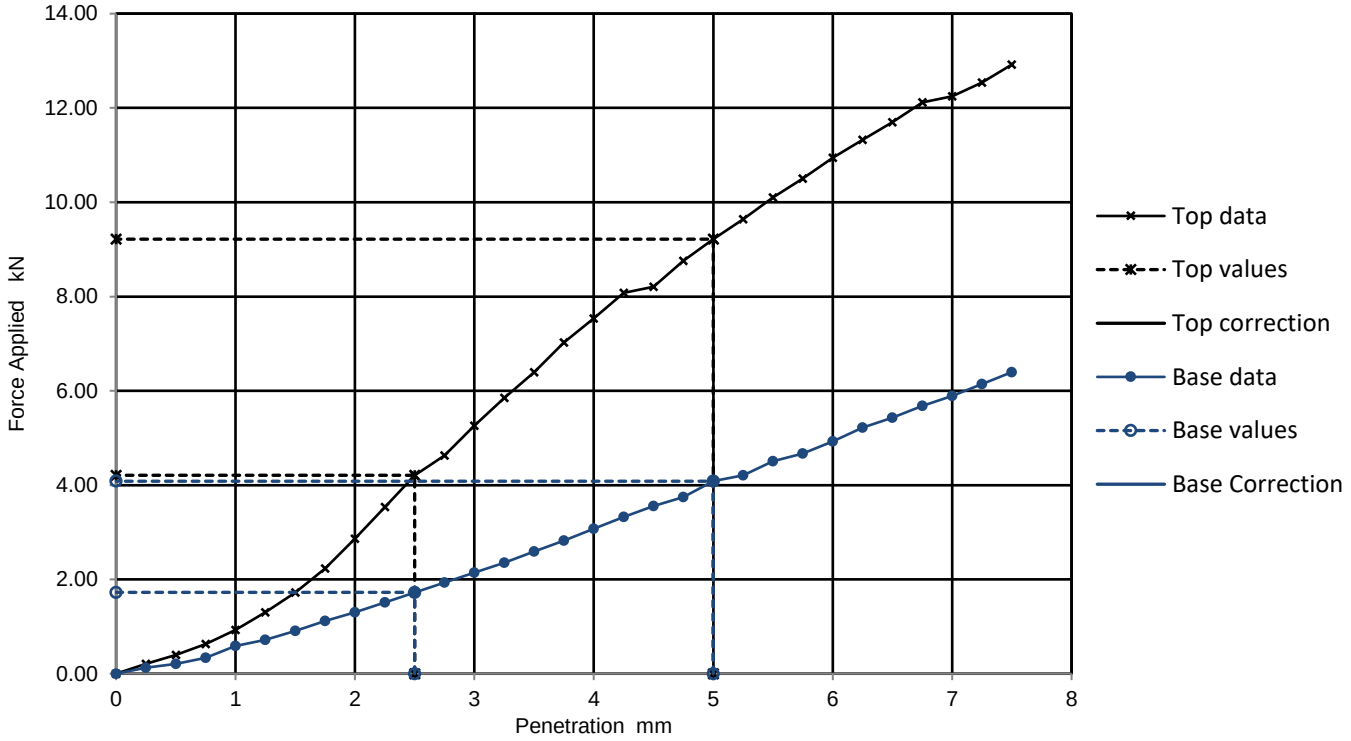
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305057
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.07	Mg/m3	Surcharge applied	2	kg
	Dry density	1.84	Mg/m3		1	kPa
	Moisture content	12.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		32.0	46.0	46.0		
BASE		13.0	20.0	20.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	8

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

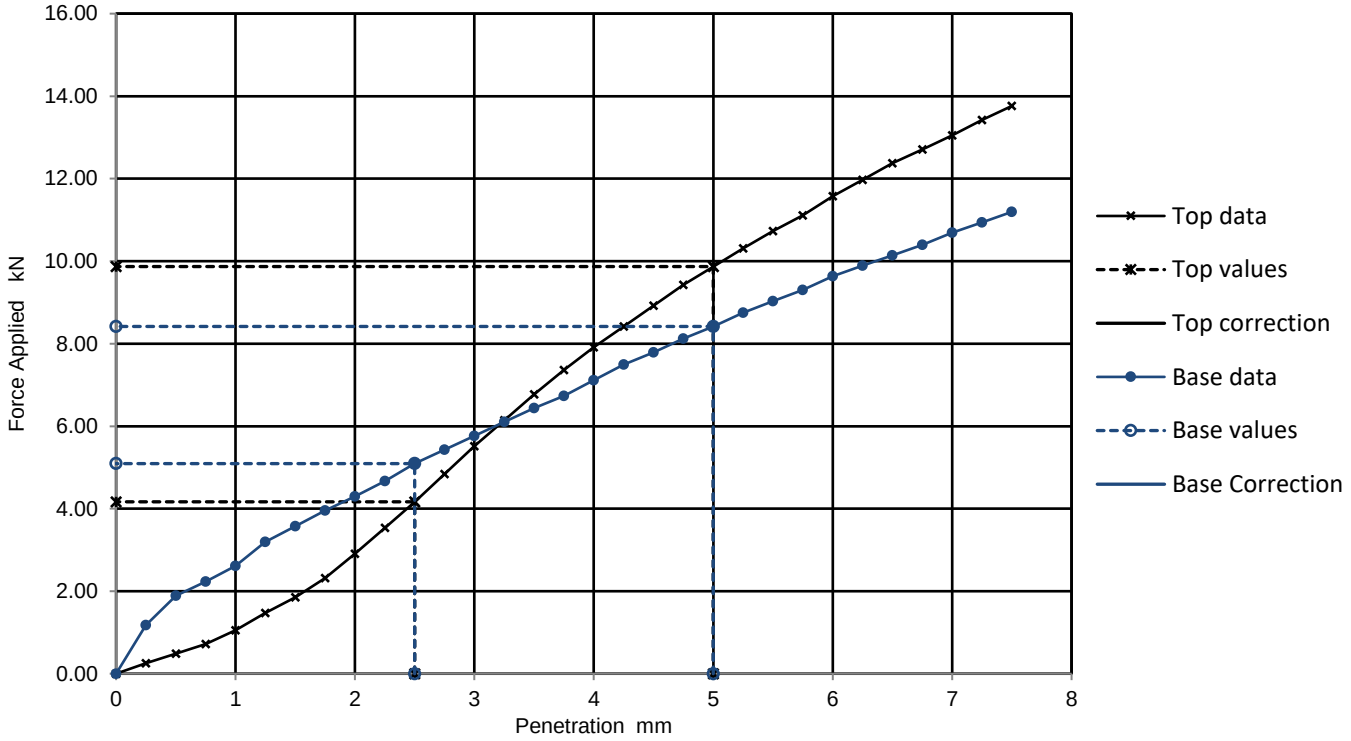
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305057
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition				Soaking details	Not soaked	
Details				Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed			%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.05	Mg/m3	Surcharge applied	2	kg
	Dry density	1.84	Mg/m3		1	kPa
	Moisture content	11.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		32.0	49.0	49.0	46.0	
BASE		39.0	42.0	42.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	9

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

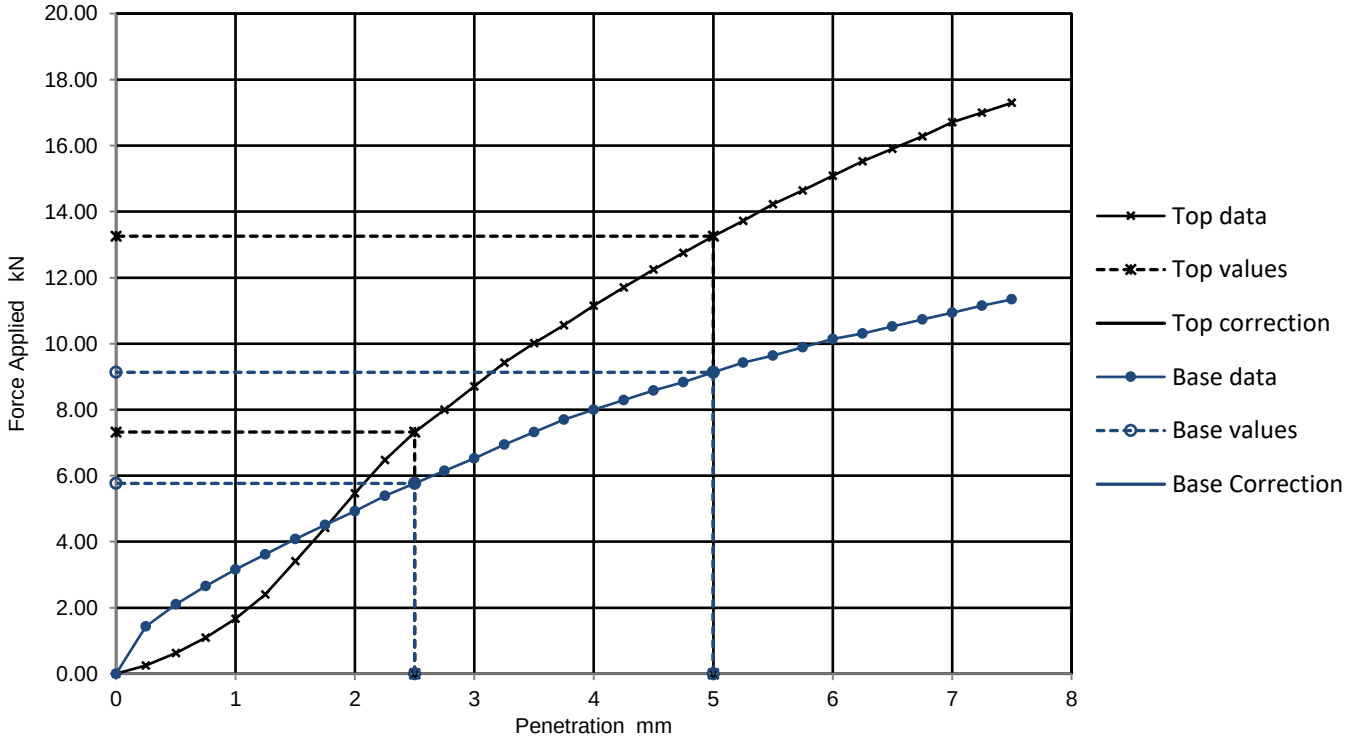
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH107
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305057
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.83	Mg/m3		1	kPa
	Moisture content	10.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		55.0	66.0	66.0		
BASE		44.0	46.0	46.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	10

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

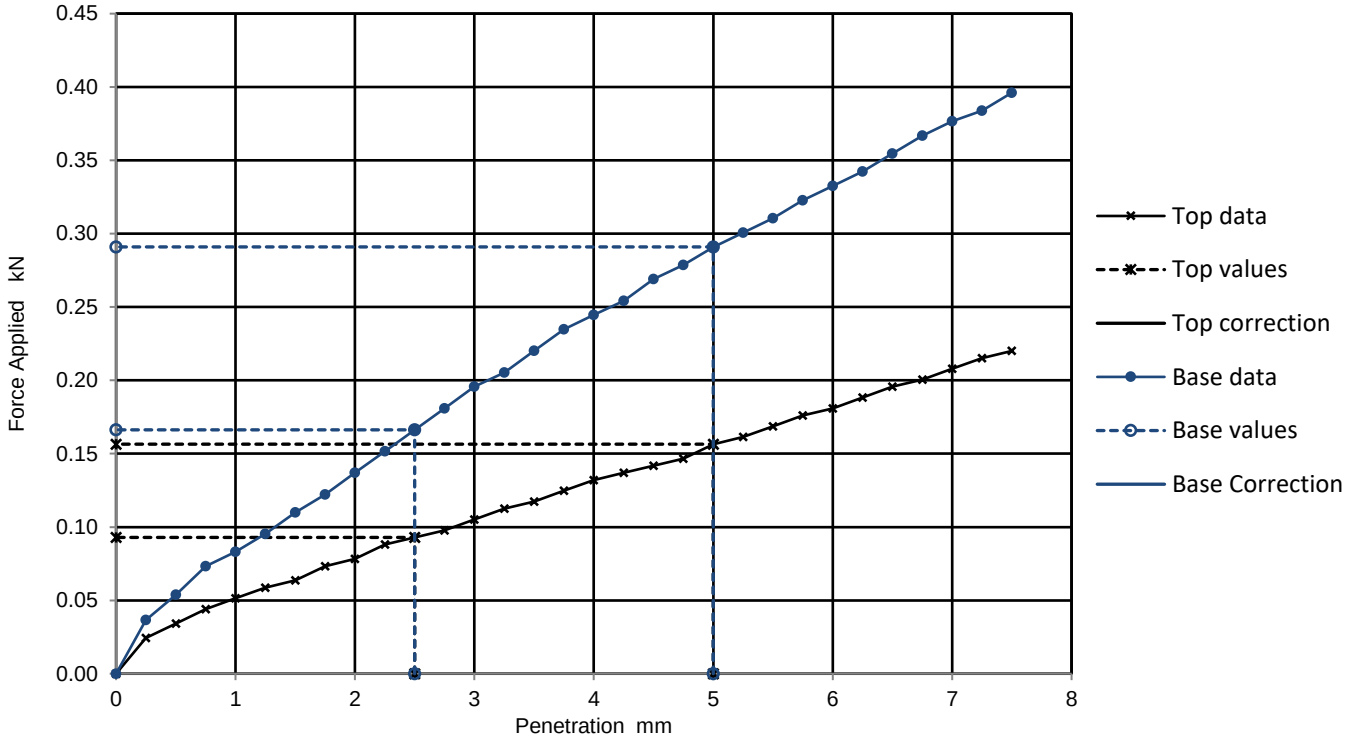
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Light greyish-brown slightly sandy gravelly SILT. Gravel is coarse.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050539
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.28	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	11.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.7	0.8	0.8		
BASE		1.3	1.5	1.5		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	11

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

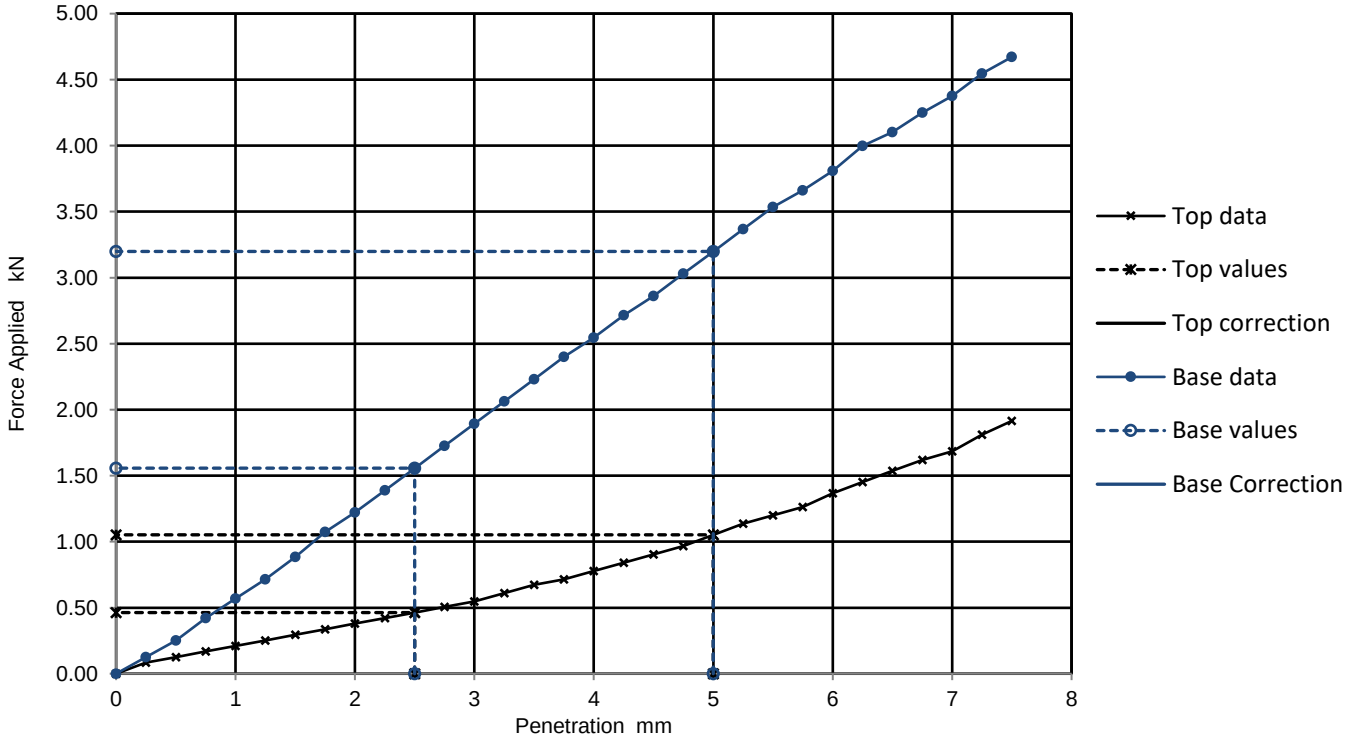
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050539
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.26	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	10.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.5	5.3	5.3		
BASE		12.0	16.0	16.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	12

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

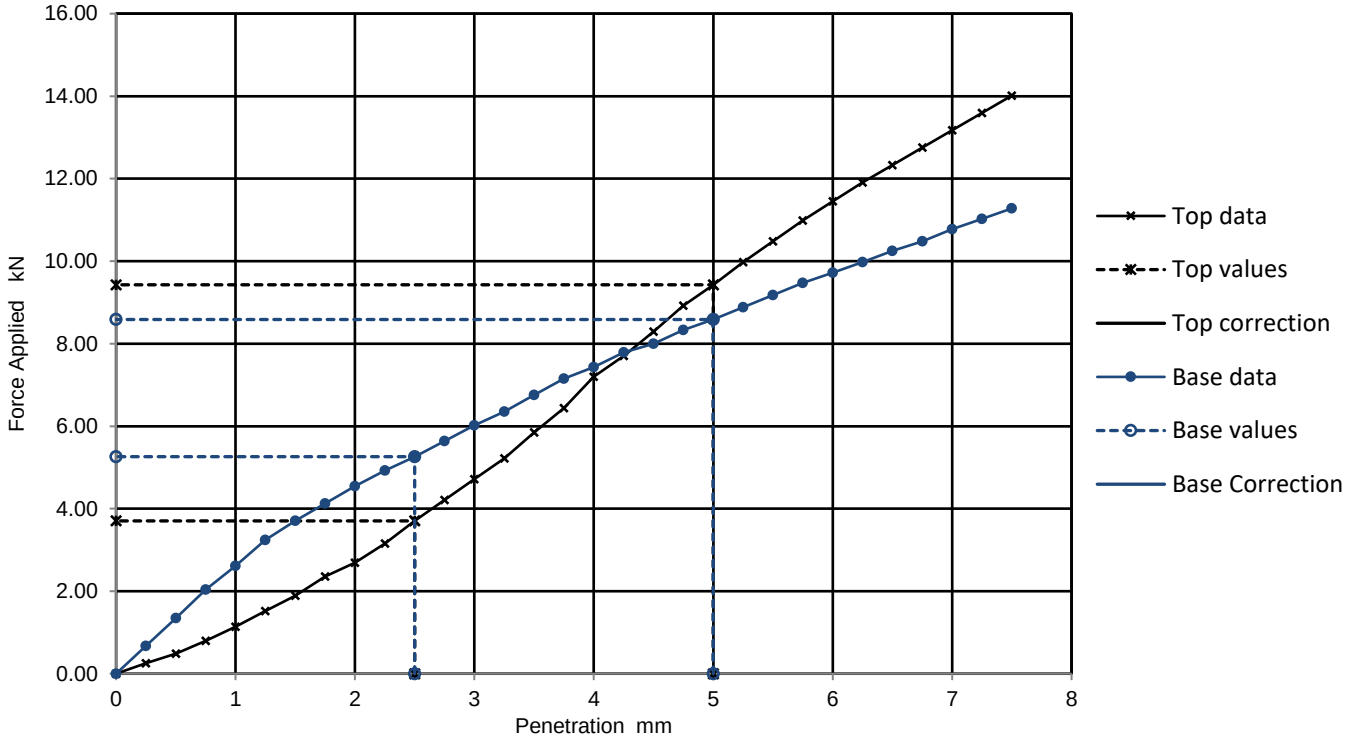
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050539
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.15	Mg/m3	Surcharge applied	kg
	Dry density	1.99	Mg/m3		kPa
	Moisture content	7.9	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		28.0	47.0	47.0	45.0	
BASE		40.0	43.0	43.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	13

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

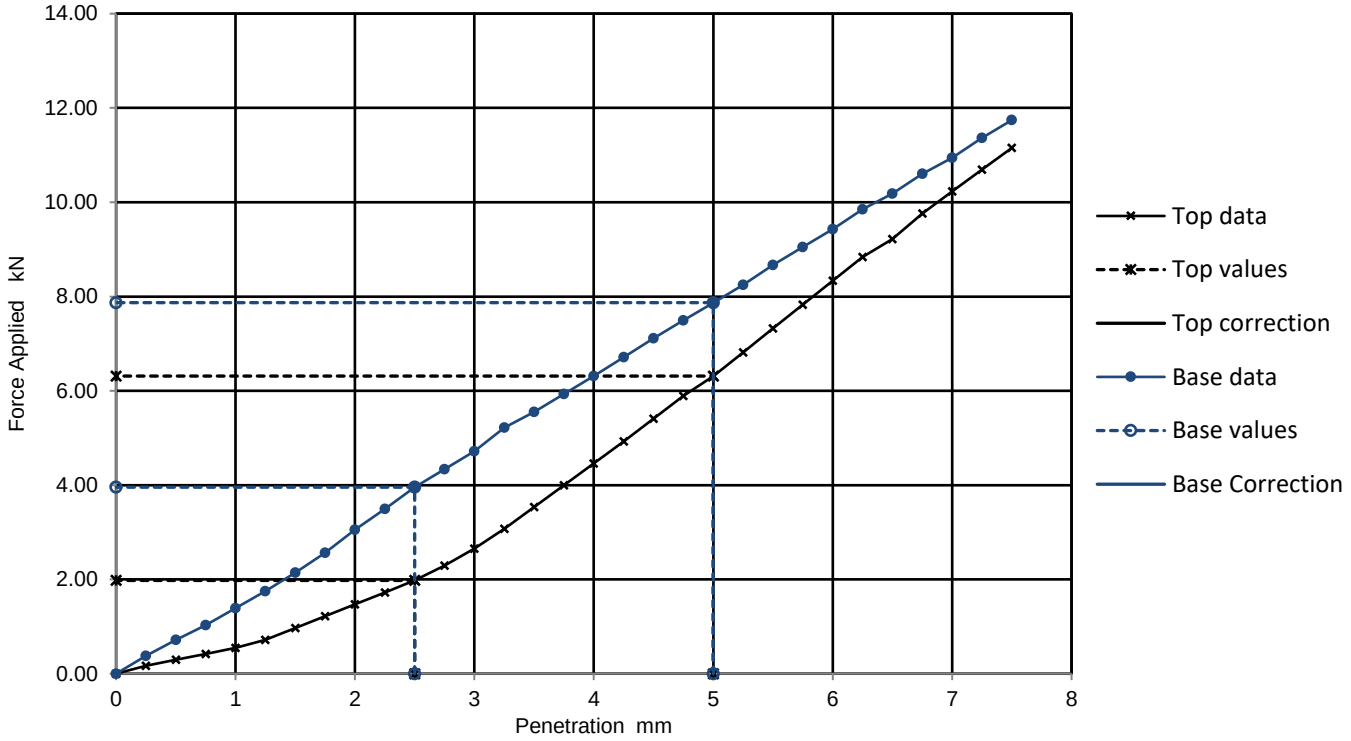
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050539
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.27	Mg/m3	Surcharge applied	2	kg
	Dry density	2.08	Mg/m3		1	kPa
	Moisture content	9.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		15.0	32.0	32.0		
BASE		30.0	39.0	39.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	14

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

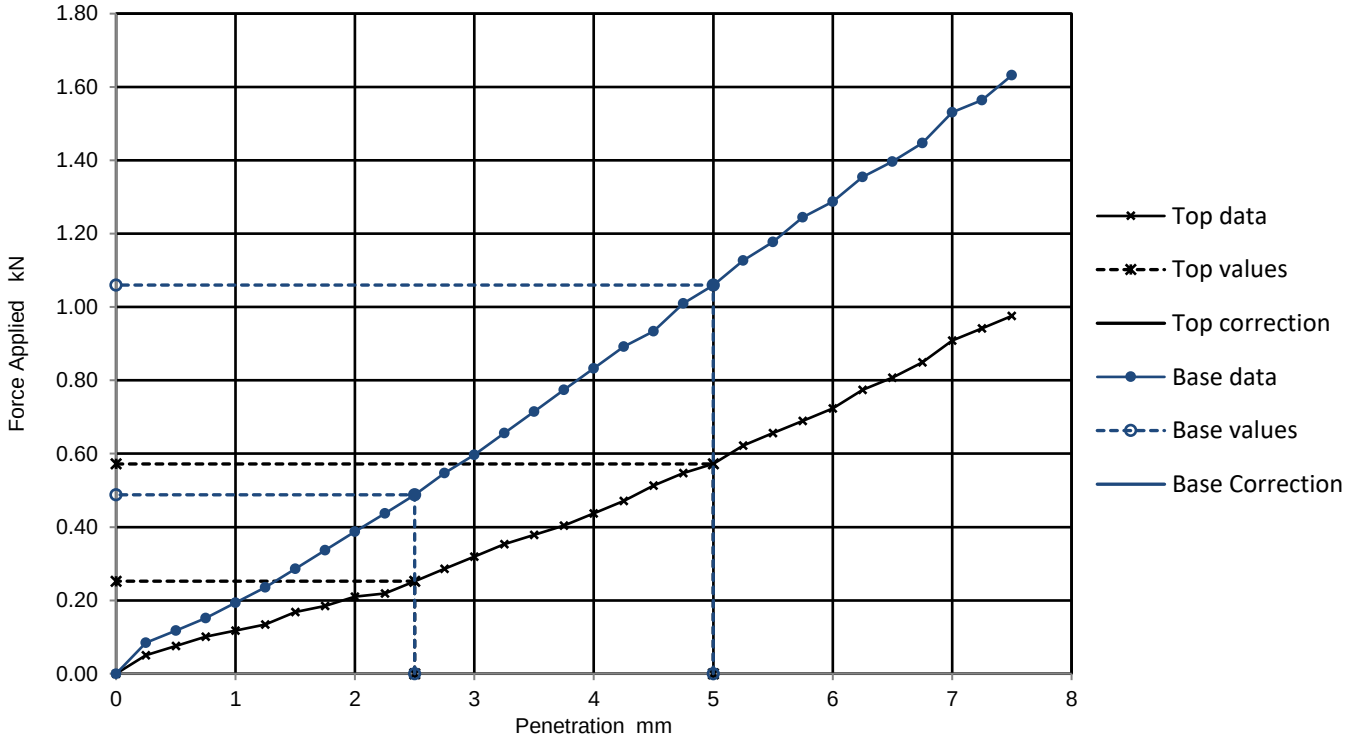
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH110
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050539
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.29	Mg/m3	Surcharge applied	2	kg
	Dry density	2.06	Mg/m3		1	kPa
	Moisture content	11.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.9	2.9	2.9		
BASE		3.7	5.3	5.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	15

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

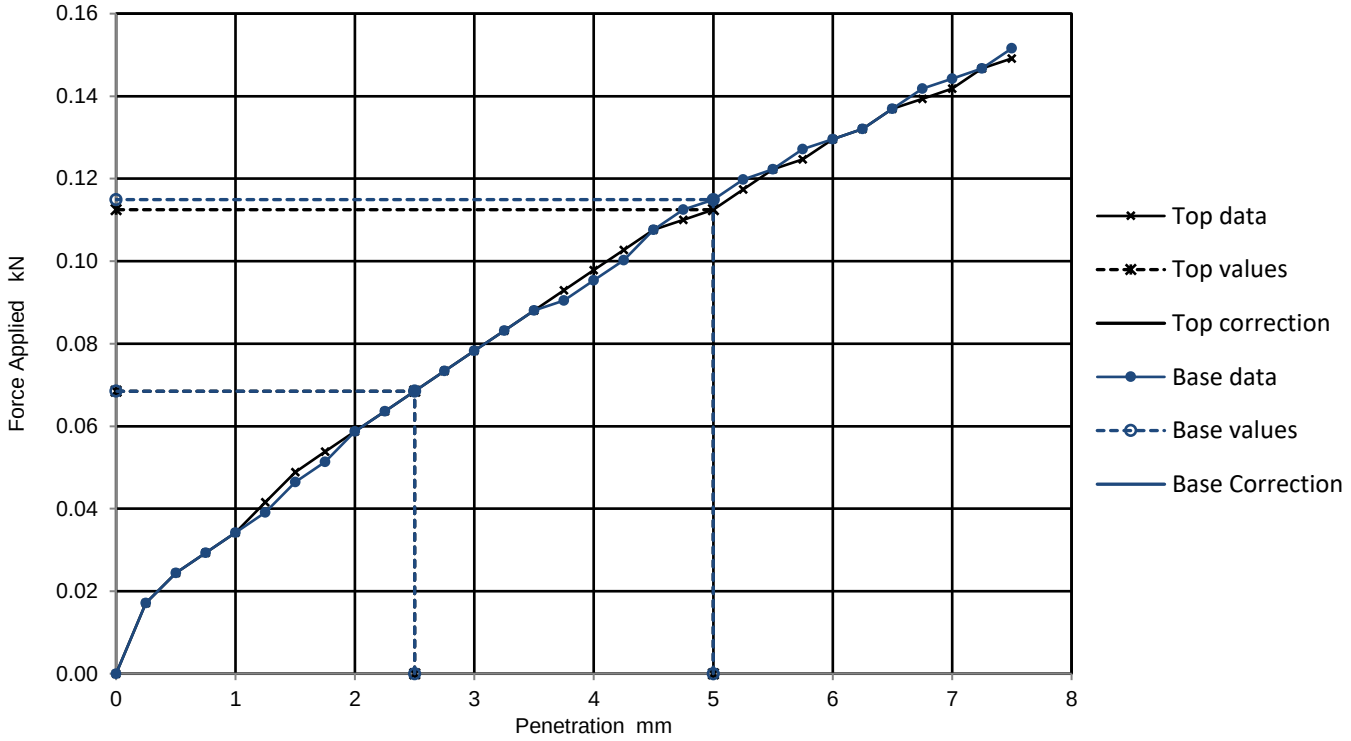
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description	Greyish-brown slightly gravelly sandy SILT.			Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050570
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	13.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.5	0.6	0.6	0.6	
BASE		0.5	0.6	0.6		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	16

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

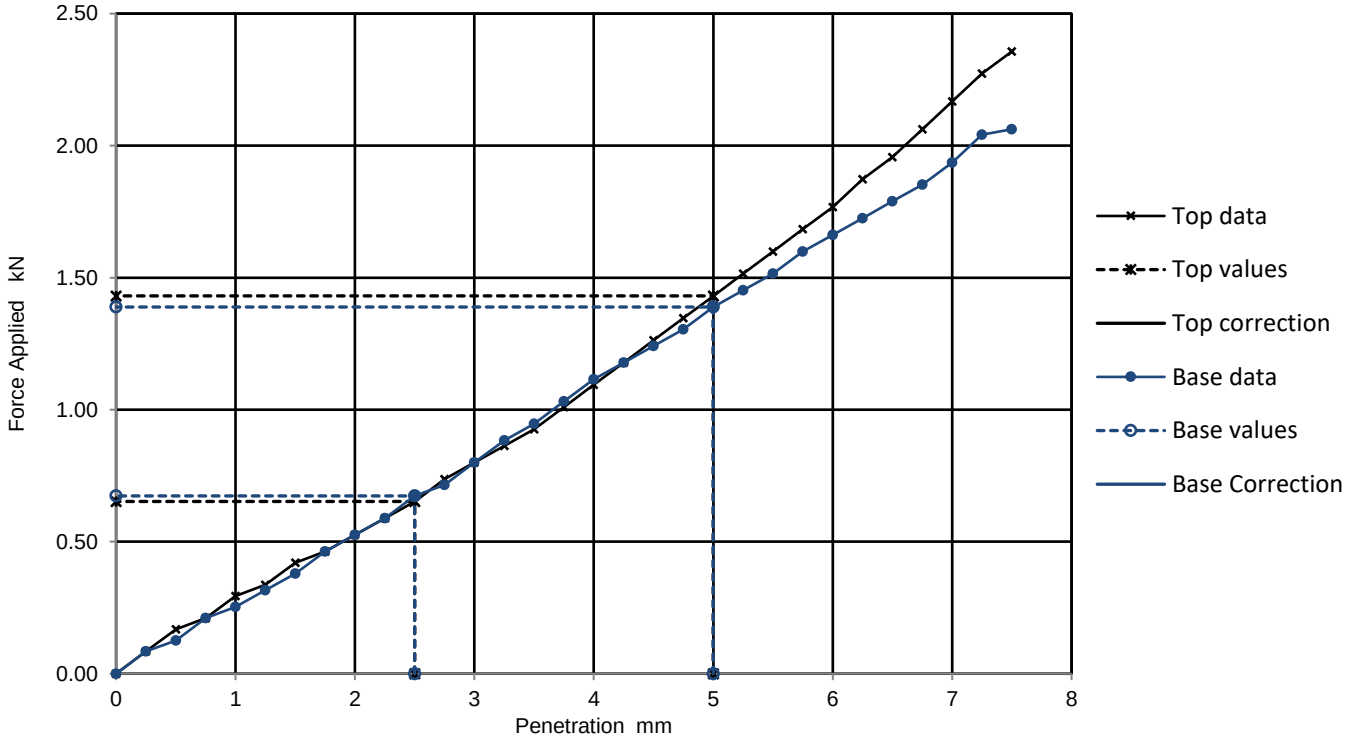
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050570
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.25	Mg/m3	Surcharge applied	kg
	Dry density	2.04	Mg/m3		kPa
	Moisture content	10.3	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.9	7.2	7.2	7.0	
BASE		5.1	6.9	6.9		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	17

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

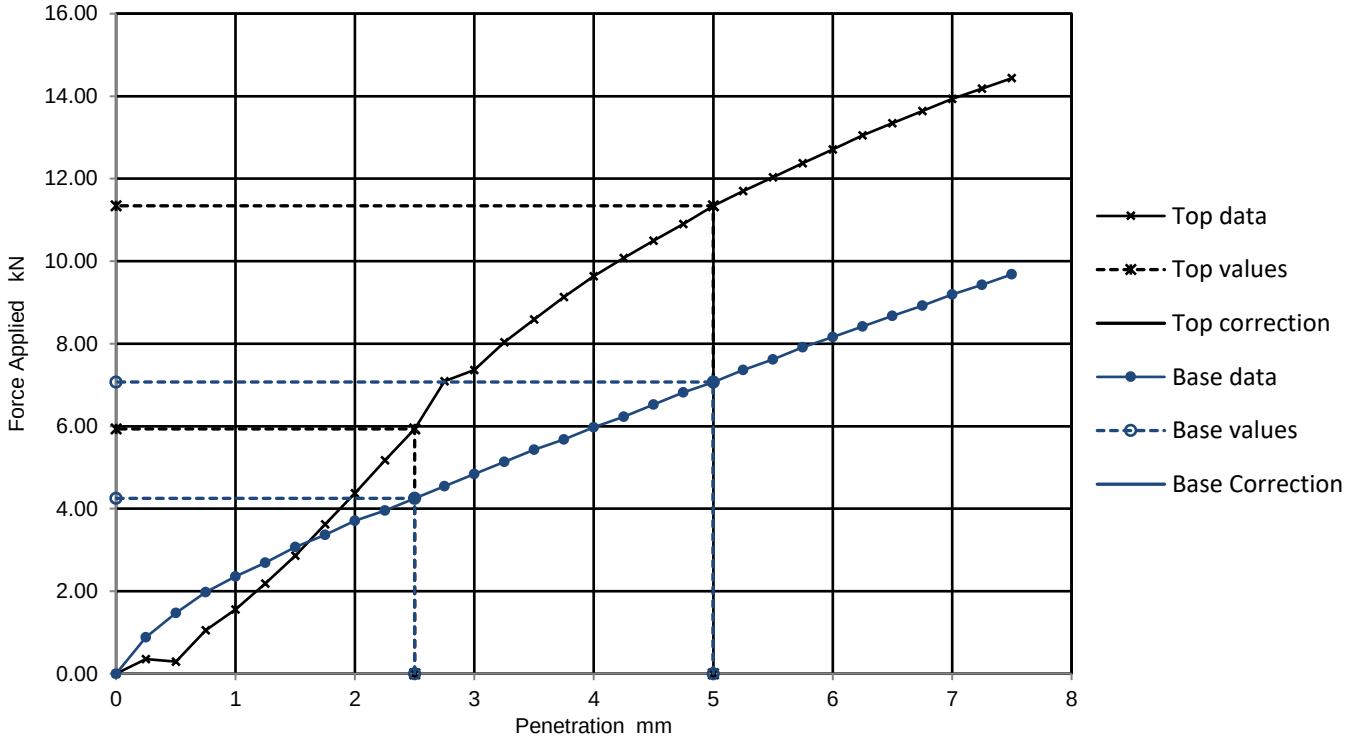
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050570
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	8.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		45.0	57.0	57.0		
BASE		32.0	35.0	35.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	18

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

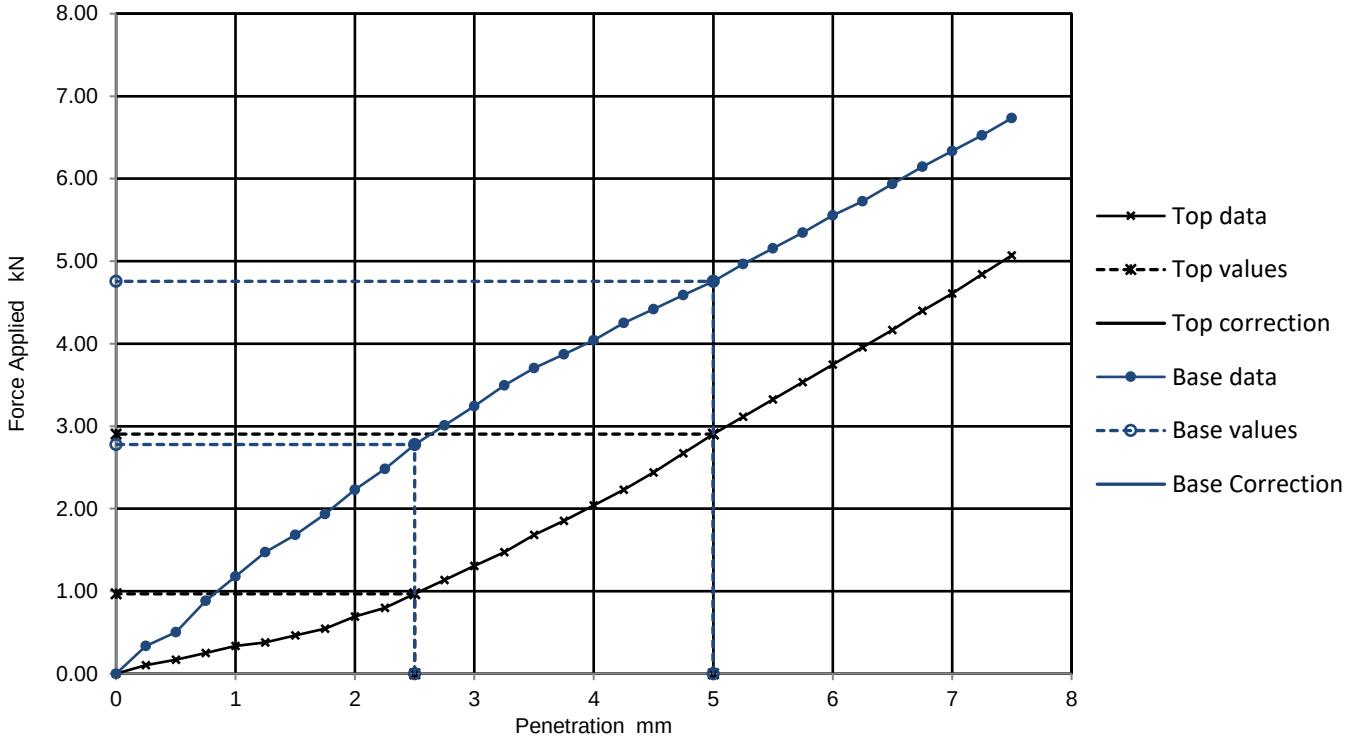
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050570
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.22	Mg/m3	Surcharge applied	2	kg
	Dry density	2.02	Mg/m3		1	kPa
	Moisture content	9.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		7.3	15.0	15.0		
BASE		21.0	24.0	24.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	19

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

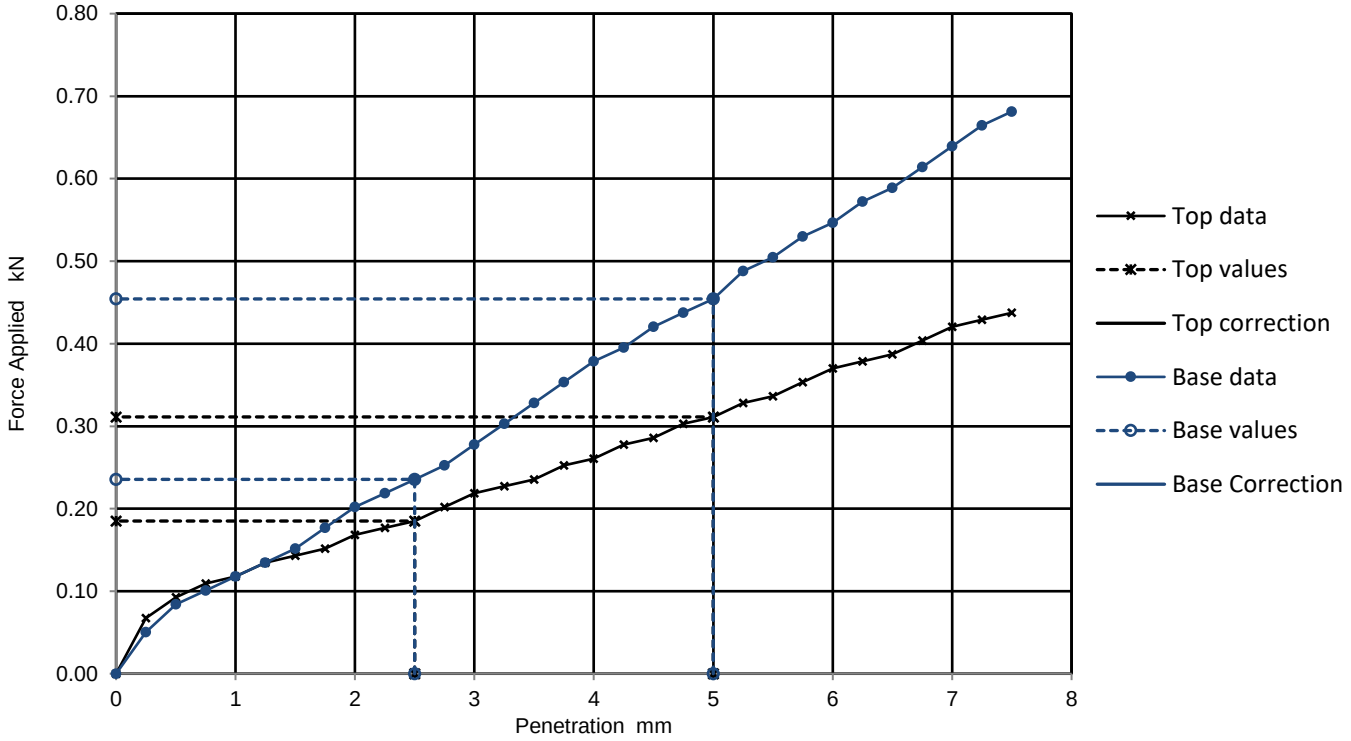
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH111
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023050570
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.25	Mg/m3	Surcharge applied	2	kg
	Dry density	2.02	Mg/m3		1	kPa
	Moisture content	11.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.4	1.6	1.6		
BASE		1.8	2.3	2.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	20

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

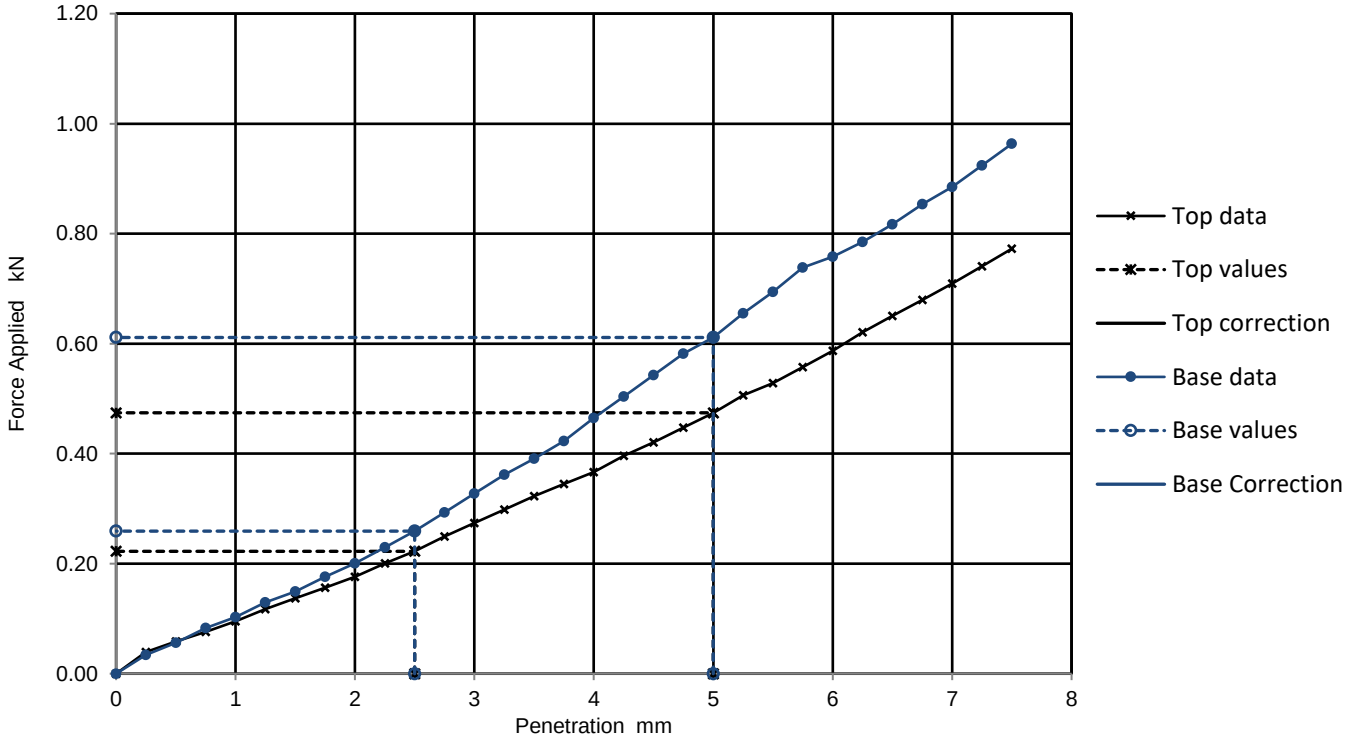
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH112
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description	Brown slightly sandy slightly gravelly SILT.			Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426177
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.17	Mg/m3	Surcharge applied	2	kg
	Dry density	1.90	Mg/m3		1	kPa
	Moisture content	14.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.7	2.4	2.4		
BASE		2.0	3.1	3.1		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	21

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

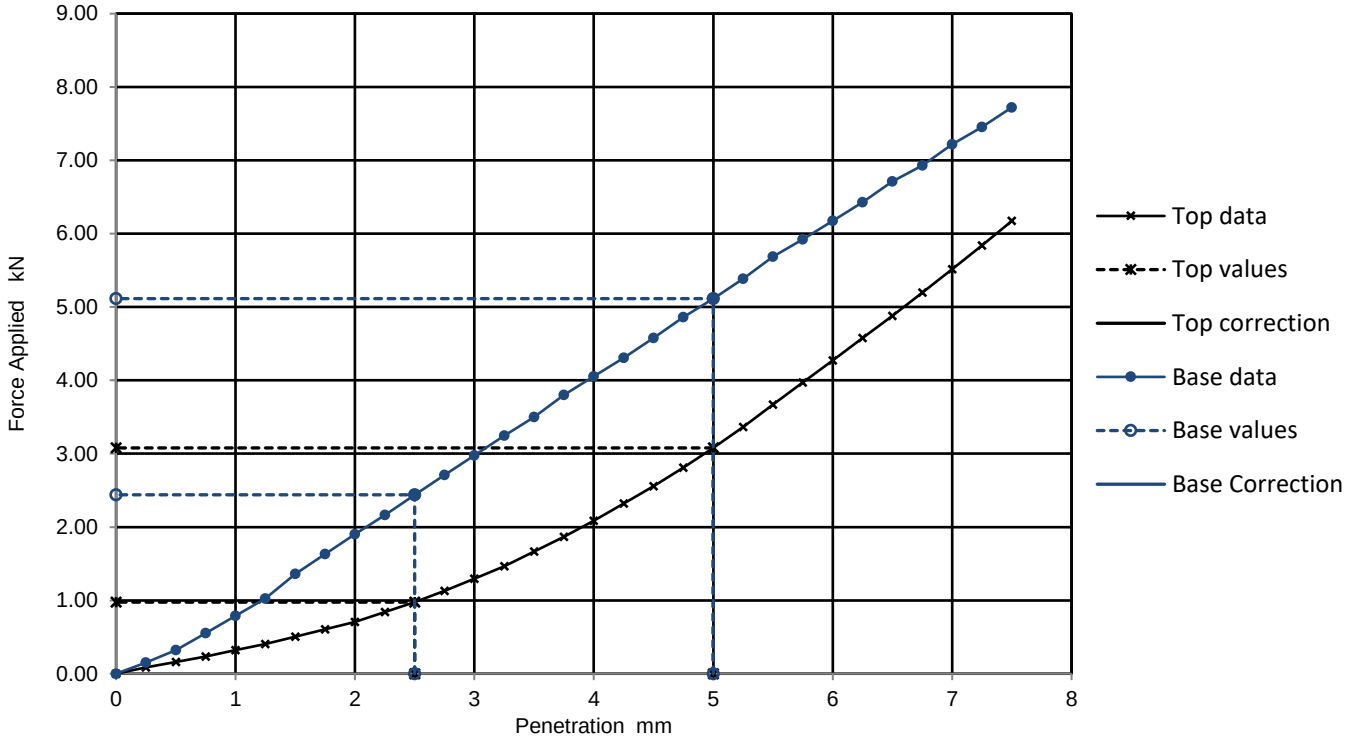
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH112
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426177
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	2	kg
	Dry density	1.88	Mg/m3		1	kPa
	Moisture content	13.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		7.4	15.0	15.0		
BASE		18.0	26.0	26.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	22

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

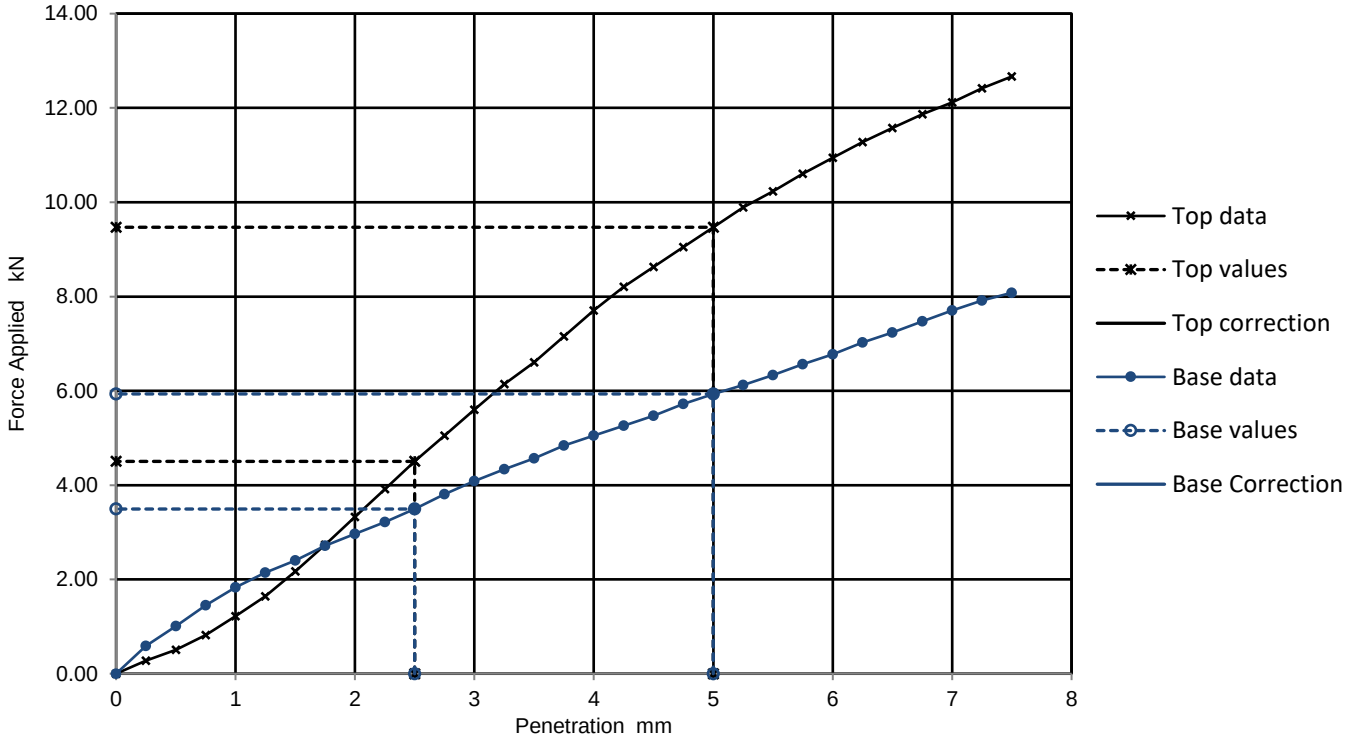
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH112
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426177
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.97	Mg/m3	Surcharge applied	2	kg
	Dry density	1.76	Mg/m3		1	kPa
	Moisture content	12.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		34.0	47.0	47.0		
BASE		26.0	30.0	30.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	23

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

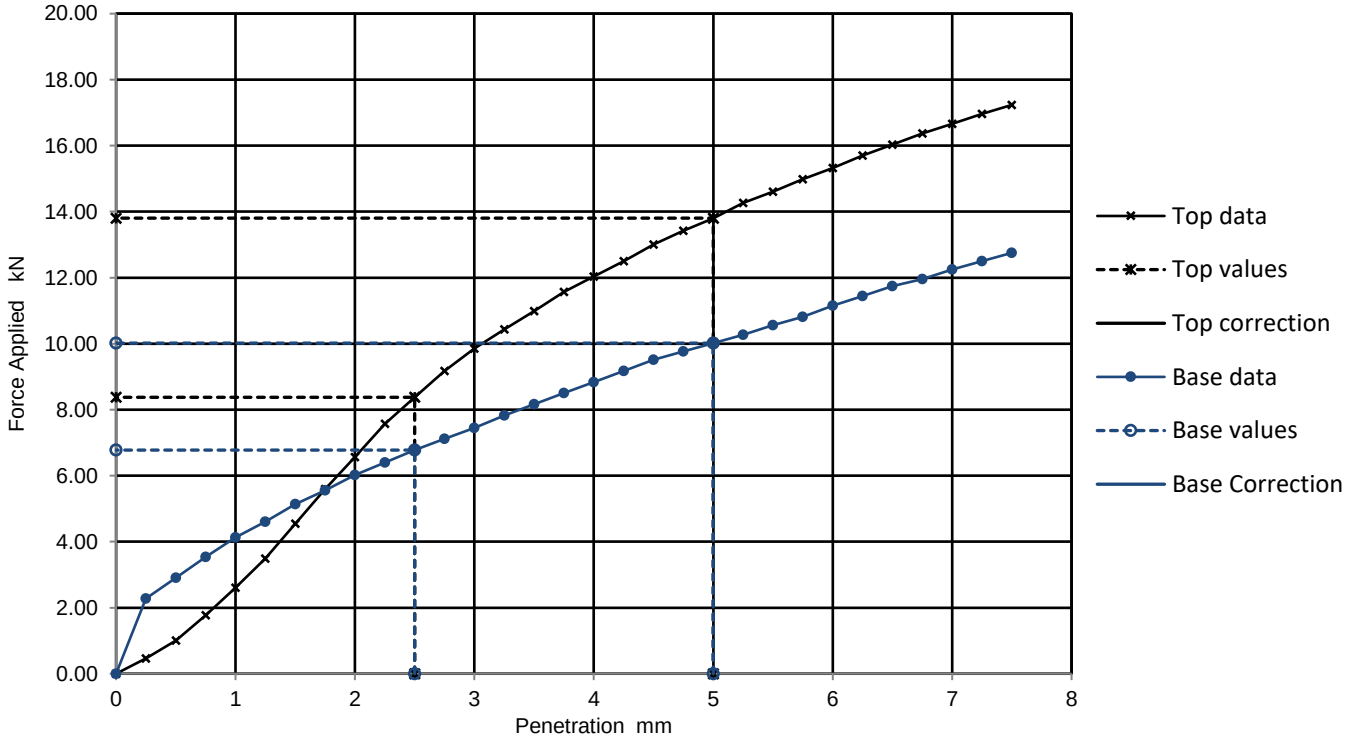
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH112
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426177
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	2	kg
	Dry density	1.81	Mg/m3		1	kPa
	Moisture content	10.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		63.0	69.0	69.0		
BASE		51.0	50.0	51.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	24

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

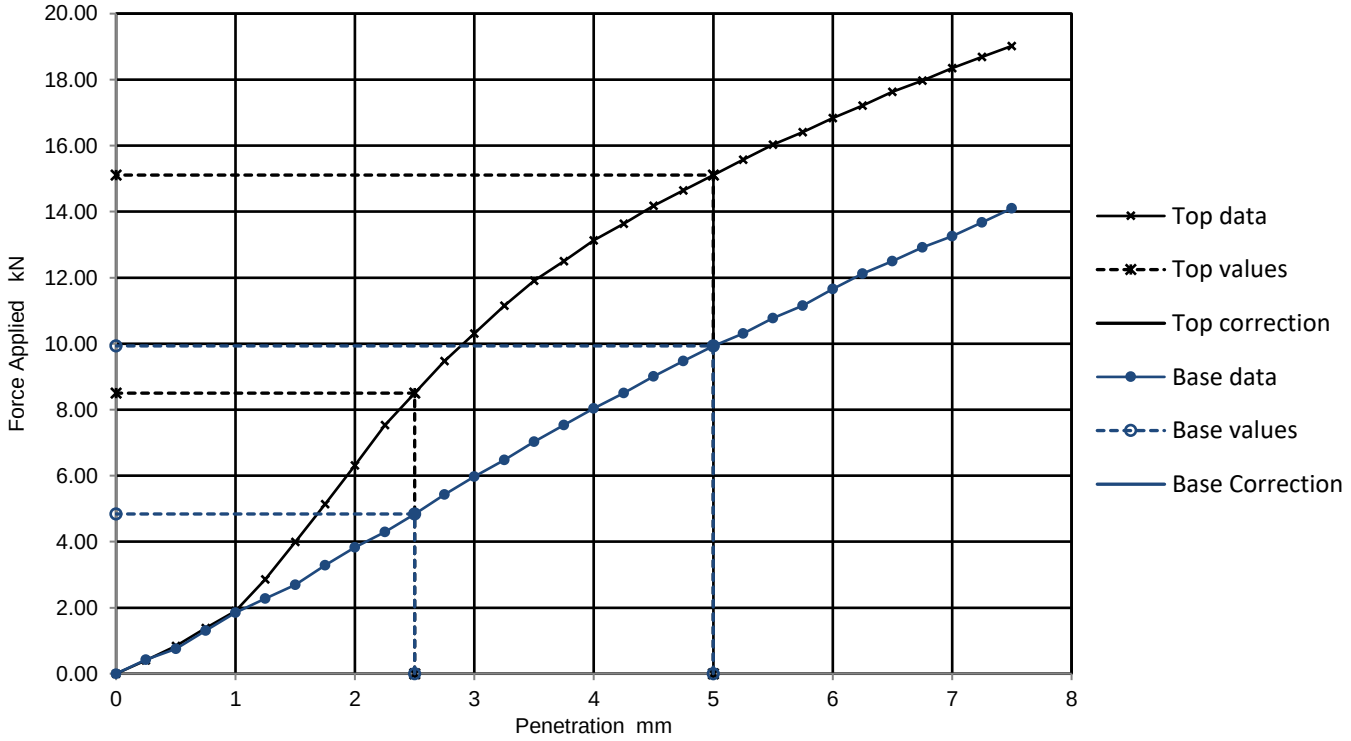
IRISH DRILLING LIMITED	**California Bearing Ratio (CBR)**			Job Ref	2023OY104
				Borehole/Pit No.	BH112
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230426177
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.82	Mg/m3		1	kPa
	Moisture content	11.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		64.0	76.0	76.0		
BASE		37.0	50.0	50.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	25

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

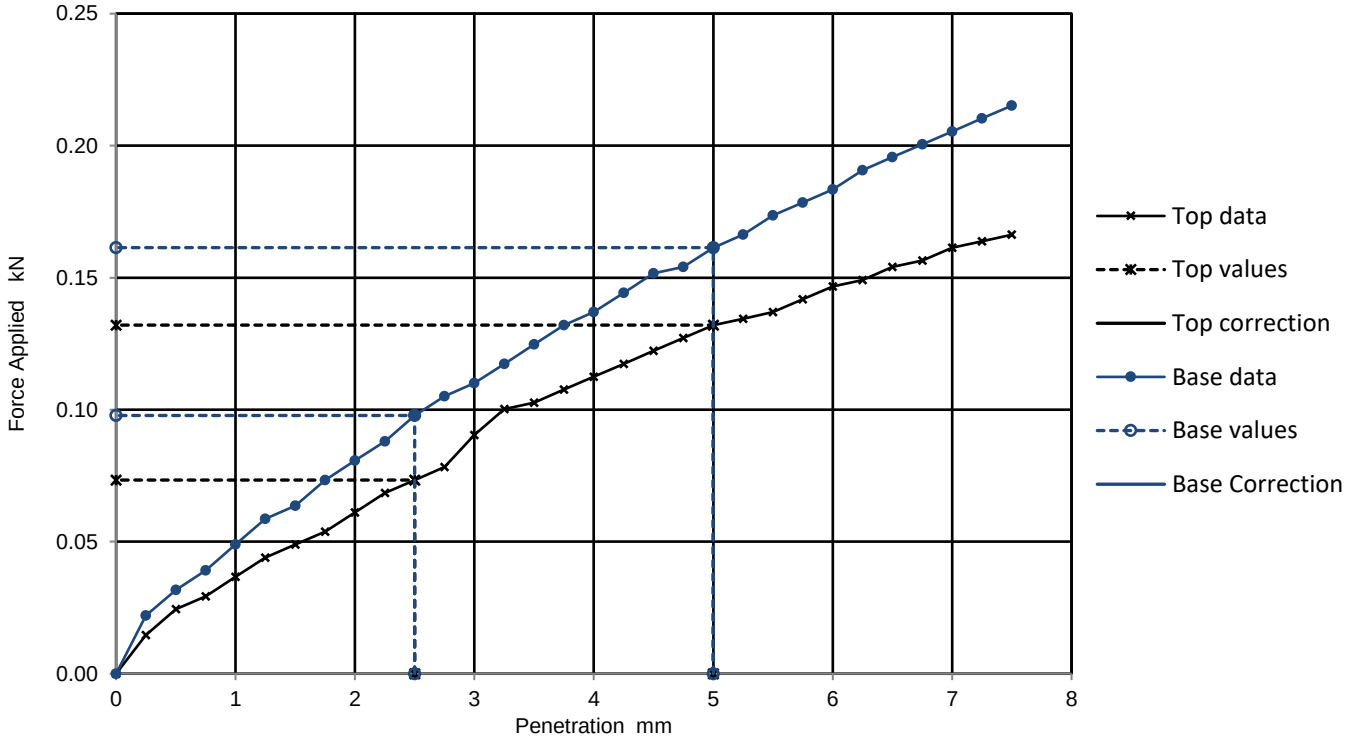
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH117
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description	Brownish-grey slightly gravelly sandy SILT.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023052381
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.20	Mg/m3	Surcharge applied	2	kg
	Dry density	1.93	Mg/m3		1	kPa
	Moisture content	13.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.6	0.7	0.7		
BASE		0.7	0.8	0.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	26

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

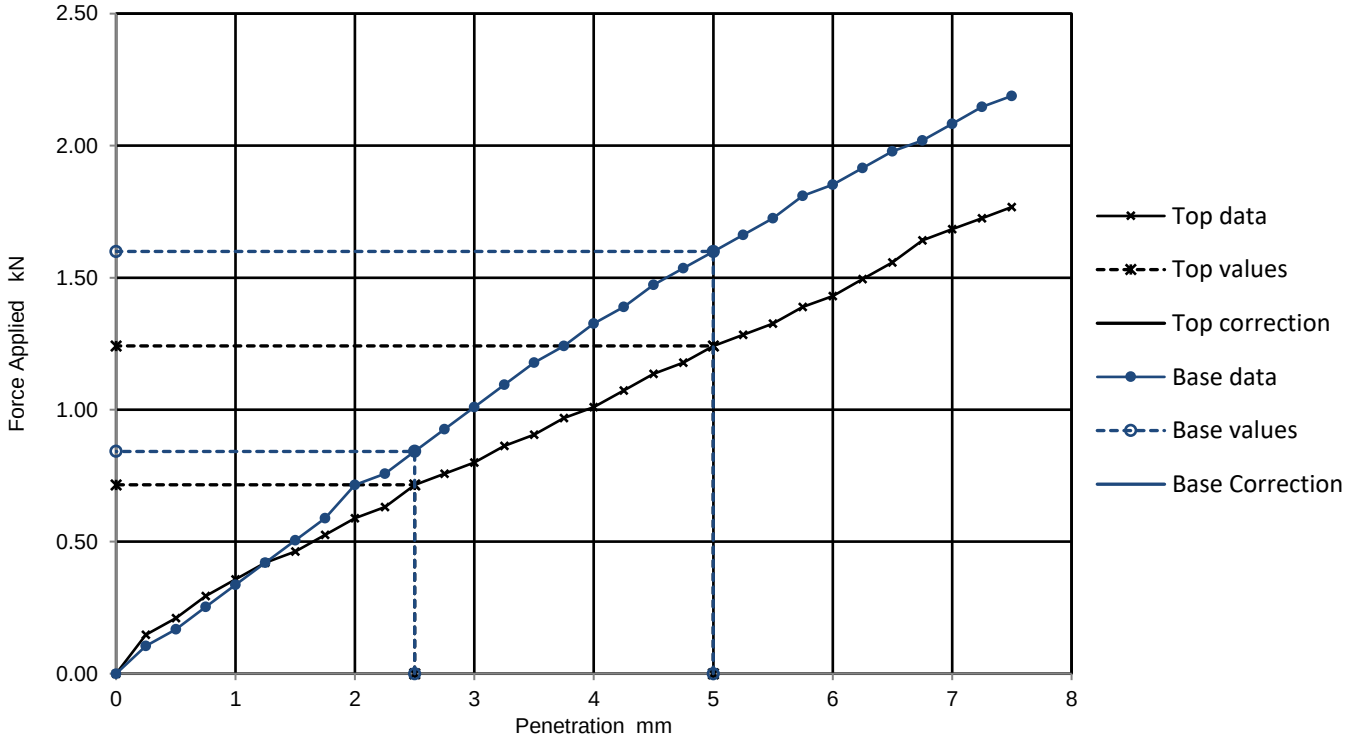
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH117
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023052381
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.22	Mg/m3	Surcharge applied	2	kg
	Dry density	2.00	Mg/m3		1	kPa
	Moisture content	11.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		5.4	6.2	6.2		
BASE		6.4	8.0	8.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	27

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

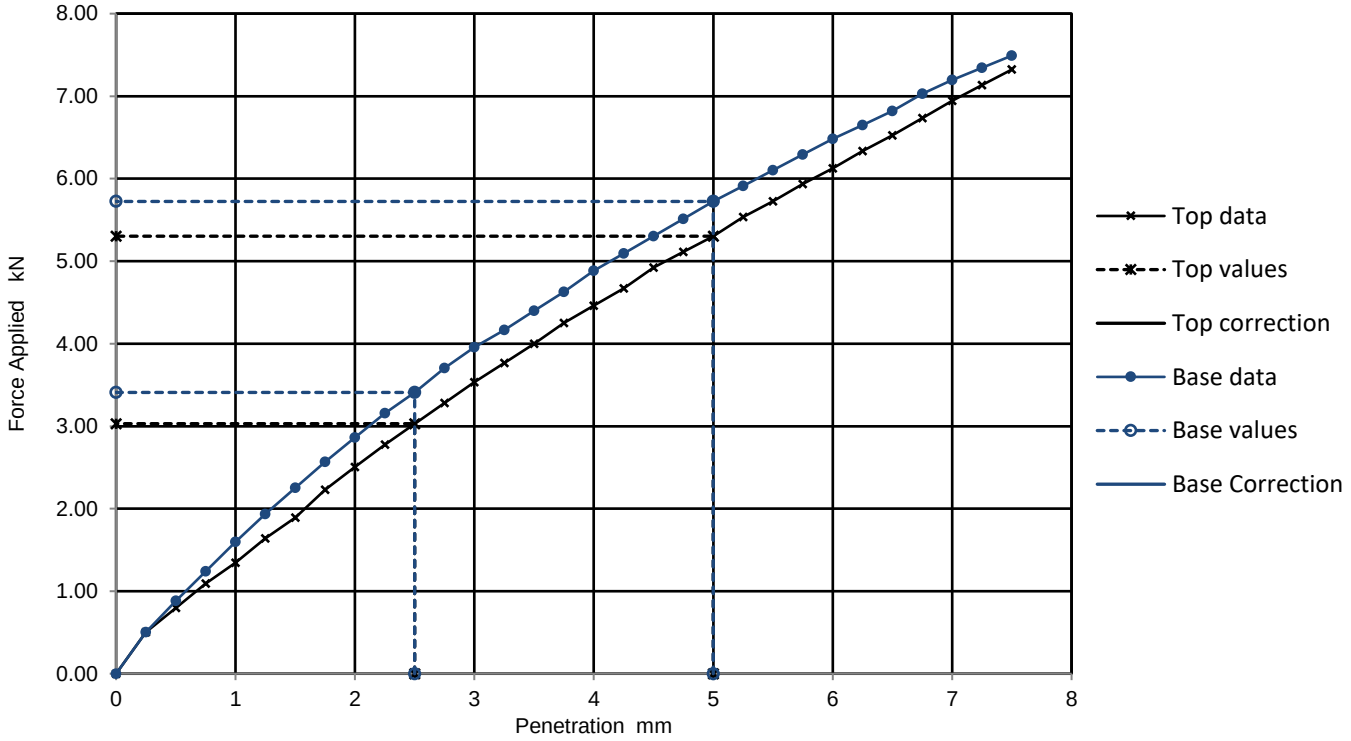
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH117
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023052381
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	kg
	Dry density	1.96	Mg/m3		kPa
	Moisture content	10.3	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		23.0	27.0	27.0	28.0	
BASE		26.0	29.0	29.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	28

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

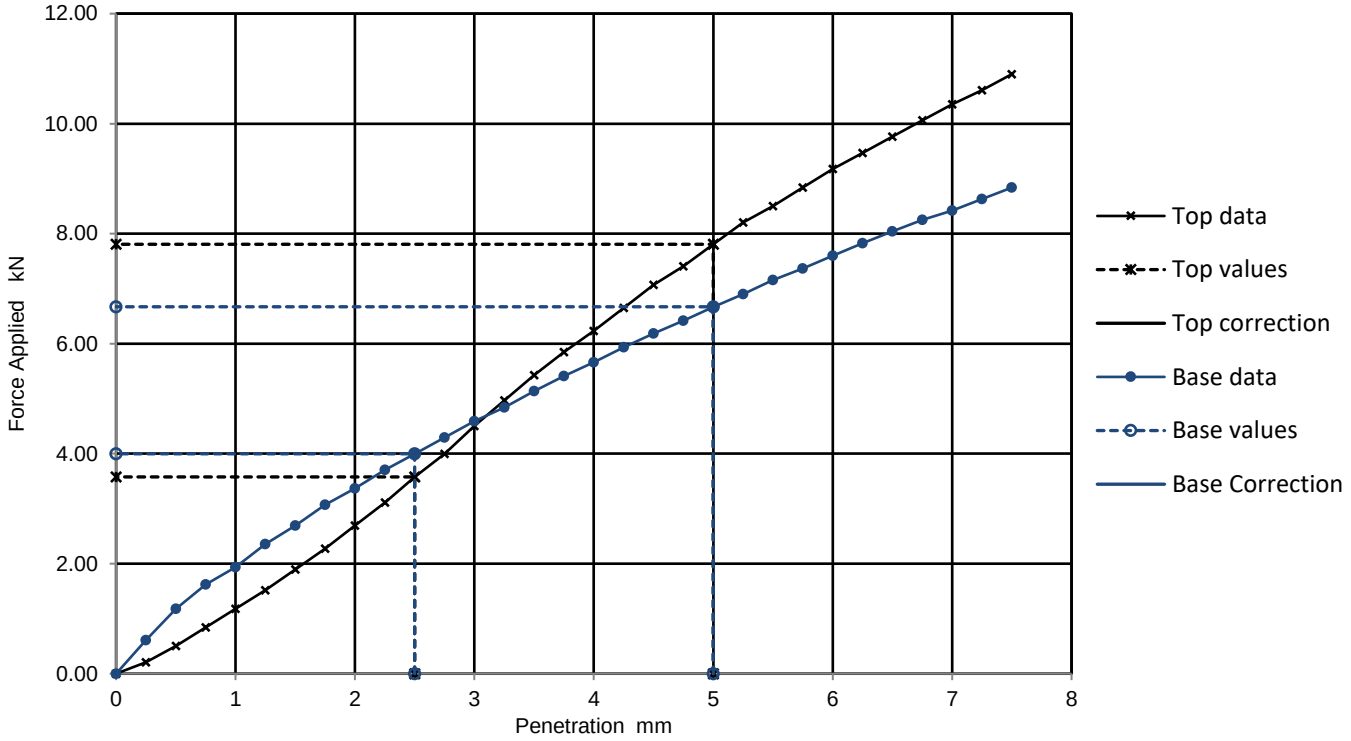
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH117
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023052381
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition				Soaking details	Not soaked	
Details				Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed			%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.11	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	7.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		27.0	39.0	39.0	36.0	
BASE		30.0	33.0	33.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	29

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

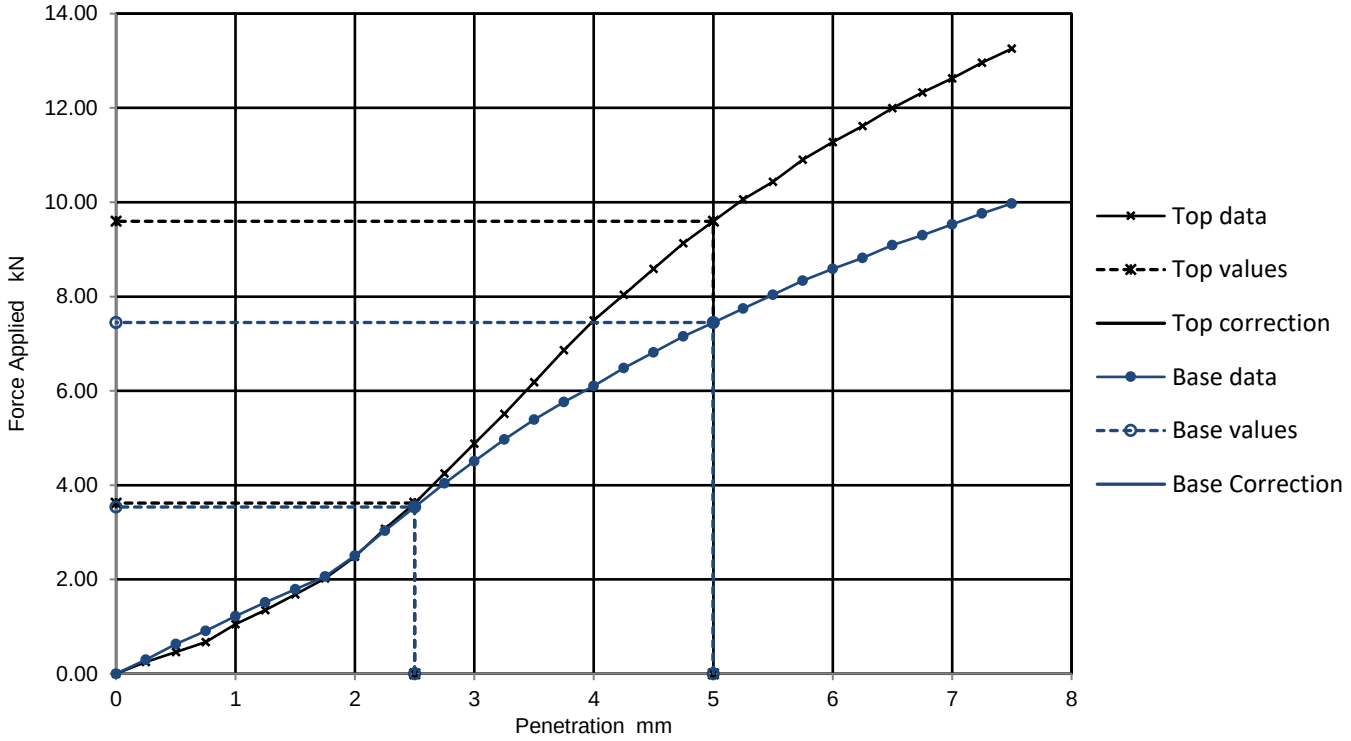
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BH117
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023052381
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.07	Mg/m3	Surcharge applied	2	kg
	Dry density	1.93	Mg/m3		1	kPa
	Moisture content	7.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		27.0	48.0	48.0		
BASE		27.0	37.0	37.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	30

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

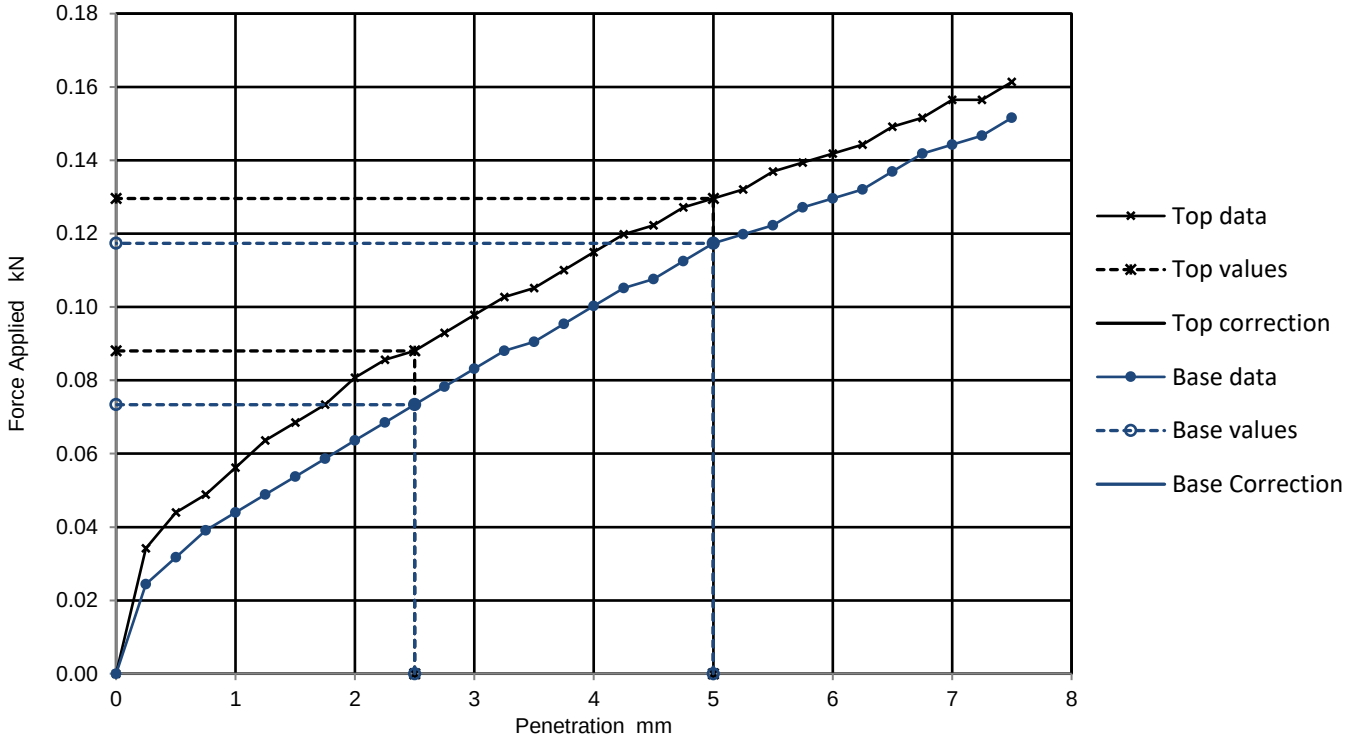
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS01
Site Name	Derrygreenagh Power			Sample No.	11
Soil Description	Grey and black slightly sandy gravelly SILT and PEAT.			Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060710
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	12.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.7	0.7	0.7	0.6	
BASE		0.6	0.6	0.6		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	31

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

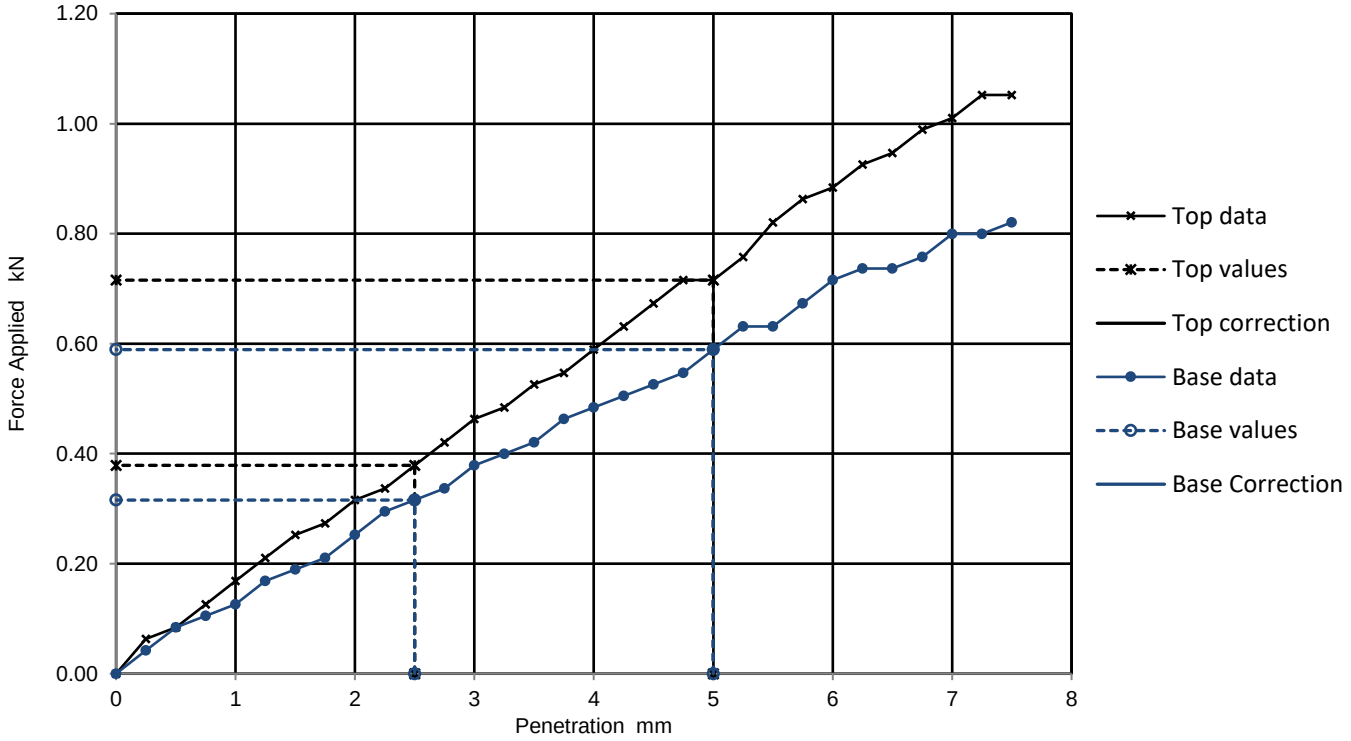
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS01
Site Name	Derrygreenagh Power			Sample No.	11
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060710
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.29	Mg/m3	Surcharge applied	2	kg
	Dry density	2.08	Mg/m3		1	kPa
	Moisture content	10.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.9	3.6	3.6	3.3	
BASE		2.4	2.9	2.9		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	32

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

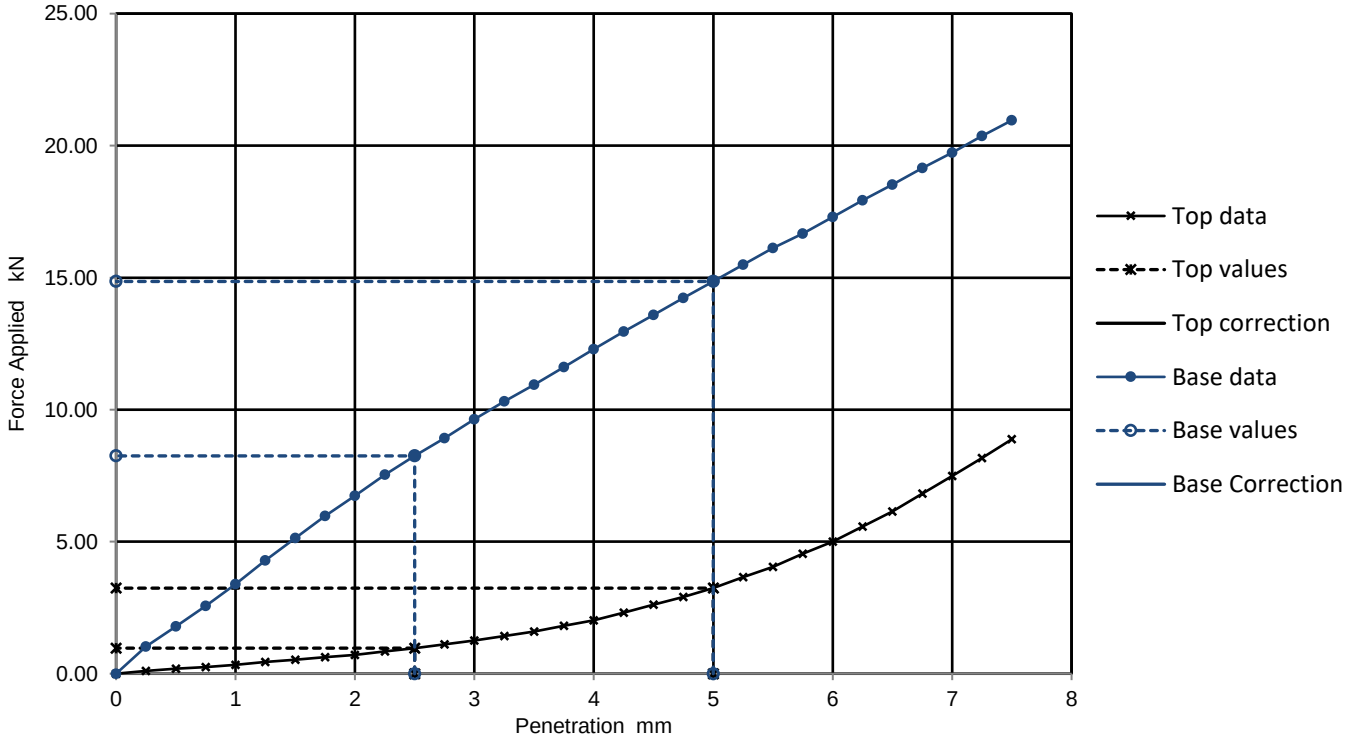
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS01
Site Name	Derrygreenagh Power			Sample No.	11
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060710
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.32	Mg/m3	Surcharge applied	2	kg
	Dry density	2.15	Mg/m3		1	kPa
	Moisture content	8.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		7.3	16.0	16.0		
BASE		62.0	74.0	74.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	33

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

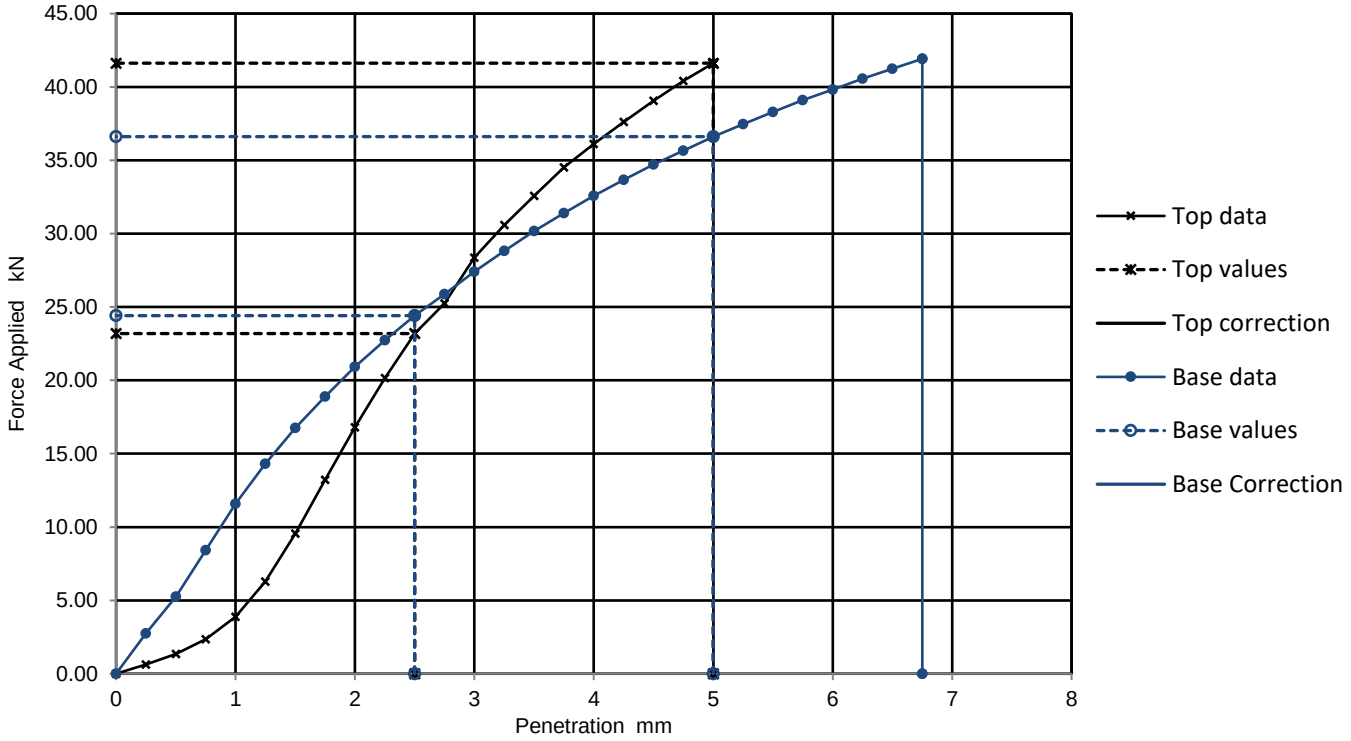
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS01
Site Name	Derrygreenagh Power			Sample No.	11
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060710
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.30	Mg/m3	Surcharge applied	2	kg
	Dry density	2.15	Mg/m3		1	kPa
	Moisture content	6.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		180.0	210.0	210.0	200.0	
BASE		180.0	180.0	180.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	34

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

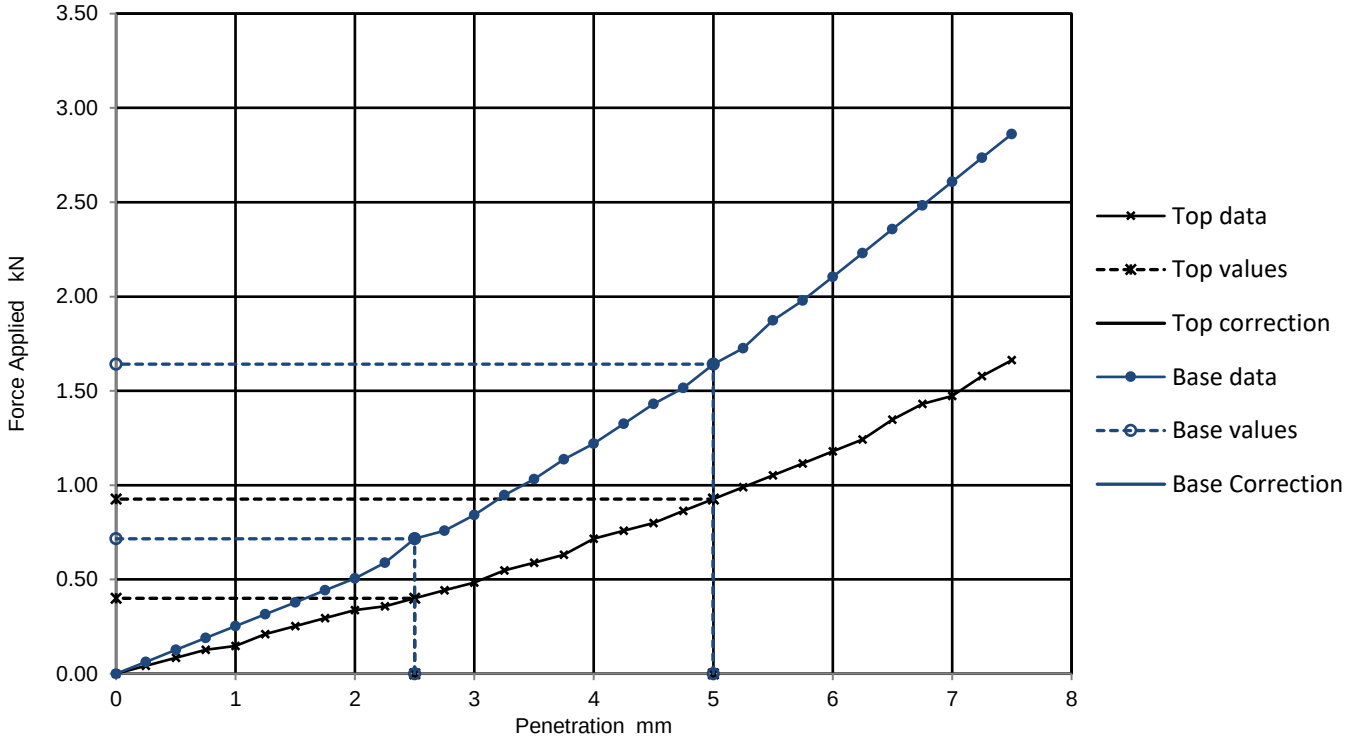
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS01
Site Name	Derrygreenagh Power			Sample No.	11
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060710
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.31	Mg/m3	Surcharge applied	2	kg
	Dry density	2.12	Mg/m3		1	kPa
	Moisture content	8.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.0	4.6	4.6		
BASE		5.4	8.2	8.2		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	35

Lab Sheet Reference : 01/11/2023

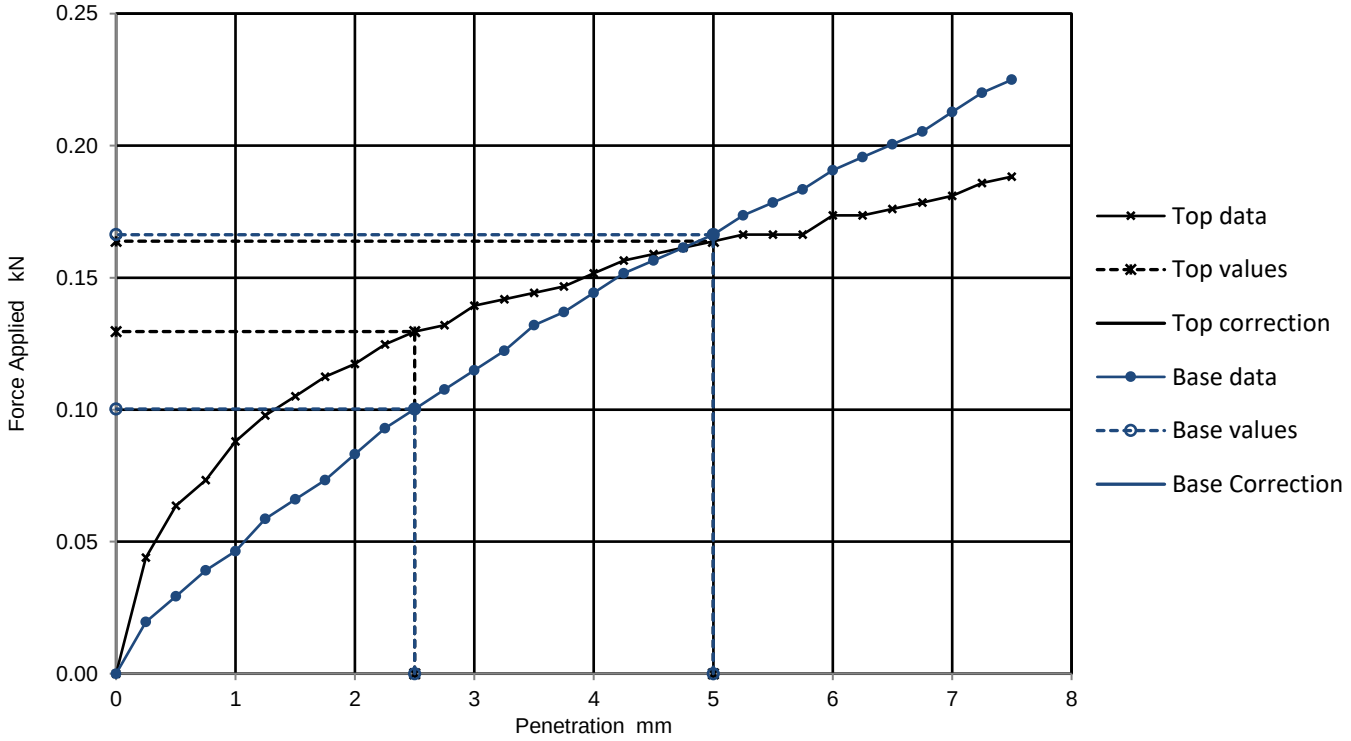
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS02
Site Name	Derrygreenagh Power			Sample No.	9
Soil Description	Light grey slightly gravelly sandy SILT.			Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305188
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition				Soaking details	Not soaked	
Details				Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed			%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	14.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.0	0.8	1.0	0.9	
BASE		0.8	0.8	0.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	36

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

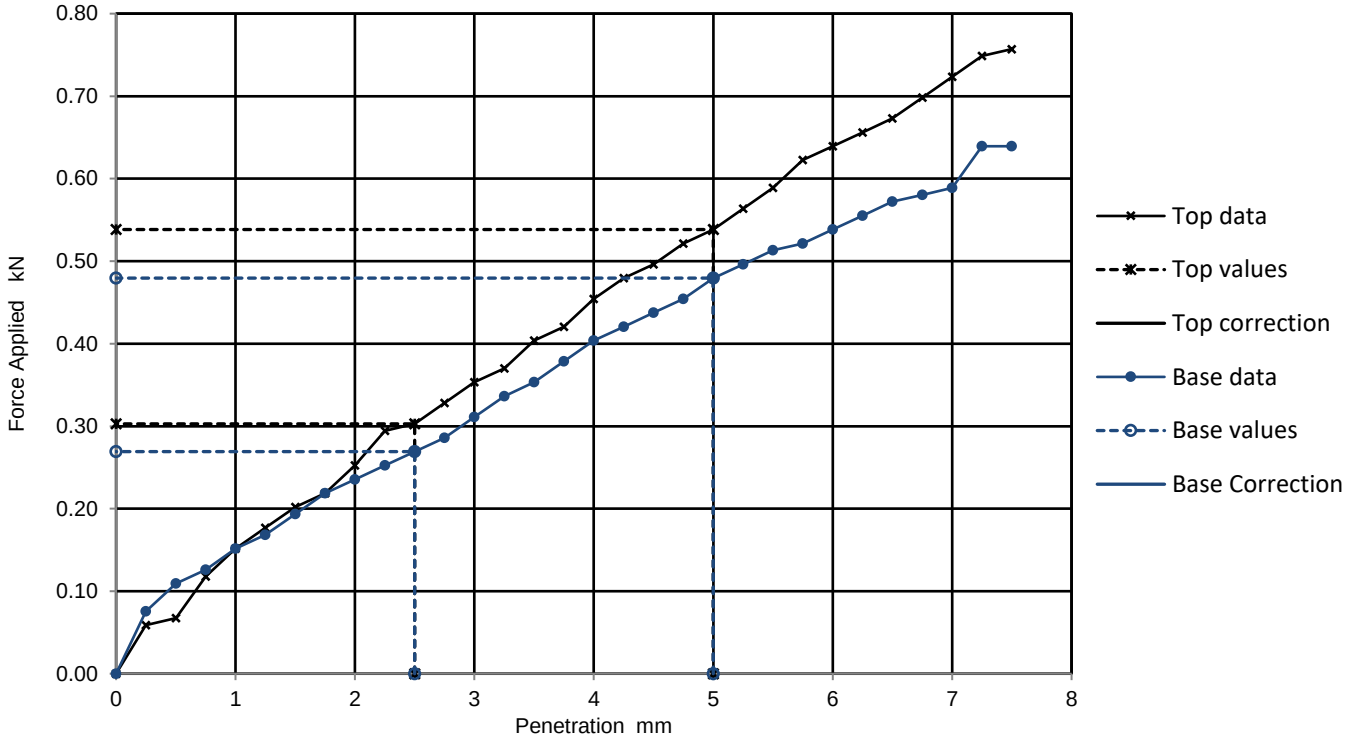
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS02
Site Name	Derrygreenagh Power			Sample No.	9
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305188
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.27	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	11.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.3	2.7	2.7	2.5	
BASE		2.0	2.4	2.4		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	37

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

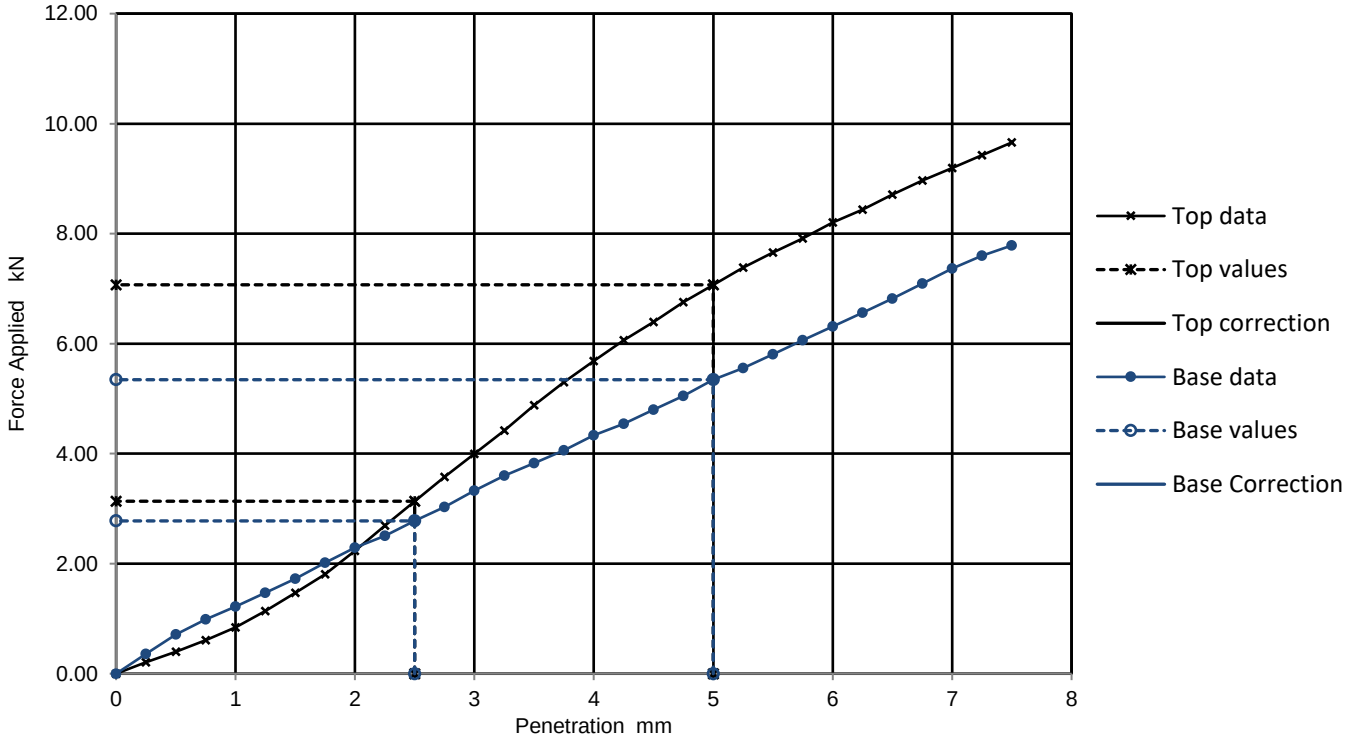
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS02
Site Name	Derrygreenagh Power			Sample No.	9
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305188
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	2	kg
	Dry density	1.97	Mg/m3		1	kPa
	Moisture content	9.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		24.0	35.0	35.0		
BASE		21.0	27.0	27.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	38

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

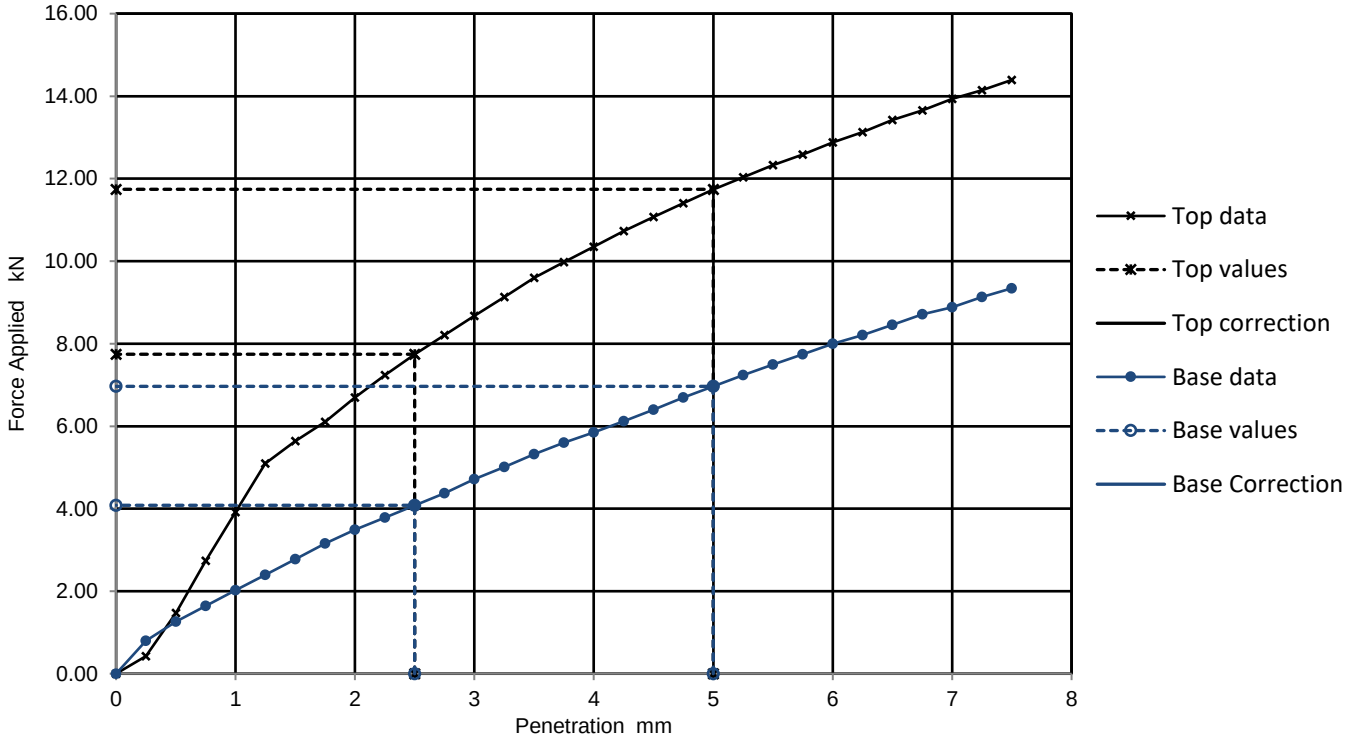
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS02
Site Name	Derrygreenagh Power			Sample No.	9
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305188
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.11	Mg/m3	Surcharge applied	2	kg
	Dry density	1.95	Mg/m3		1	kPa
	Moisture content	8.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		59.0	59.0	59.0		
BASE		31.0	35.0	35.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	39

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

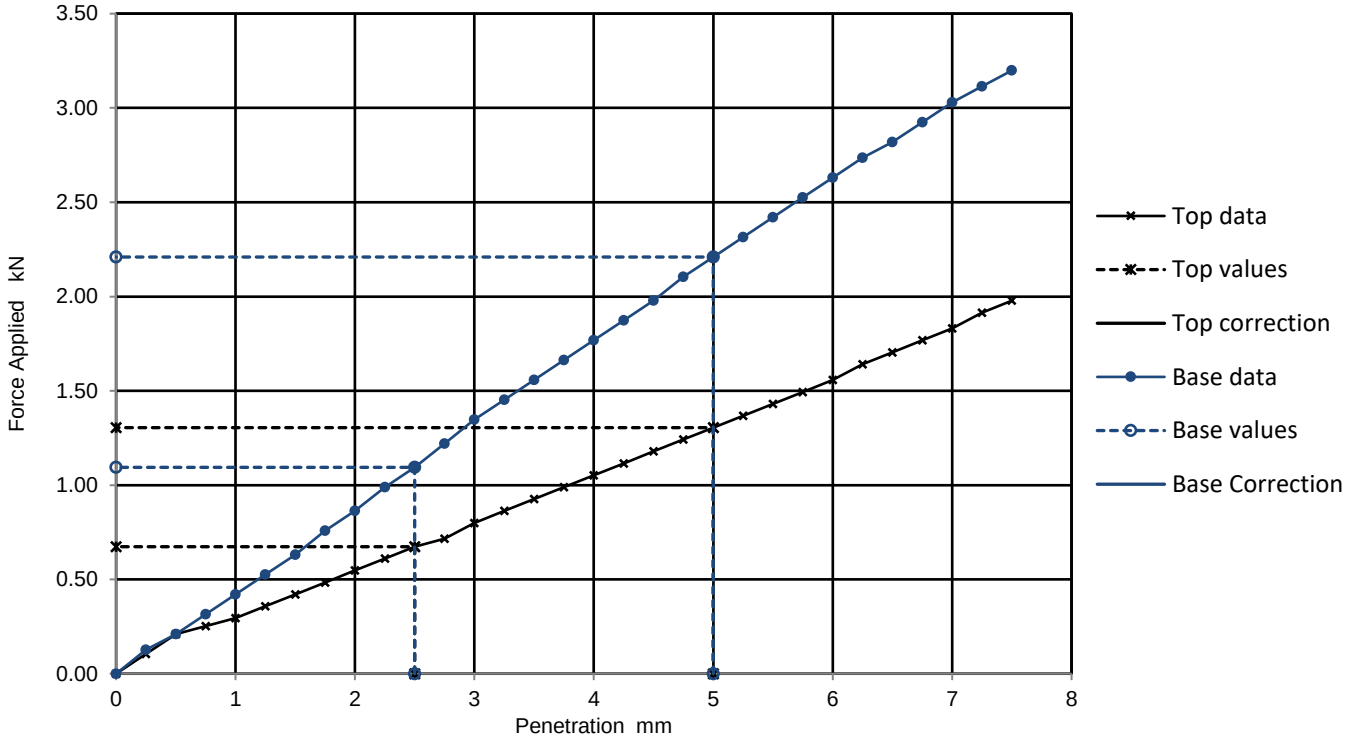
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS02
Site Name	Derrygreenagh Power			Sample No.	9
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305188
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.27	Mg/m3	Surcharge applied	2	kg
	Dry density	2.07	Mg/m3		1	kPa
	Moisture content	9.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		5.1	6.5	6.5		
BASE		8.3	11.0	11.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	40

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

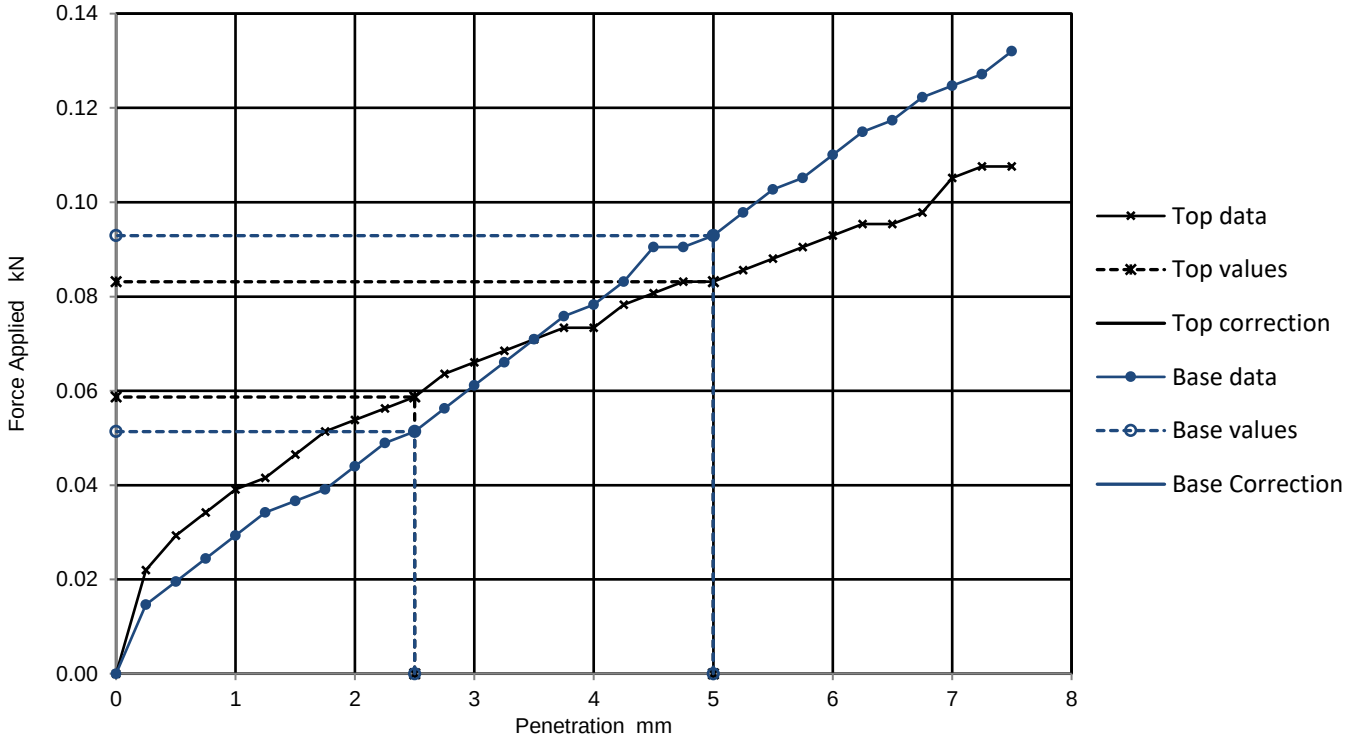
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description	Grey gravelly SILT.			Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081444
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	1.94	Mg/m3		1	kPa
	Moisture content	14.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.4	0.4	0.4	0.5	
BASE		0.4	0.5	0.5		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	41

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

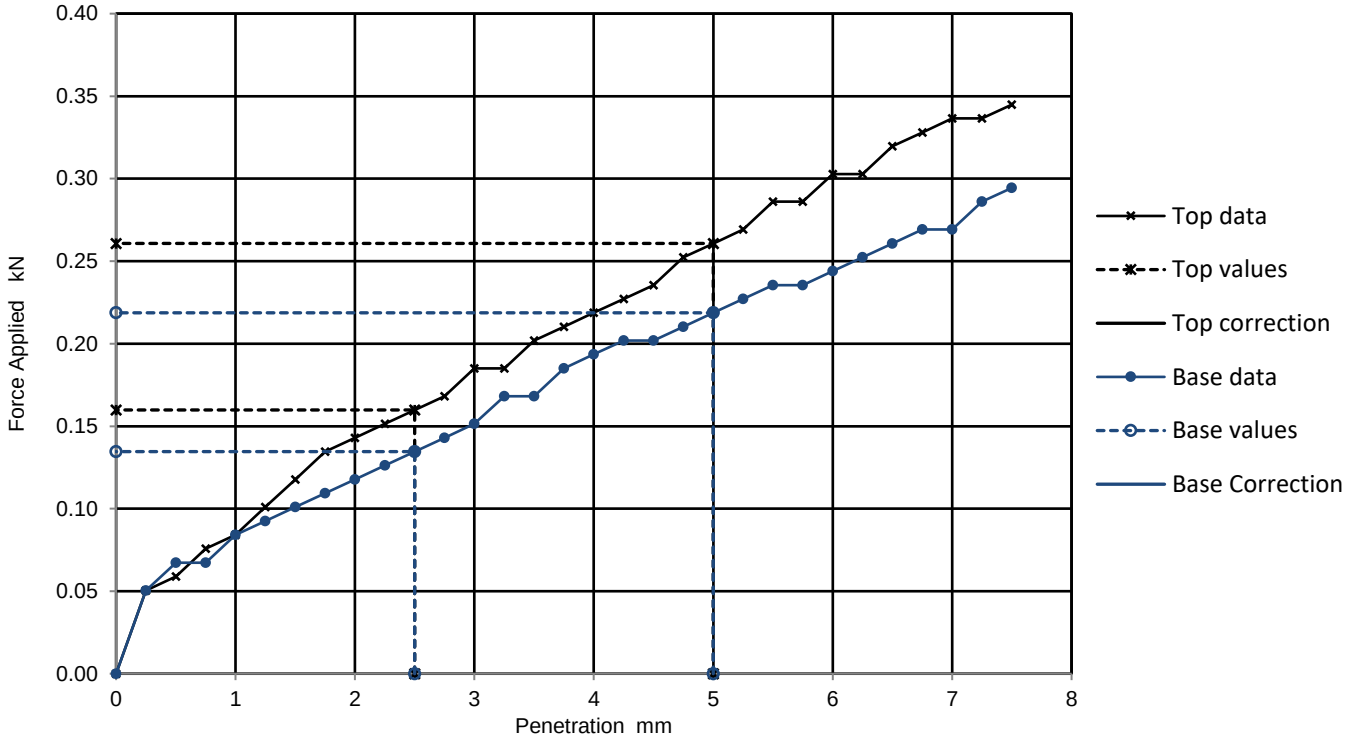
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081444
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.27	Mg/m3	Surcharge applied	2	kg
	Dry density	2.06	Mg/m3		1	kPa
	Moisture content	10.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.2	1.3	1.3	1.2	
BASE		1.0	1.1	1.1		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	42

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

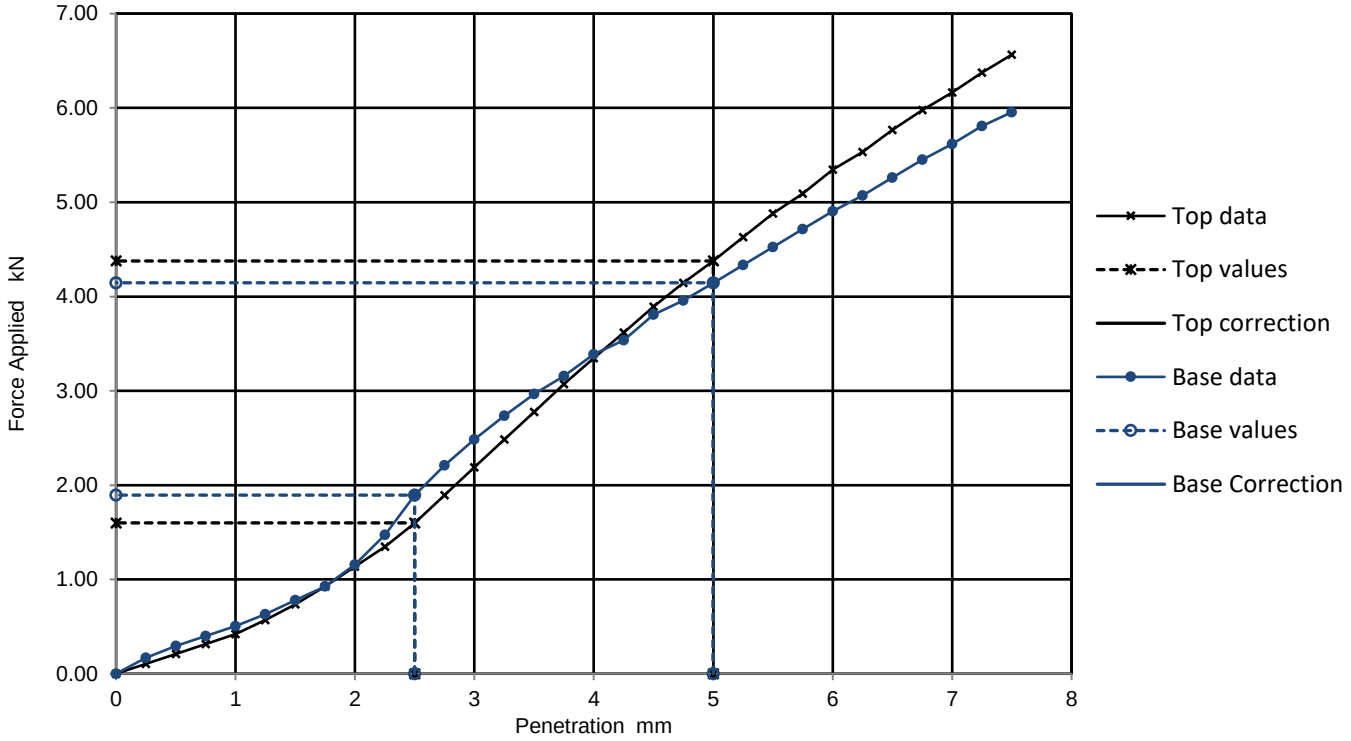
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081444
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	2	kg
	Dry density	1.99	Mg/m3		1	kPa
	Moisture content	8.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		12.0	22.0	22.0	21.0	
BASE		14.0	21.0	21.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	43

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

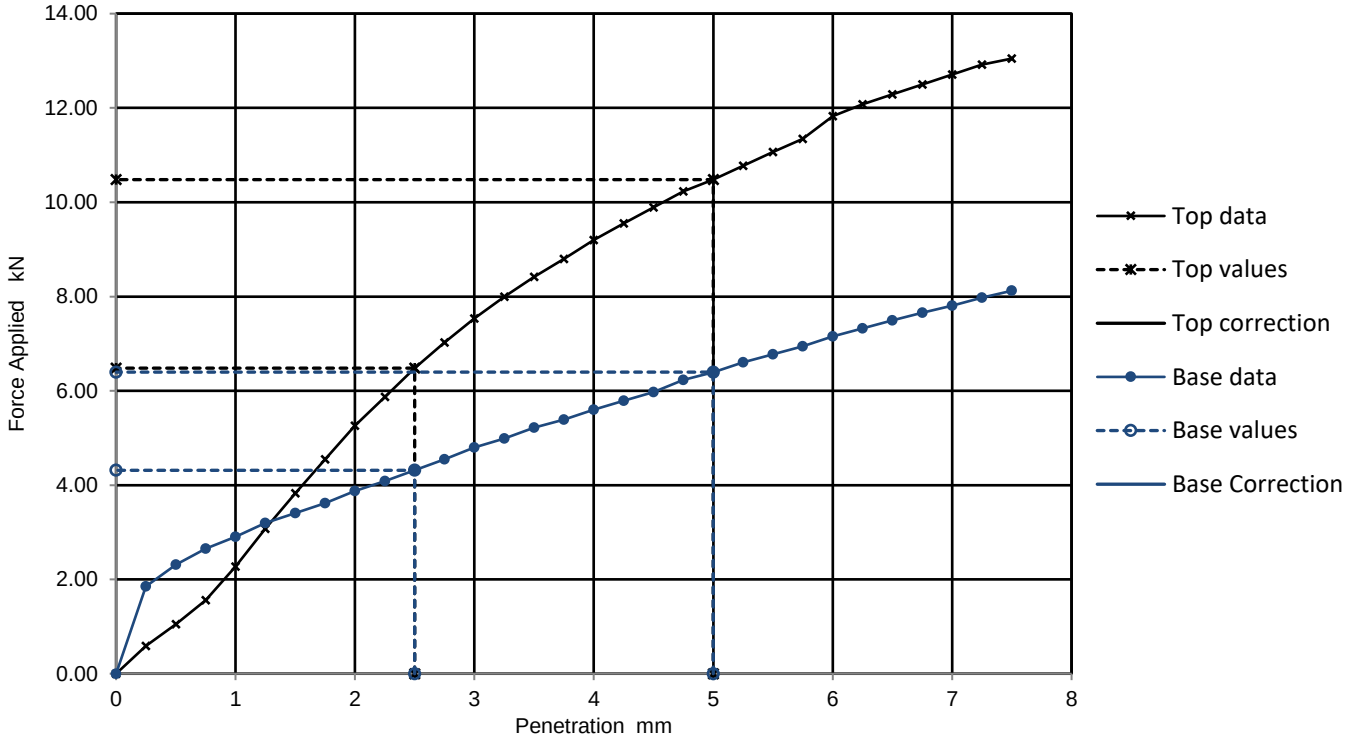
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081444
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.10	Mg/m3	Surcharge applied	kg
	Dry density	1.96	Mg/m3		kPa
	Moisture content	7.3	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		49.0	52.0	52.0		
BASE		33.0	32.0	33.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	44

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

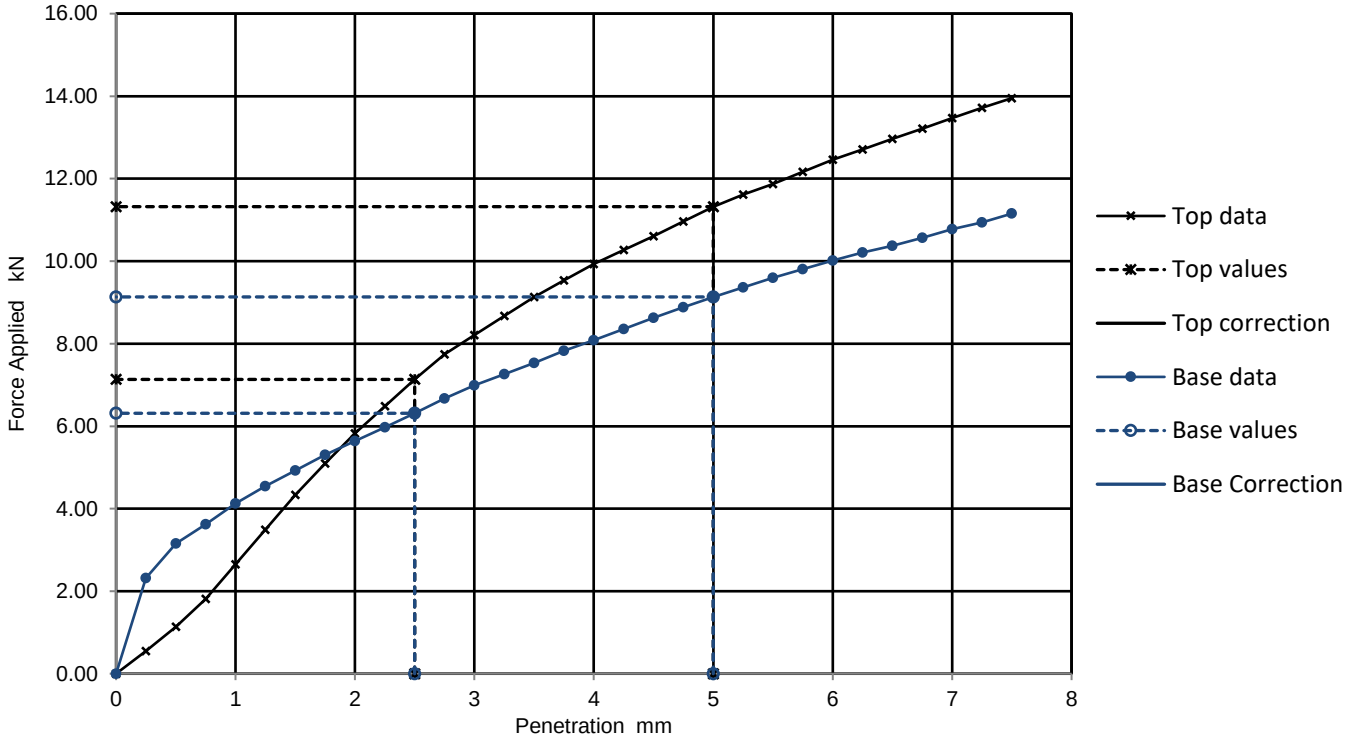
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS101
Site Name	Derrygreenagh Power			Sample No.	10
Soil Description				Depth m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081444
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.03	Mg/m3	Surcharge applied	2	kg
	Dry density	1.90	Mg/m3		1	kPa
	Moisture content	6.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		54.0	57.0	57.0	52.0	
BASE		48.0	46.0	48.0		

General remarks	Test specific remarks	Approved
		BCD

Fig No.	1
QC From R9	
Sheet No	45

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

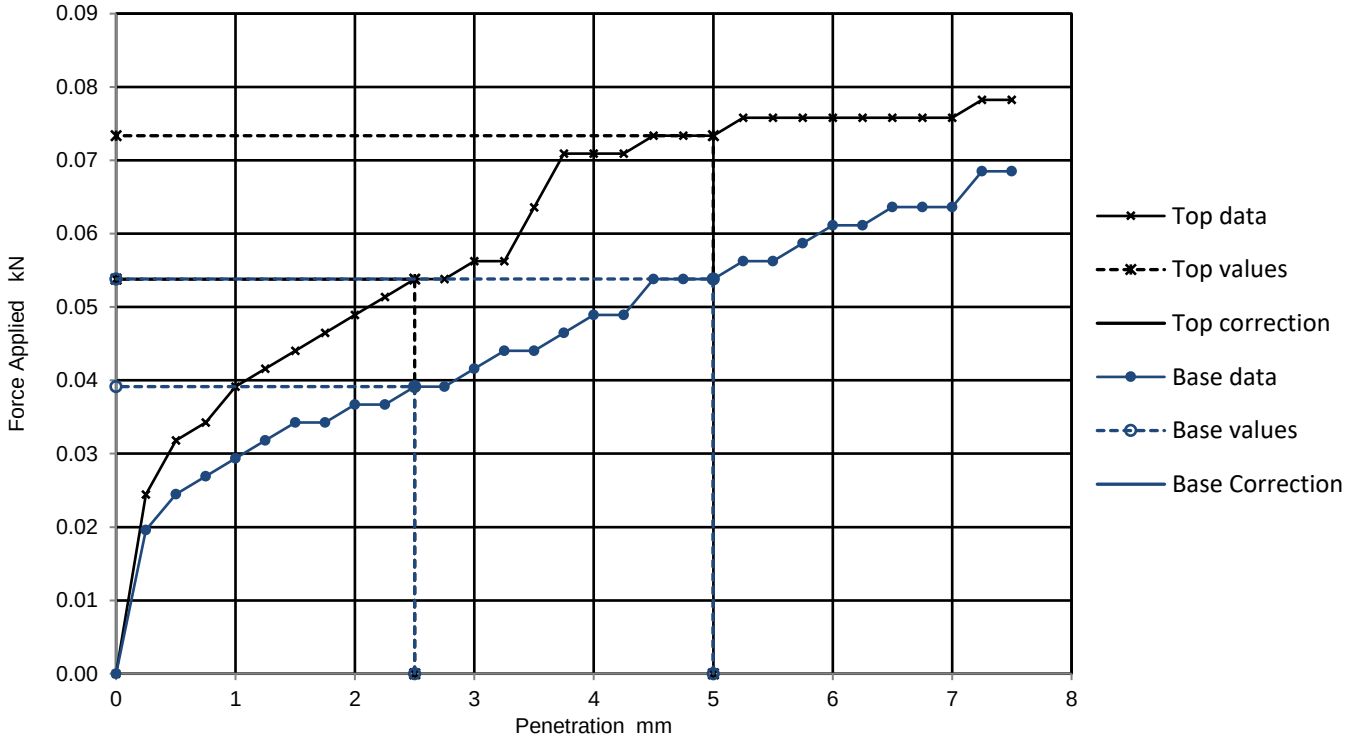
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description	Light greyish-brown slightly gravelly slightly sandy SILT.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081471
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	14.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.4	0.4	0.4		
BASE		0.3	0.3	0.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	46

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

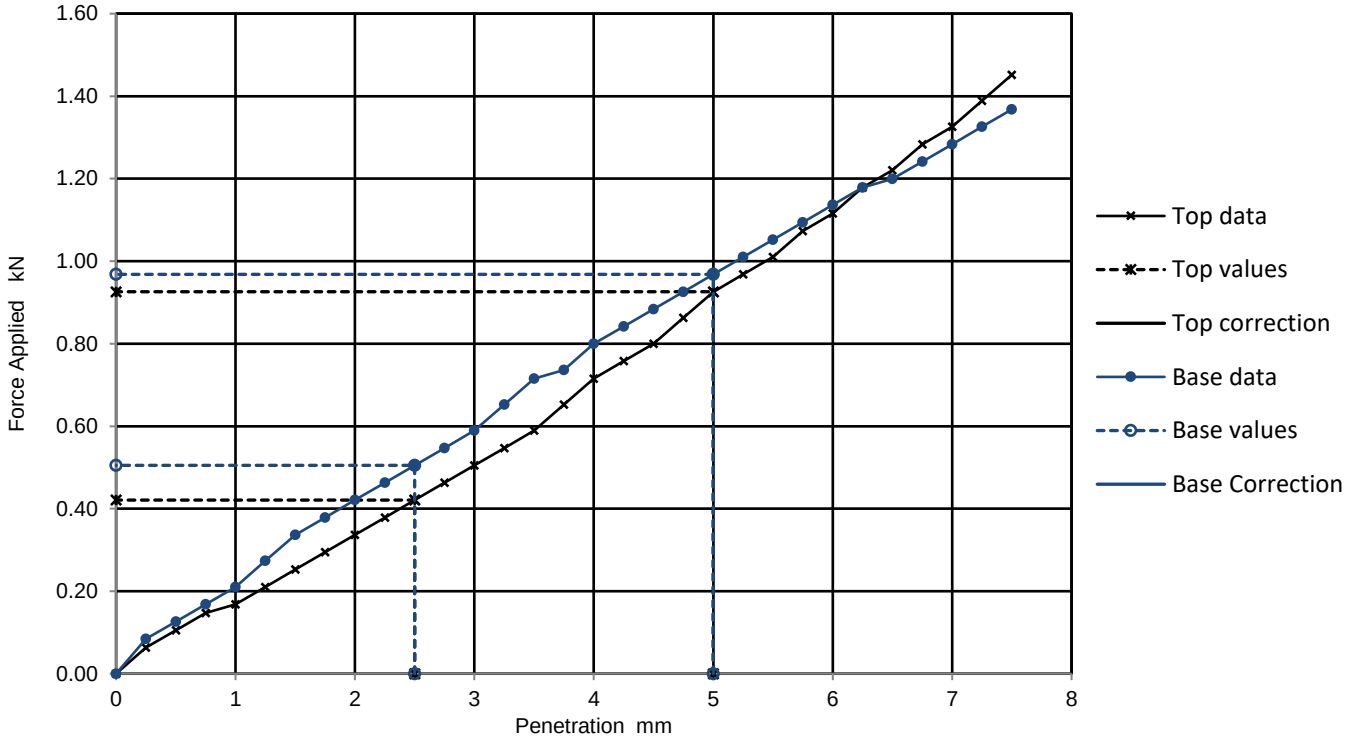
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081471
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.31	Mg/m3	Surcharge applied	2	kg
	Dry density	2.10	Mg/m3		1	kPa
	Moisture content	10.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.2	4.6	4.6	4.7	
BASE		3.8	4.8	4.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	47

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

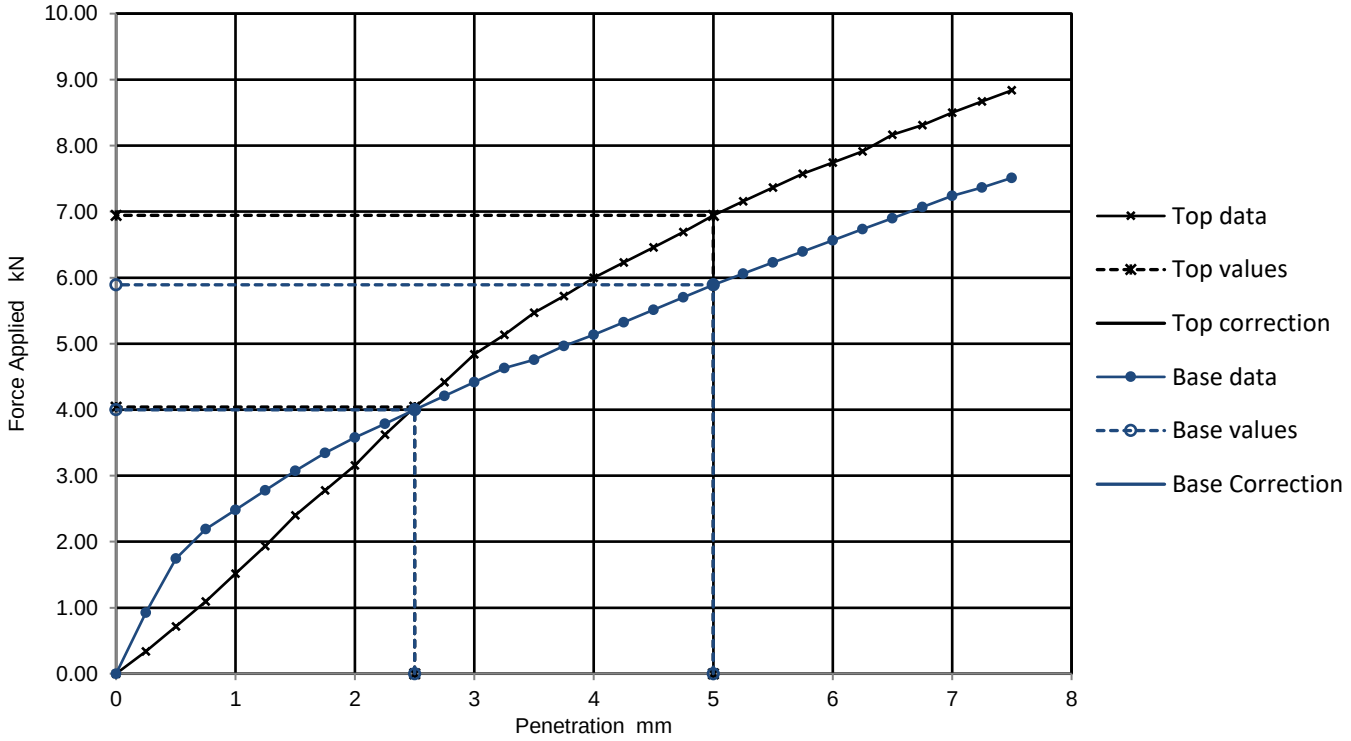
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081471
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.10	Mg/m3	Surcharge applied	2	kg
	Dry density	1.95	Mg/m3		1	kPa
	Moisture content	7.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		31.0	35.0	35.0	33.0	
BASE		30.0	29.0	30.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	48

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

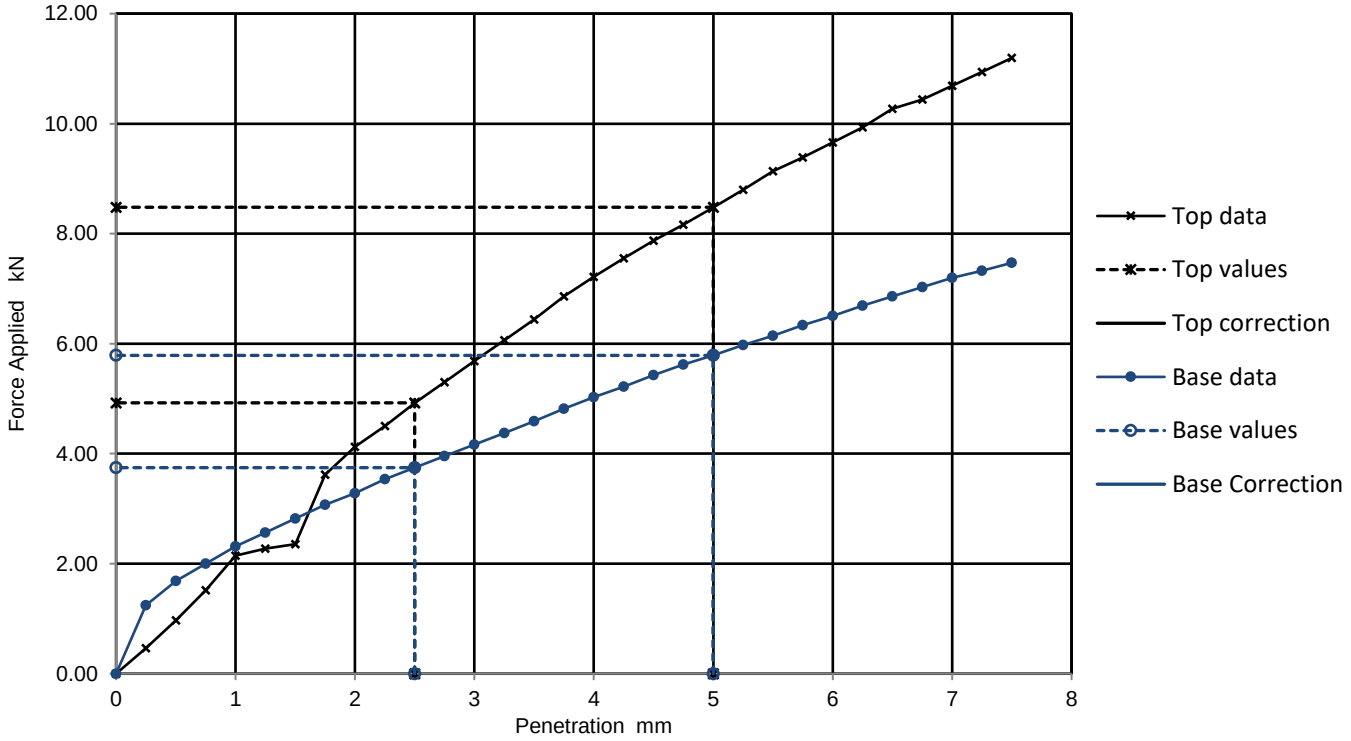
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081471
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.04	Mg/m3	Surcharge applied	2	kg
	Dry density	1.92	Mg/m3		1	kPa
	Moisture content	6.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		37.0	42.0	42.0		
BASE		28.0	29.0	29.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	49

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

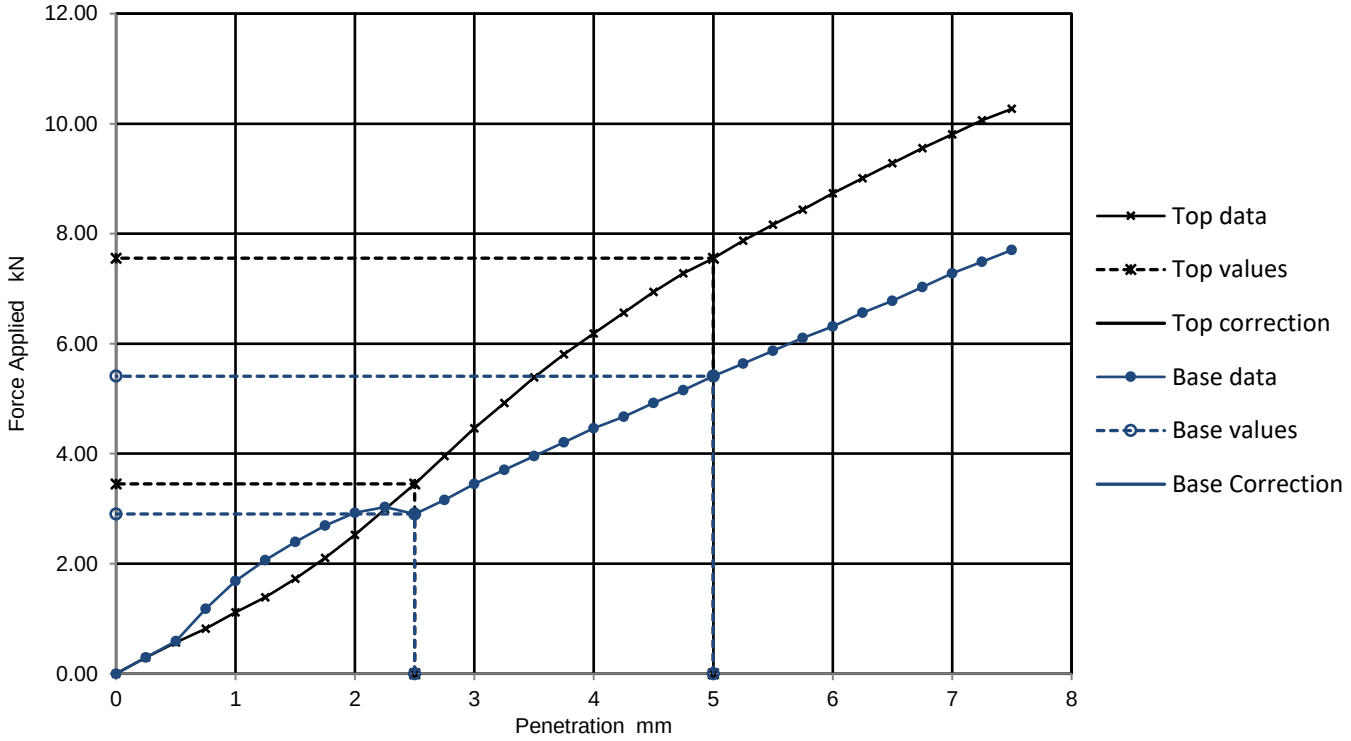
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS103
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081471
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.20	Mg/m3	Surcharge applied	2	kg
	Dry density	2.03	Mg/m3		1	kPa
	Moisture content	8.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		26.0	38.0	38.0		
BASE		22.0	27.0	27.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	50

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

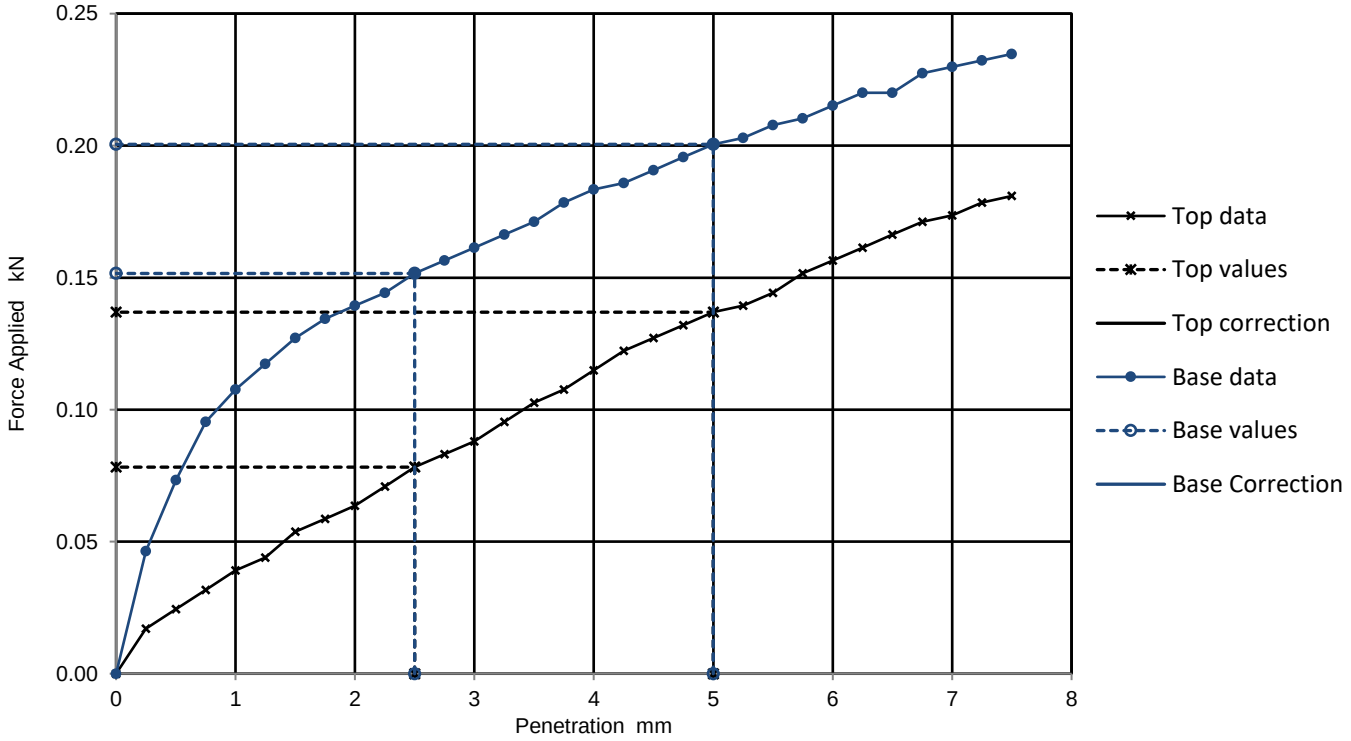
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description	Greenish-grey slightly gravelly sandy SILT.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230814108
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.30	Mg/m3	Surcharge applied	2	kg
	Dry density	2.05	Mg/m3		1	kPa
	Moisture content	12.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.6	0.7	0.7		
BASE		1.1	1.0	1.1		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	51

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

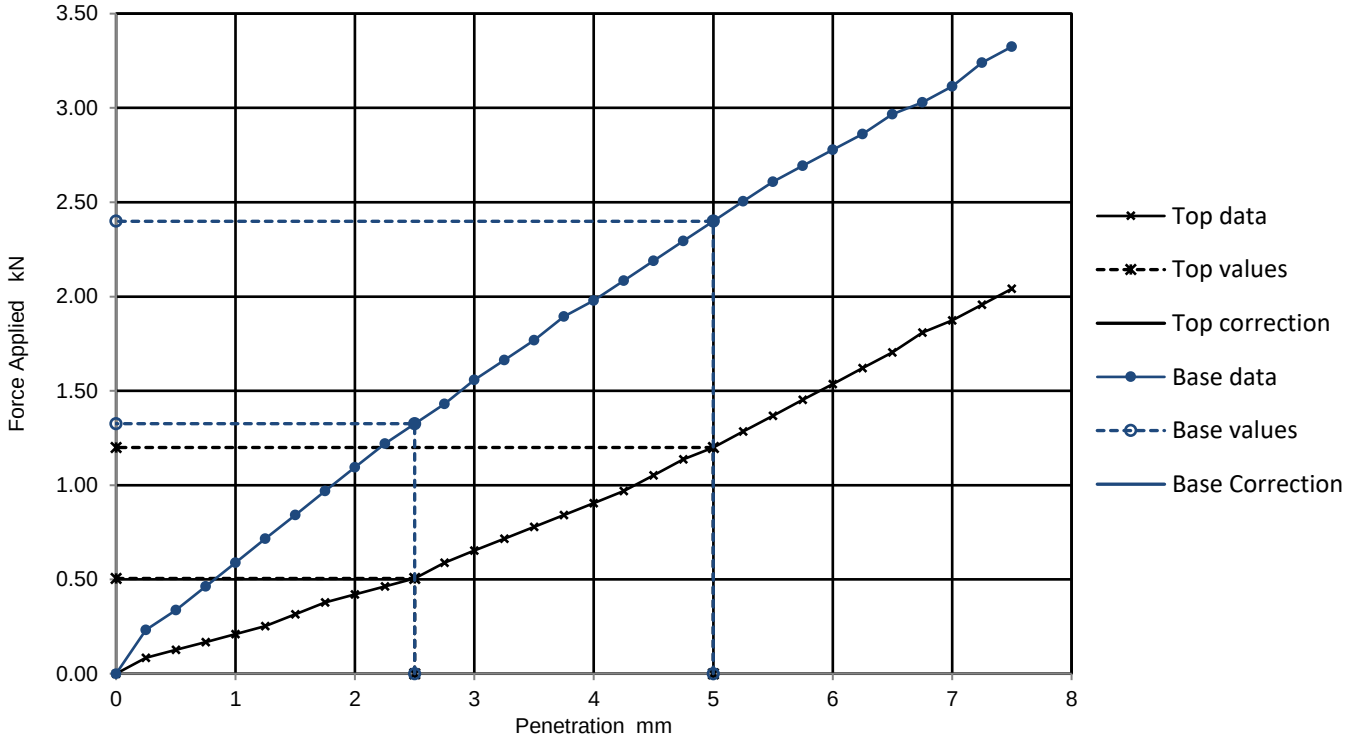
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230814108
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.33	Mg/m3	Surcharge applied	2	kg
	Dry density	2.13	Mg/m3		1	kPa
	Moisture content	9.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.8	6.0	6.0		
BASE		10.0	12.0	12.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	52

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

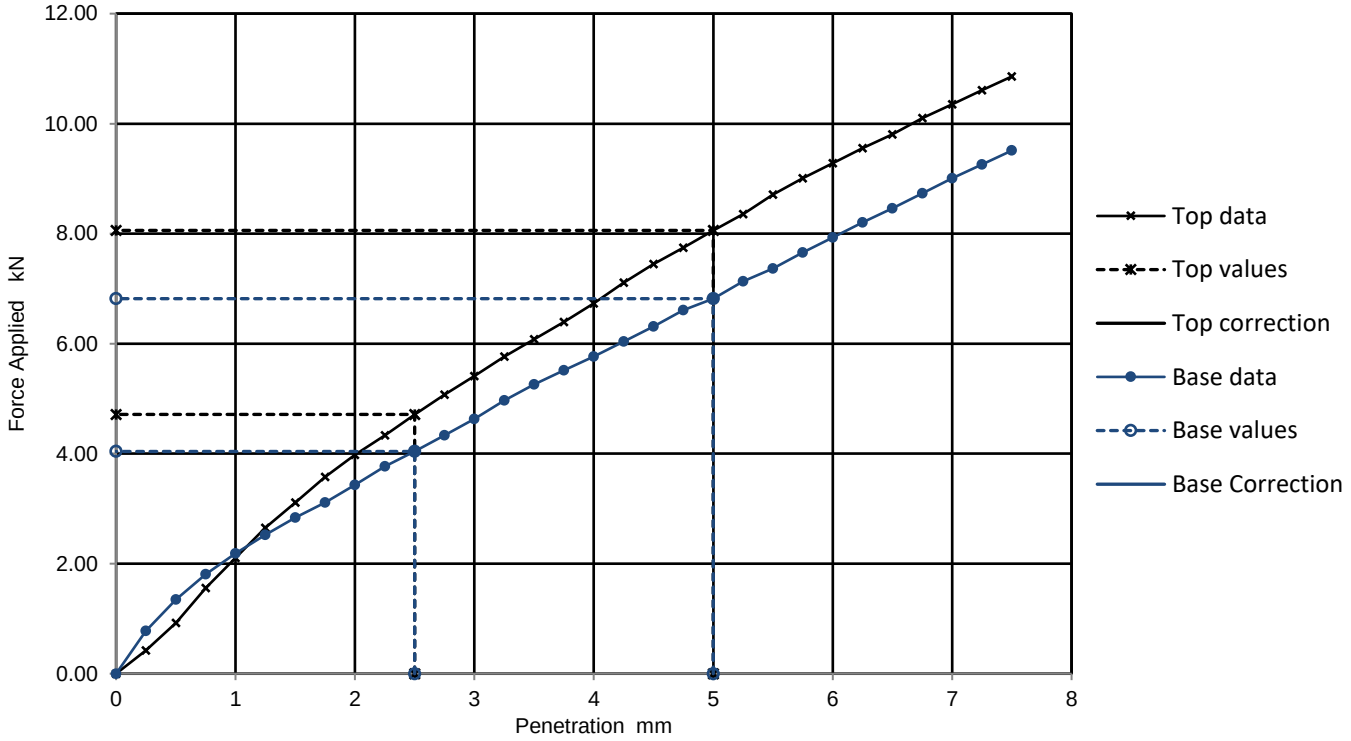
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230814108
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	2	kg
	Dry density	2.01	Mg/m3		1	kPa
	Moisture content	6.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		36.0	40.0	40.0	37.0	
BASE		31.0	34.0	34.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	53

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

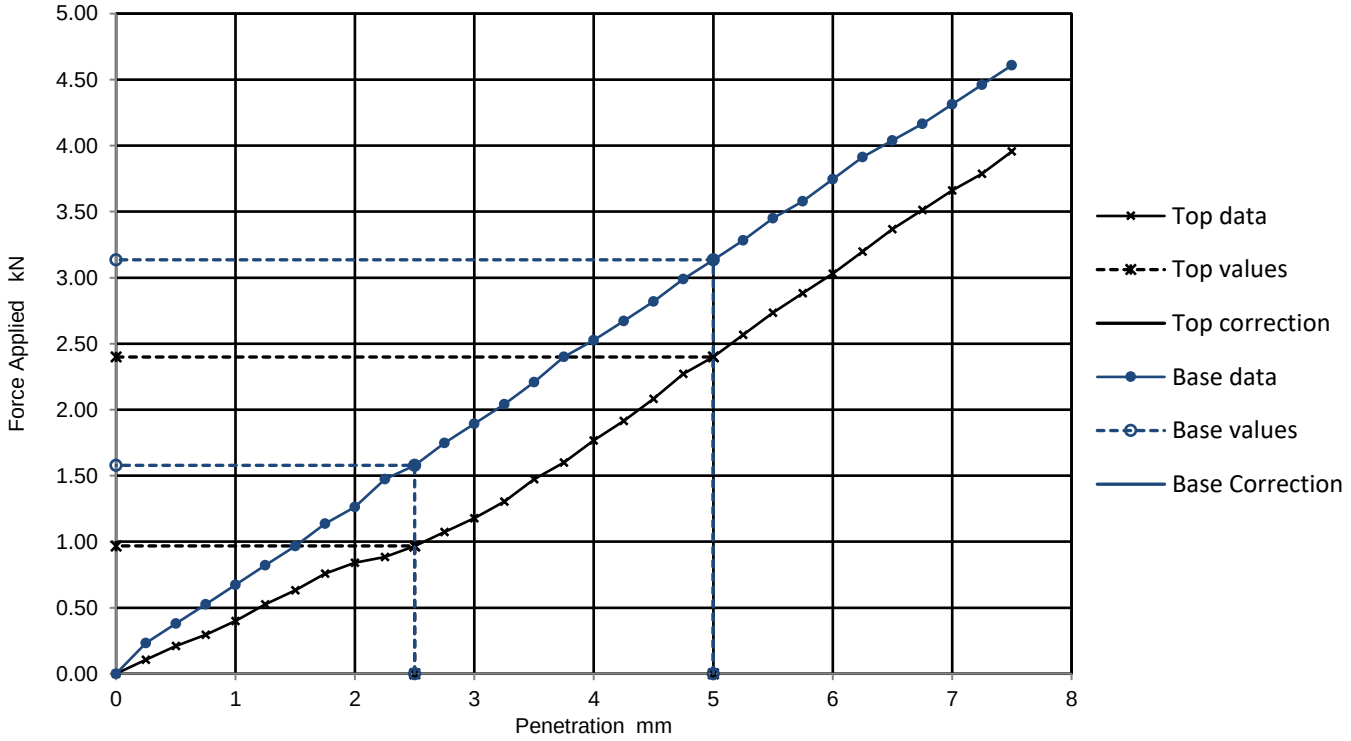
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230814108
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.32	Mg/m3	Surcharge applied	2	kg
	Dry density	2.12	Mg/m3		1	kPa
	Moisture content	9.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		7.3	12.0	12.0		
BASE		12.0	16.0	16.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	54

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

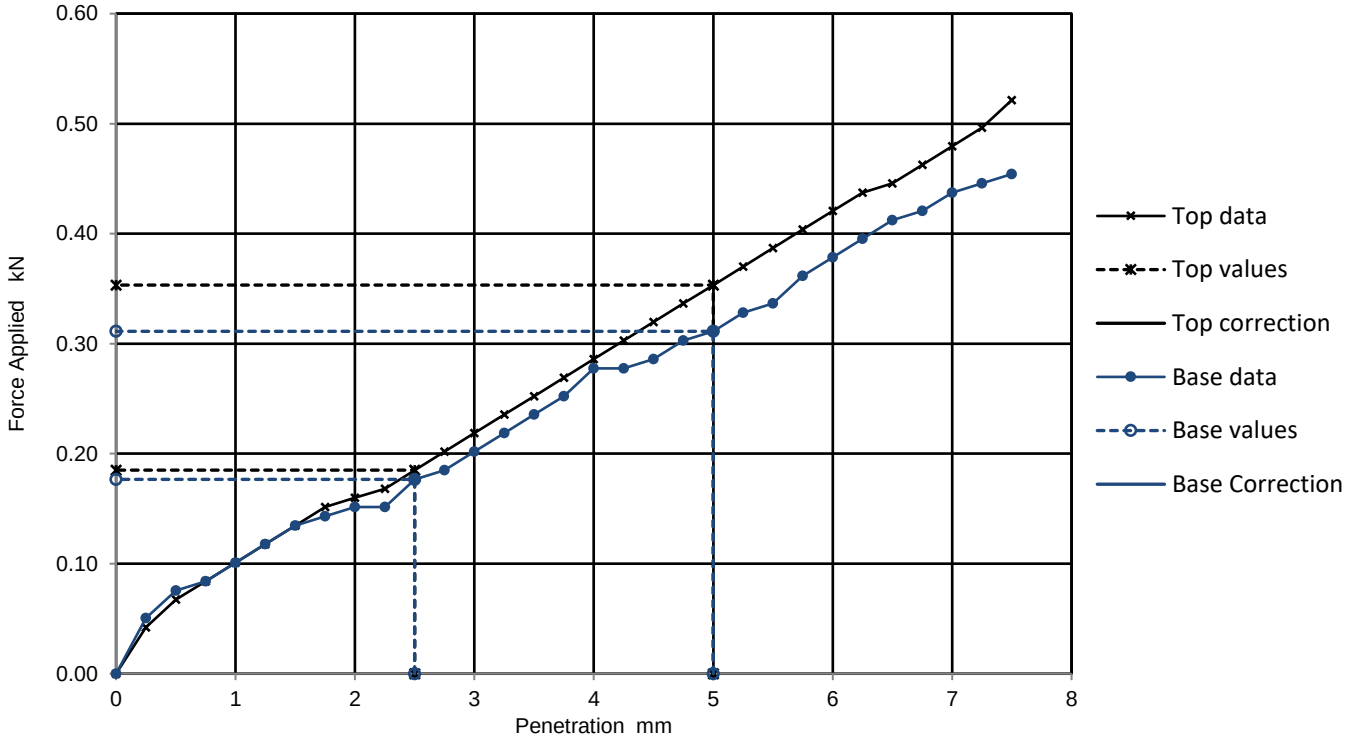
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHSS106
Site Name	Derrygreenagh Power			Sample No.	7
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230814108
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.33	Mg/m3	Surcharge applied	2	kg
	Dry density	2.11	Mg/m3		1	kPa
	Moisture content	10.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.4	1.8	1.8	1.7	
BASE		1.3	1.6	1.6		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	55

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

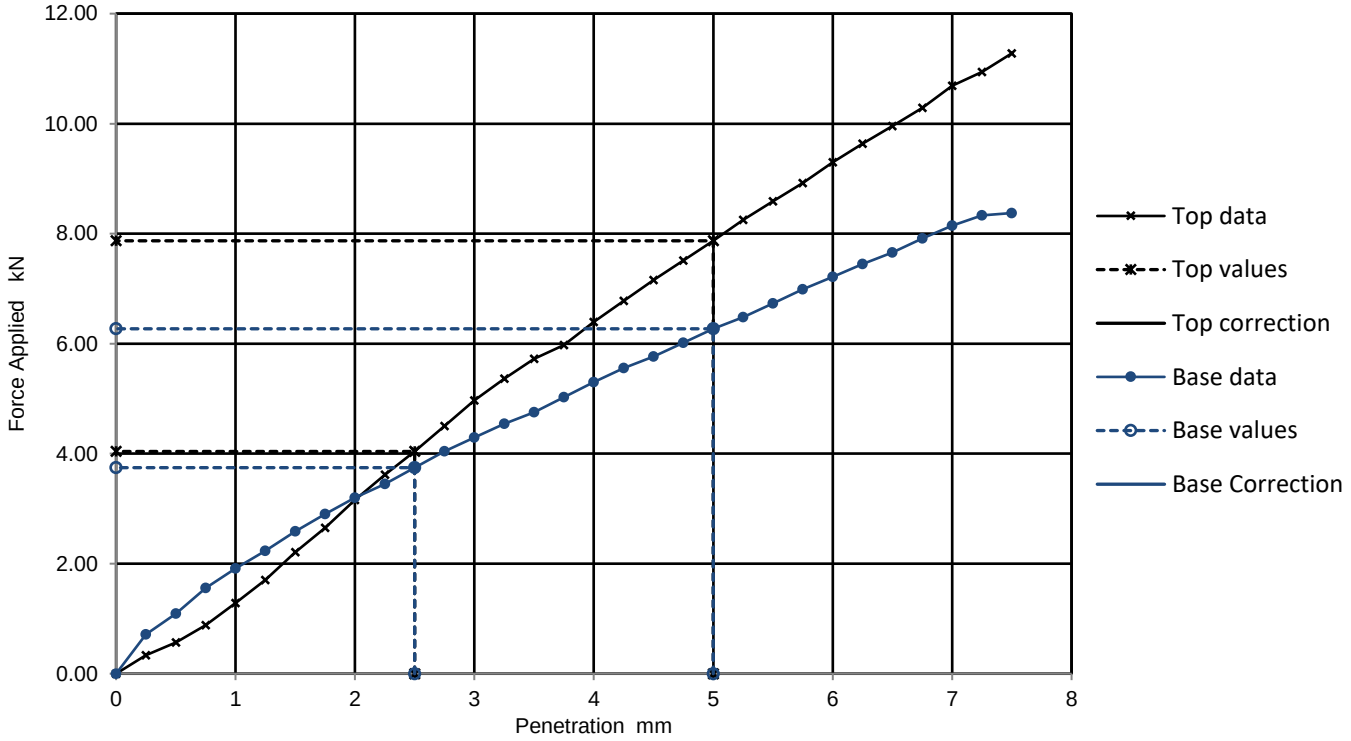
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT04
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Brownish-grey silty very gravelly medium and coarse SAND.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062235
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	2	kg
	Dry density	1.94	Mg/m3		1	kPa
	Moisture content	6.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		31.0	39.0	39.0		
BASE		28.0	31.0	31.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	56

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

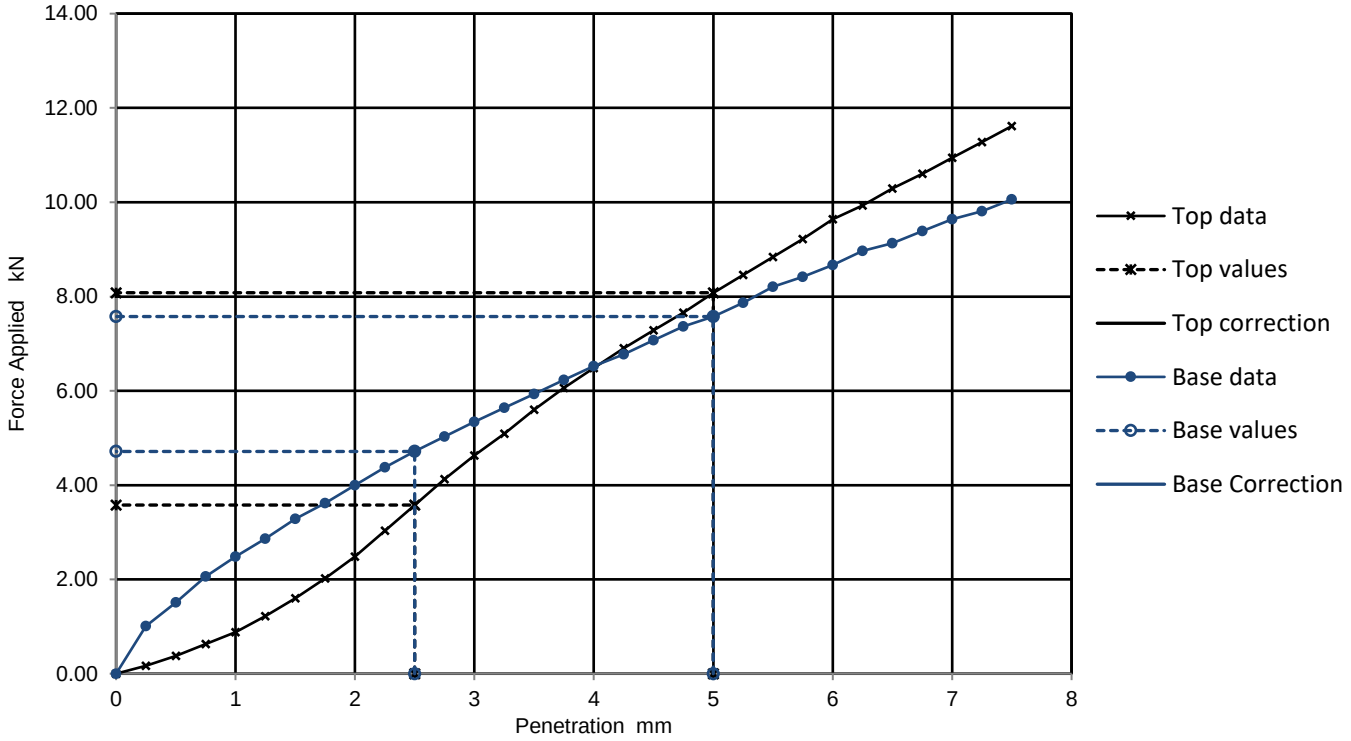
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT04
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062235
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	8.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		27.0	40.0	40.0	39.0	
BASE		36.0	38.0	38.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	57

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

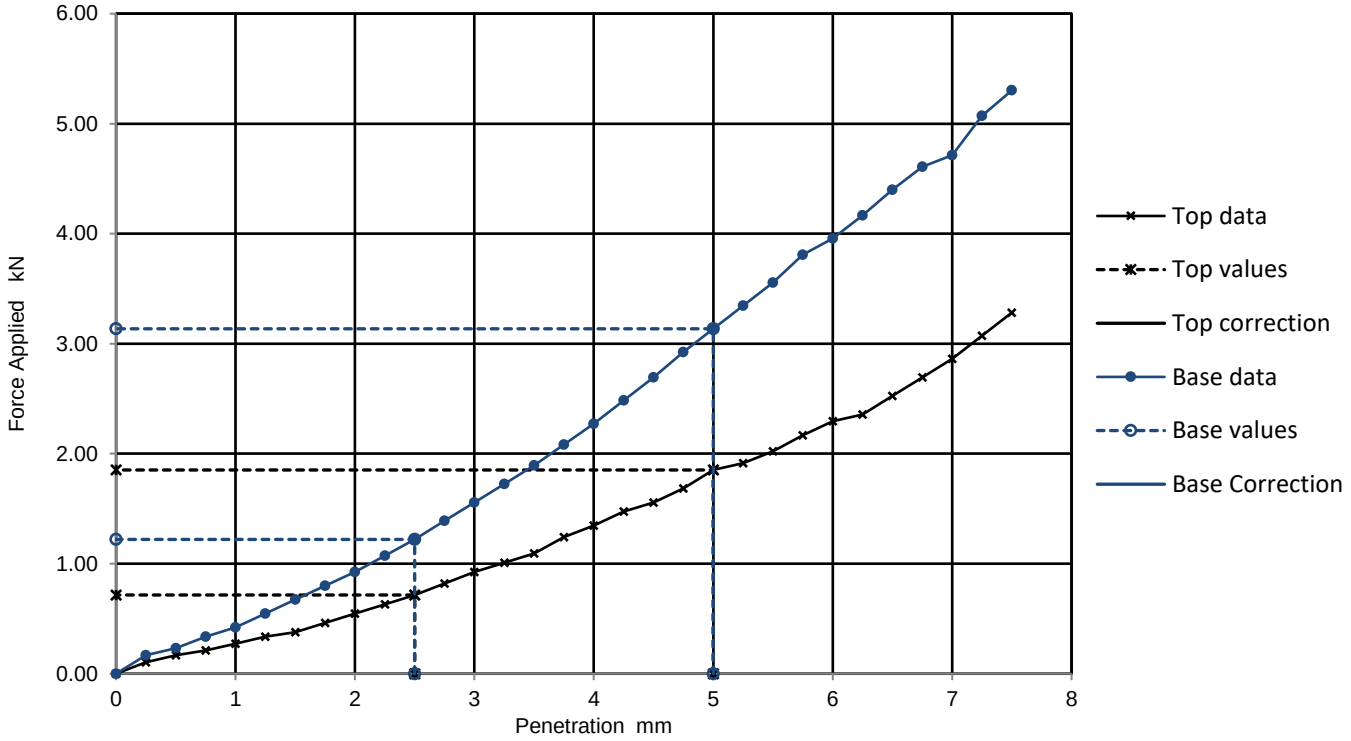
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT04
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062235
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	2.00	Mg/m3		1	kPa
	Moisture content	11.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		5.4	9.3	9.3		
BASE		9.2	16.0	16.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	58

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

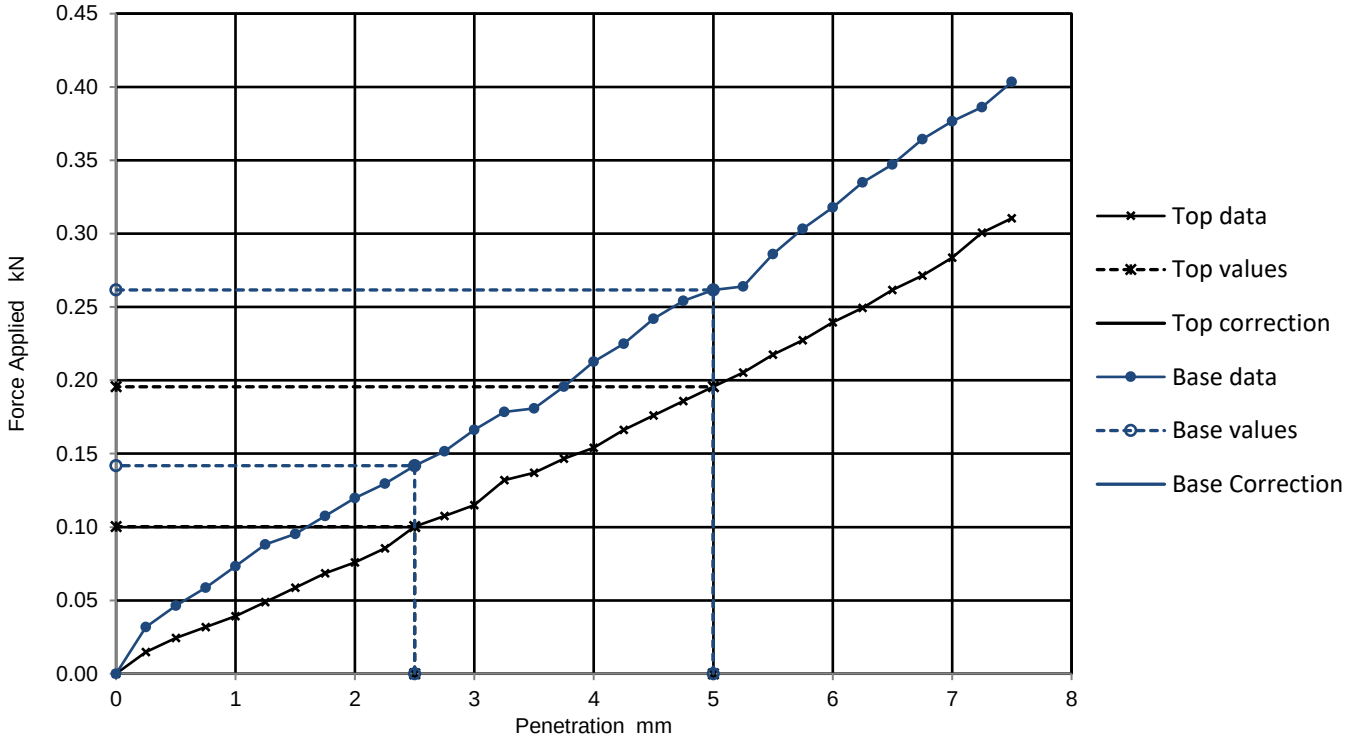
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT04
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062235
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	1.94	Mg/m3		1	kPa
	Moisture content	15.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.8	1.0	1.0		
BASE		1.1	1.3	1.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	59

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

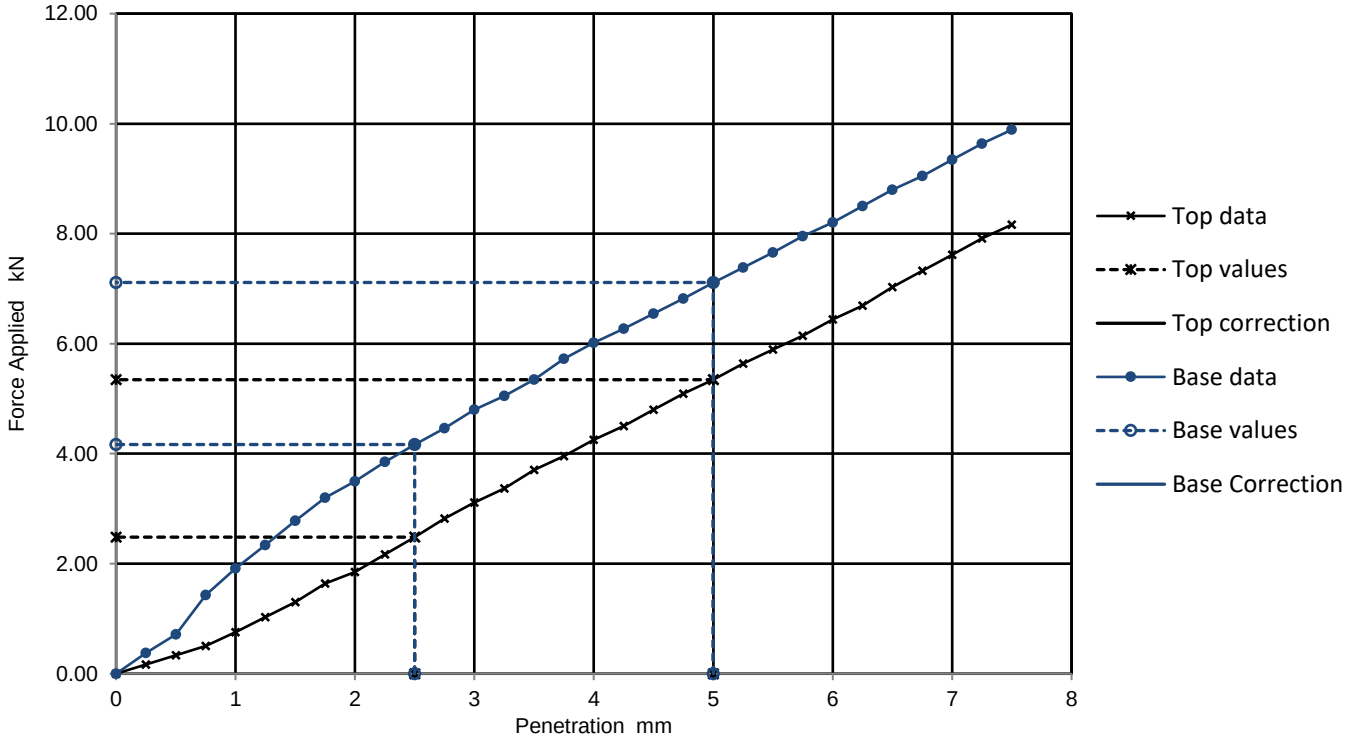
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT04
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062235
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.18	Mg/m3	Surcharge applied	2	kg
	Dry density	1.95	Mg/m3		1	kPa
	Moisture content	11.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		19.0	27.0	27.0		
BASE		32.0	36.0	36.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	60

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

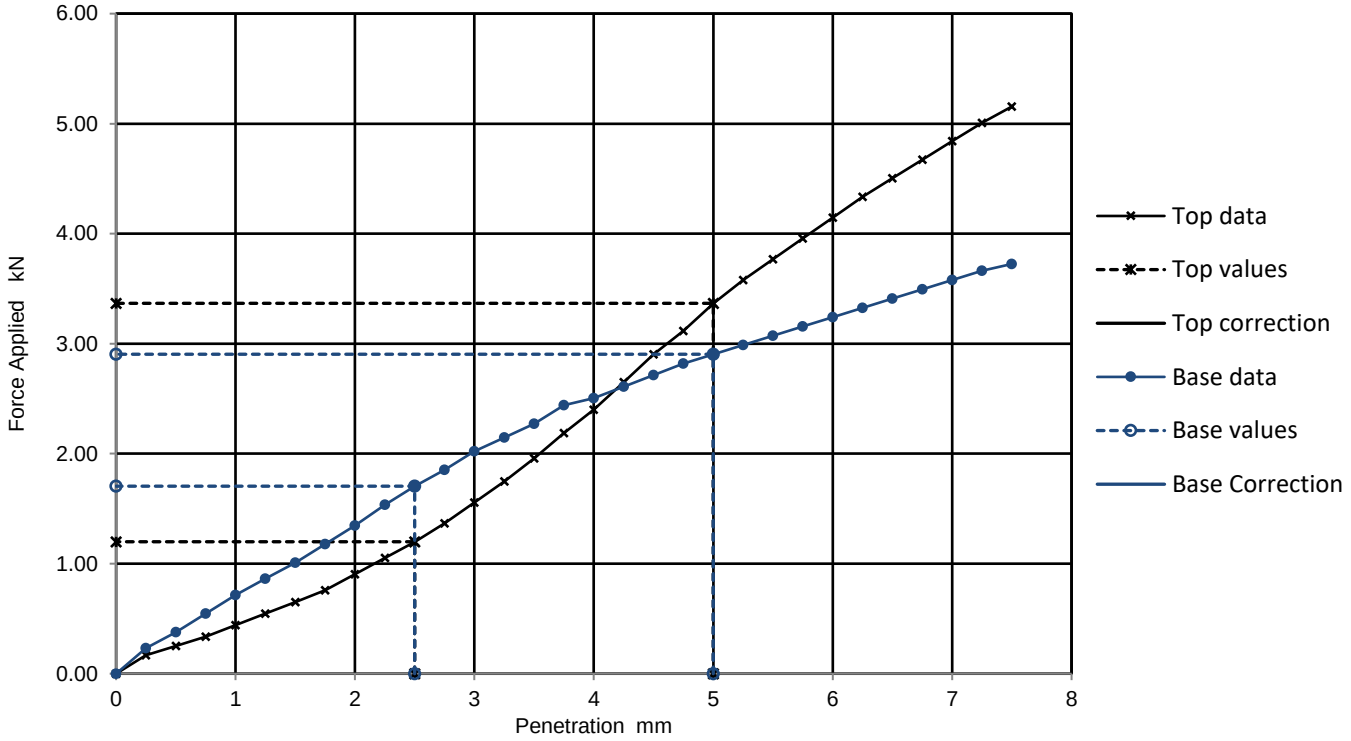
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT05
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description	Greyish-brown slightly gravelly sandy SILT. SAND is fine.			Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607171
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.70	Mg/m3	Surcharge applied	2	kg
	Dry density	1.52	Mg/m3		1	kPa
	Moisture content	11.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		9.1	17.0	17.0	16.0	
BASE		13.0	15.0	15.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	61

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

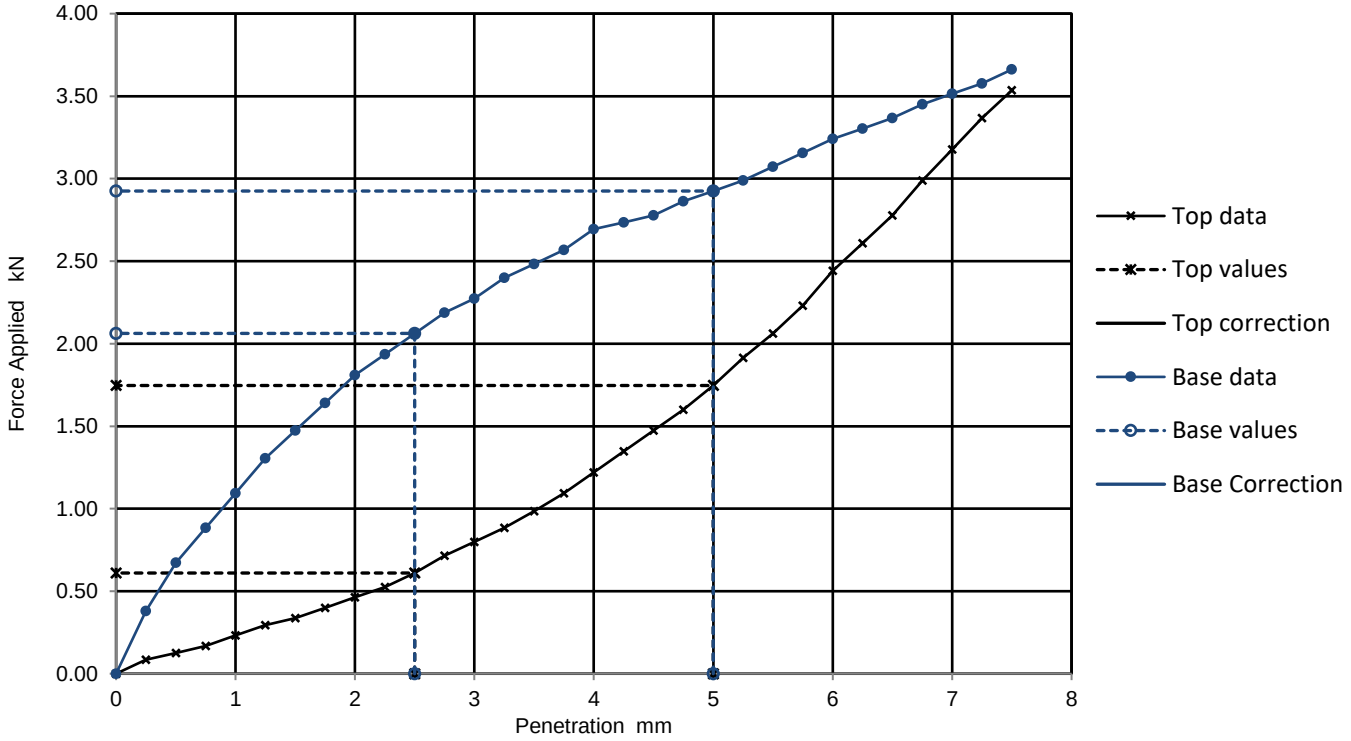
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT05
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607171
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.67	Mg/m3	Surcharge applied	2	kg
	Dry density	1.50	Mg/m3		1	kPa
	Moisture content	11.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.6	8.7	8.7		
BASE		16.0	15.0	16.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	62

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

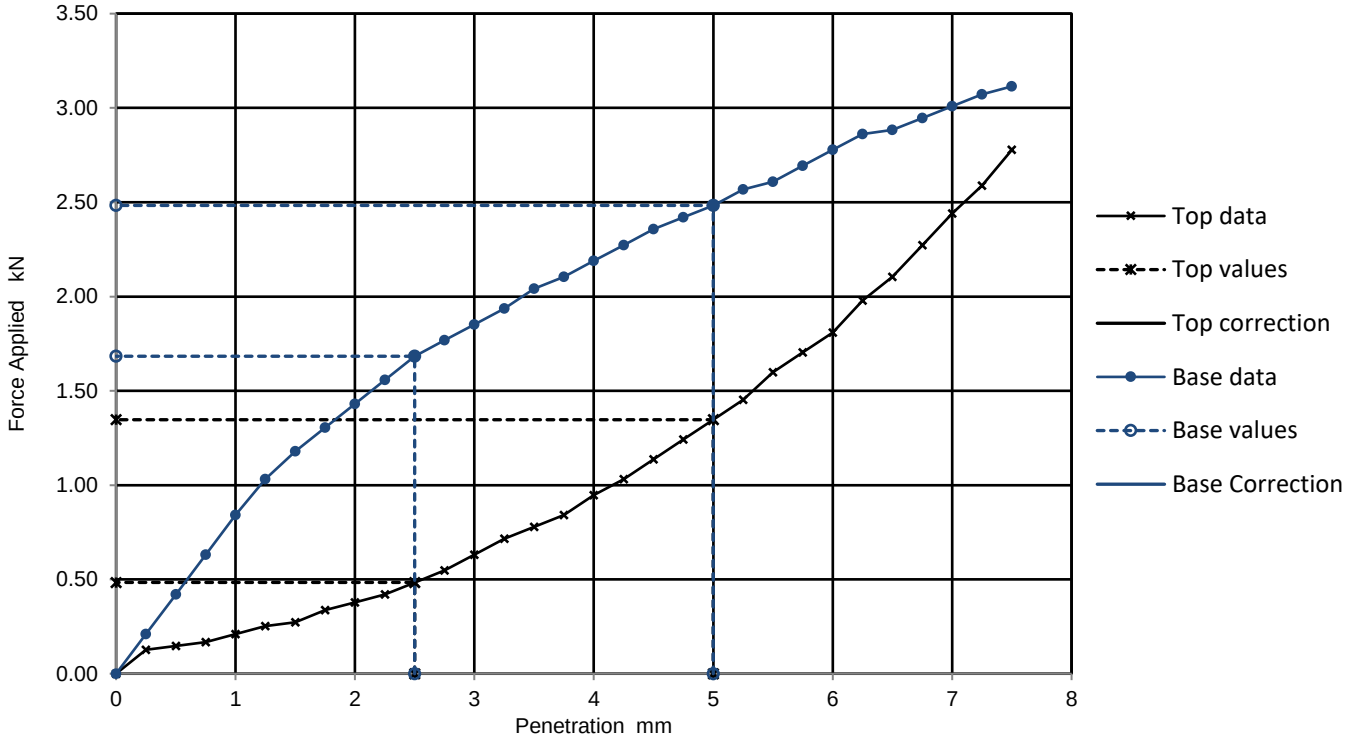
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT05
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607171
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.63	Mg/m3	Surcharge applied	kg
	Dry density	1.46	Mg/m3		kPa
	Moisture content	11.6	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.7	6.7	6.7		
BASE		13.0	12.0	13.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	63

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

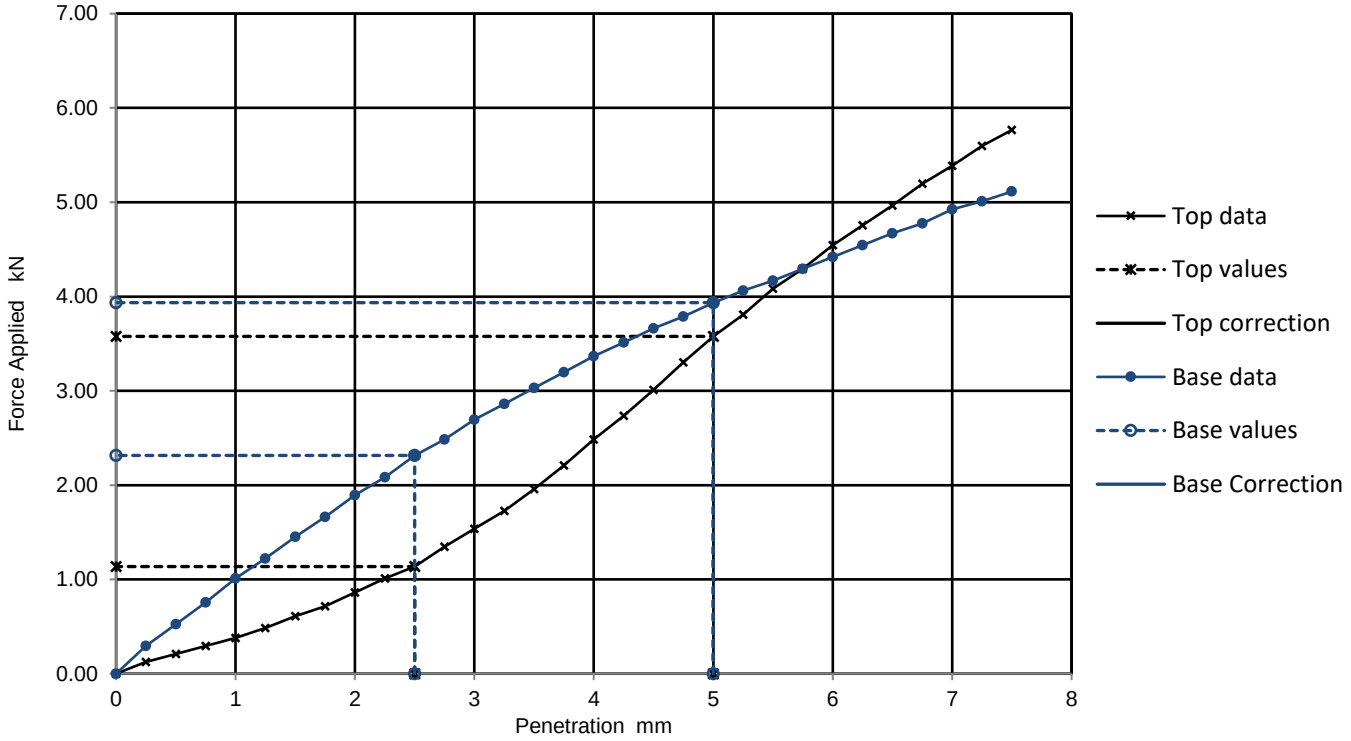
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT05
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607171
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.68	Mg/m3	Surcharge applied	2	kg
	Dry density	1.53	Mg/m3		1	kPa
	Moisture content	10.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		8.6	18.0	18.0	19.0	
BASE		18.0	20.0	20.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	64

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

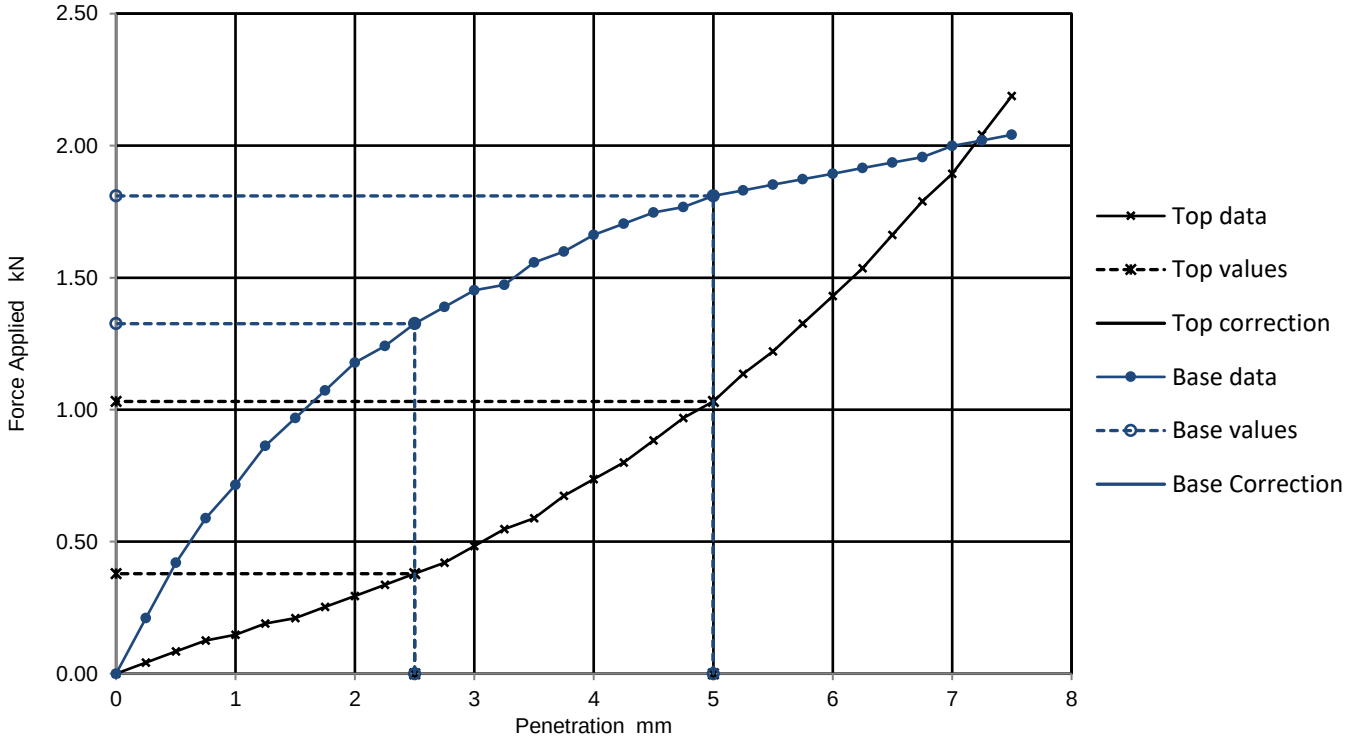
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT05
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607171
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.58	Mg/m3	Surcharge applied	2	kg
	Dry density	1.44	Mg/m3		1	kPa
	Moisture content	9.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.9	5.2	5.2		
BASE		10.0	9.0	10.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	65

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

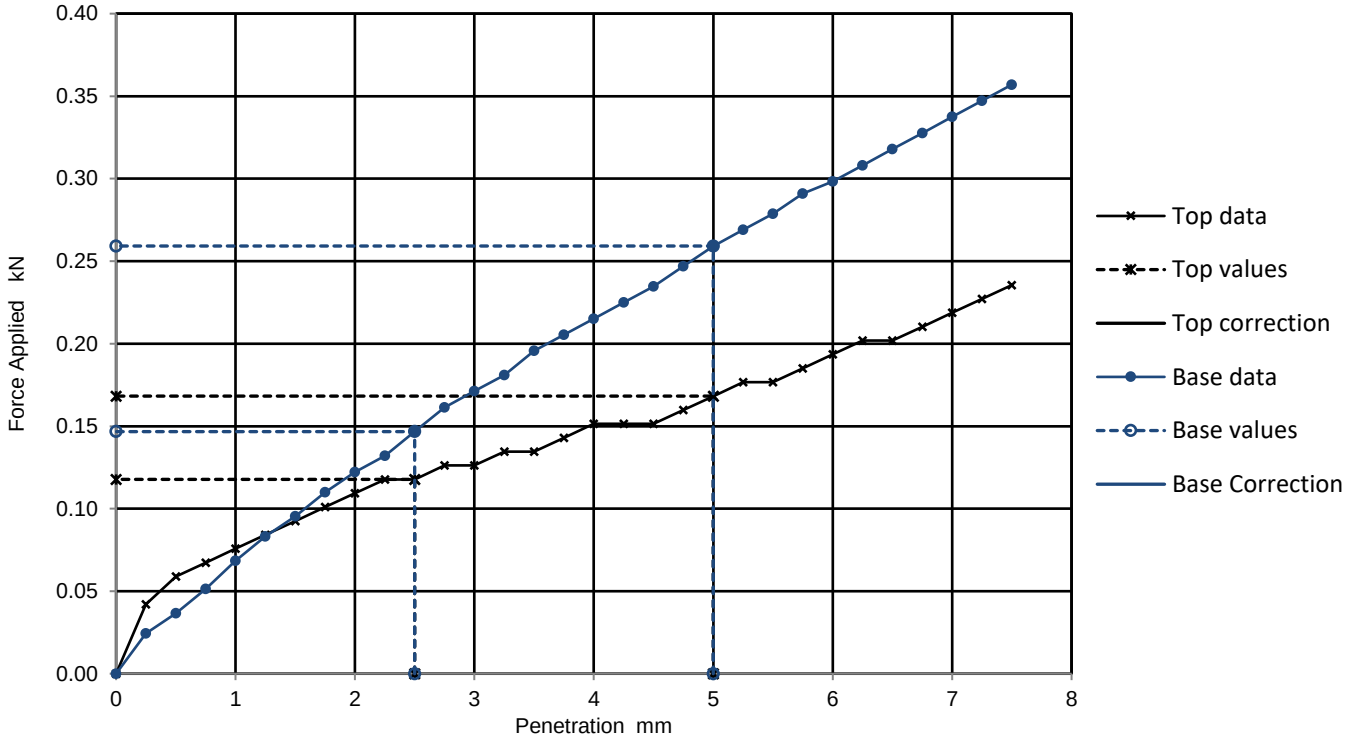
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT06
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Blackish-grey very silty coarse SAND and fine GRAVEL.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062251
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.07	Mg/m3	Surcharge applied	2	kg
	Dry density	1.73	Mg/m3		1	kPa
	Moisture content	19.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.9	0.8	0.9		
BASE		1.1	1.3	1.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	66

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

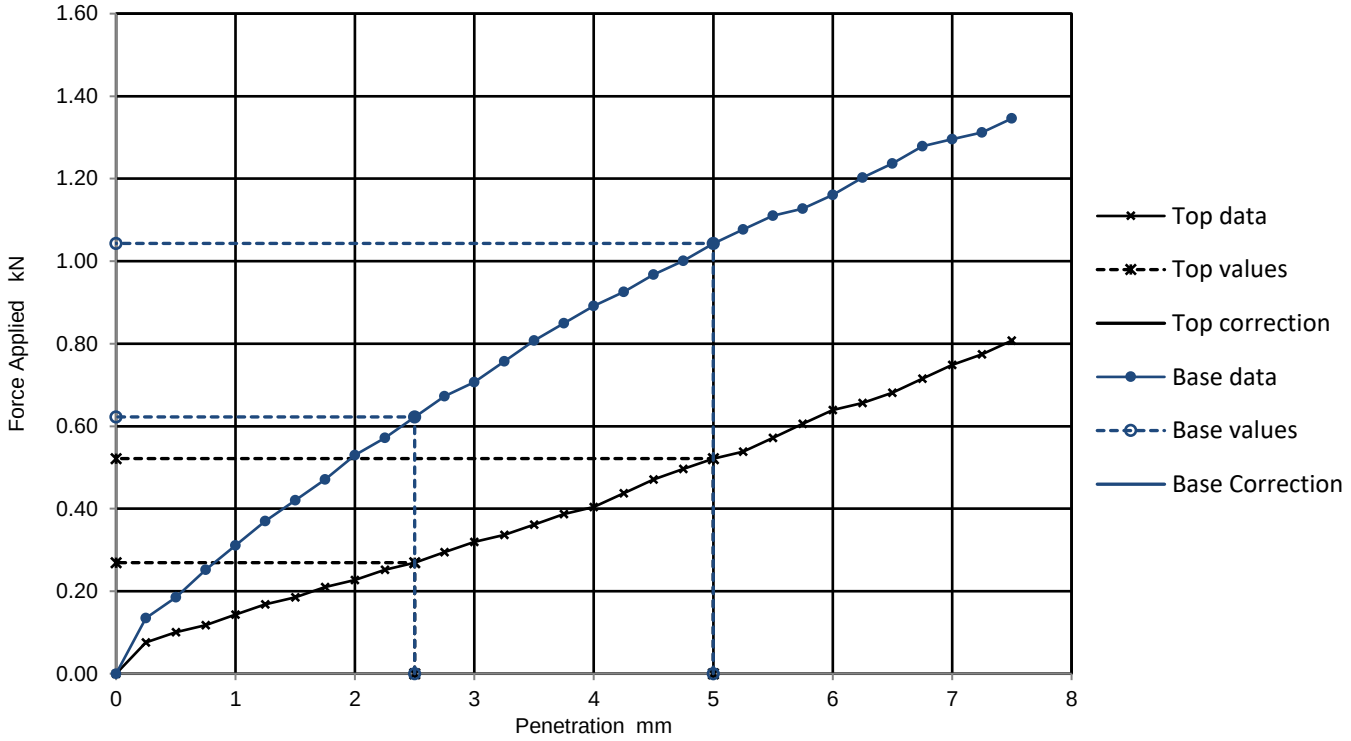
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT06
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062251
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.10	Mg/m3	Surcharge applied	2	kg
	Dry density	1.81	Mg/m3		1	kPa
	Moisture content	16.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.0	2.6	2.6		
BASE		4.7	5.2	5.2		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	67

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

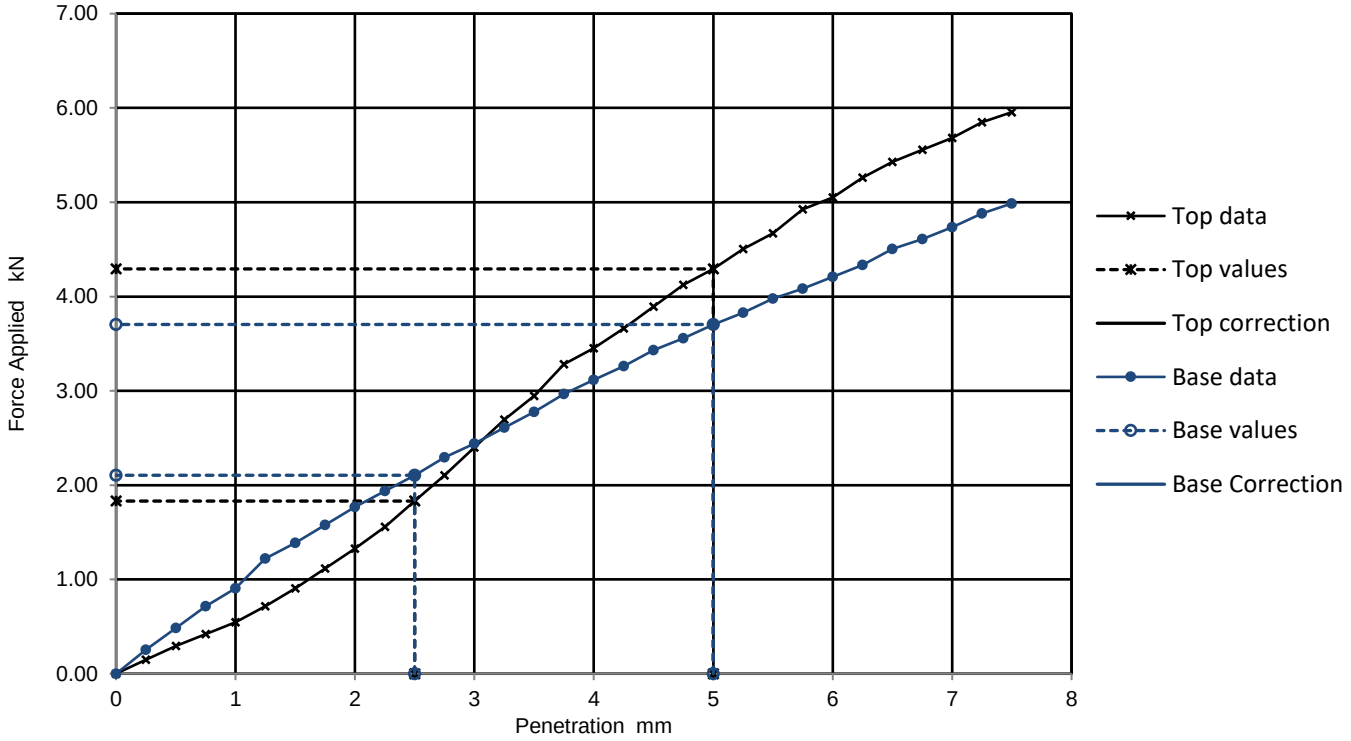
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT06
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062251
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	2	kg
	Dry density	1.85	Mg/m3		1	kPa
	Moisture content	12.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		14.0	21.0	21.0	20.0	
BASE		16.0	19.0	19.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	68

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

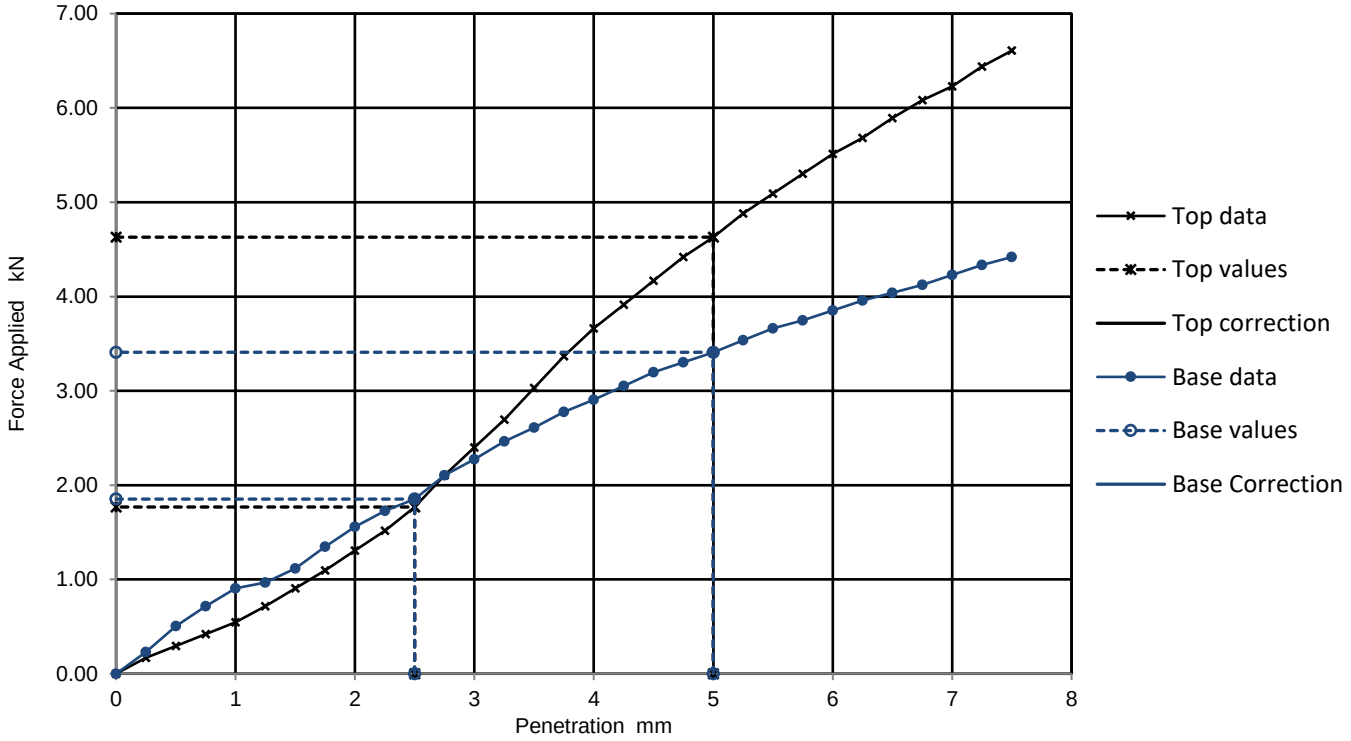
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT06
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062251
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.86	Mg/m3		1	kPa
	Moisture content	8.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		13.0	23.0	23.0		
BASE		14.0	17.0	17.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	69

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

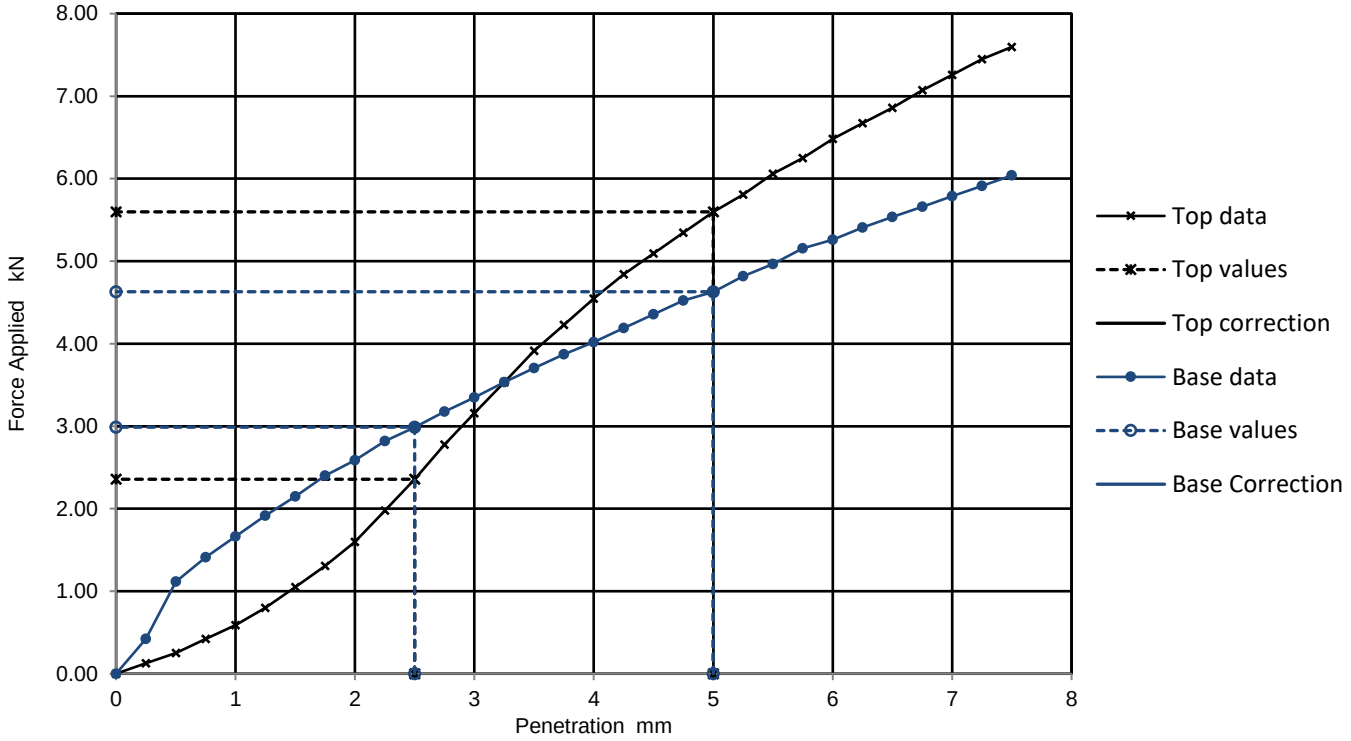
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT06
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023062251
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.85	Mg/m3		1	kPa
	Moisture content	9.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		18.0	28.0	28.0	26.0	
BASE		23.0	23.0	23.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	70

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

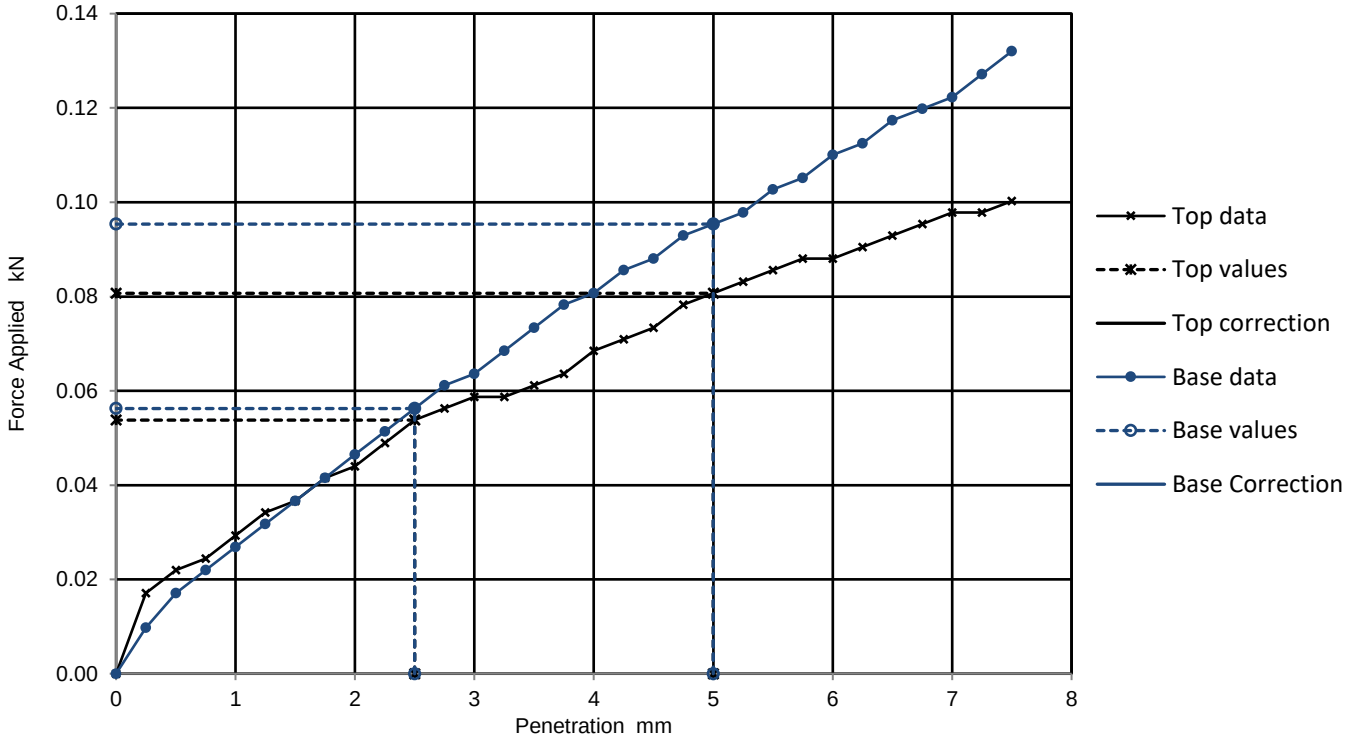
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT07
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Black and grey silty SAND and GRAVEL.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607190
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.83	Mg/m3	Surcharge applied	2	kg
	Dry density	1.39	Mg/m3		1	kPa
	Moisture content	31.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.4	0.4	0.4	0.4	
BASE		0.4	0.5	0.5		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	71

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

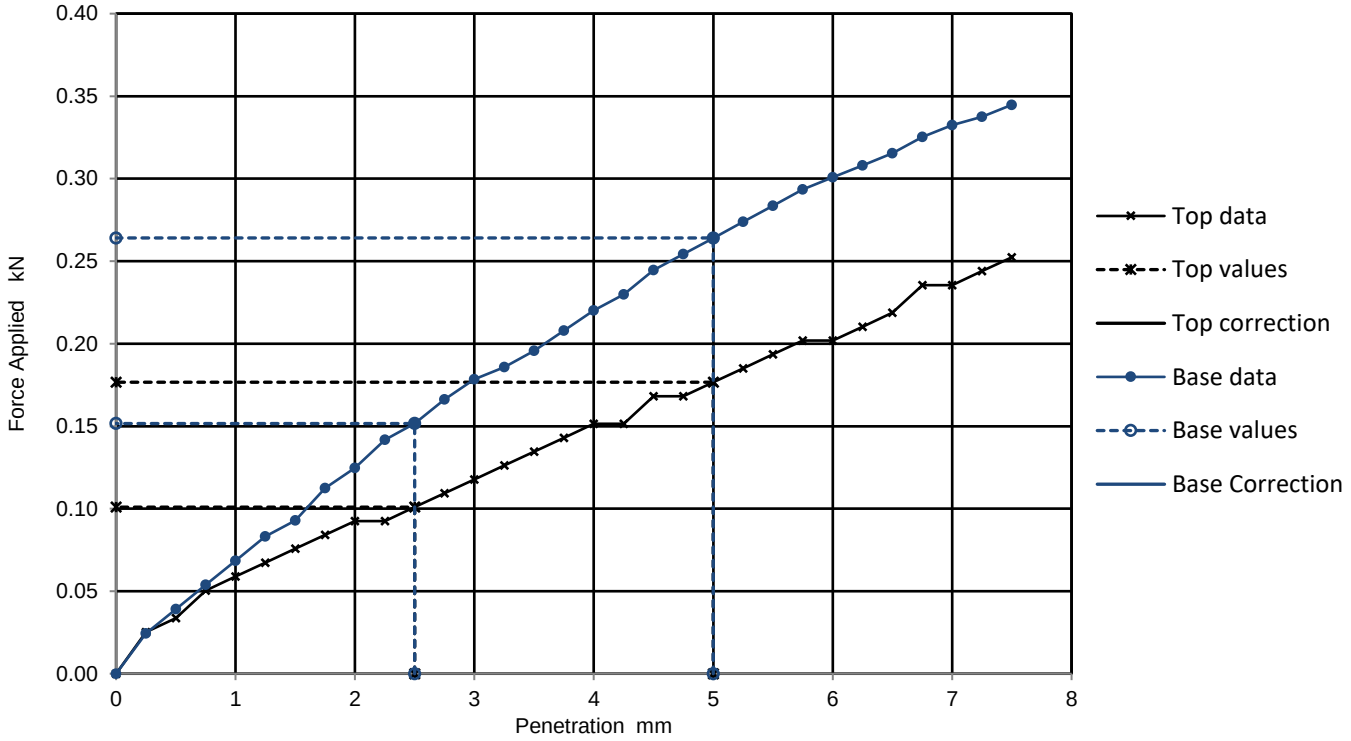
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT07
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607190
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.89	Mg/m3	Surcharge applied	2	kg
	Dry density	1.44	Mg/m3		1	kPa
	Moisture content	31.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.8	0.9	0.9		
BASE		1.1	1.3	1.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	72

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

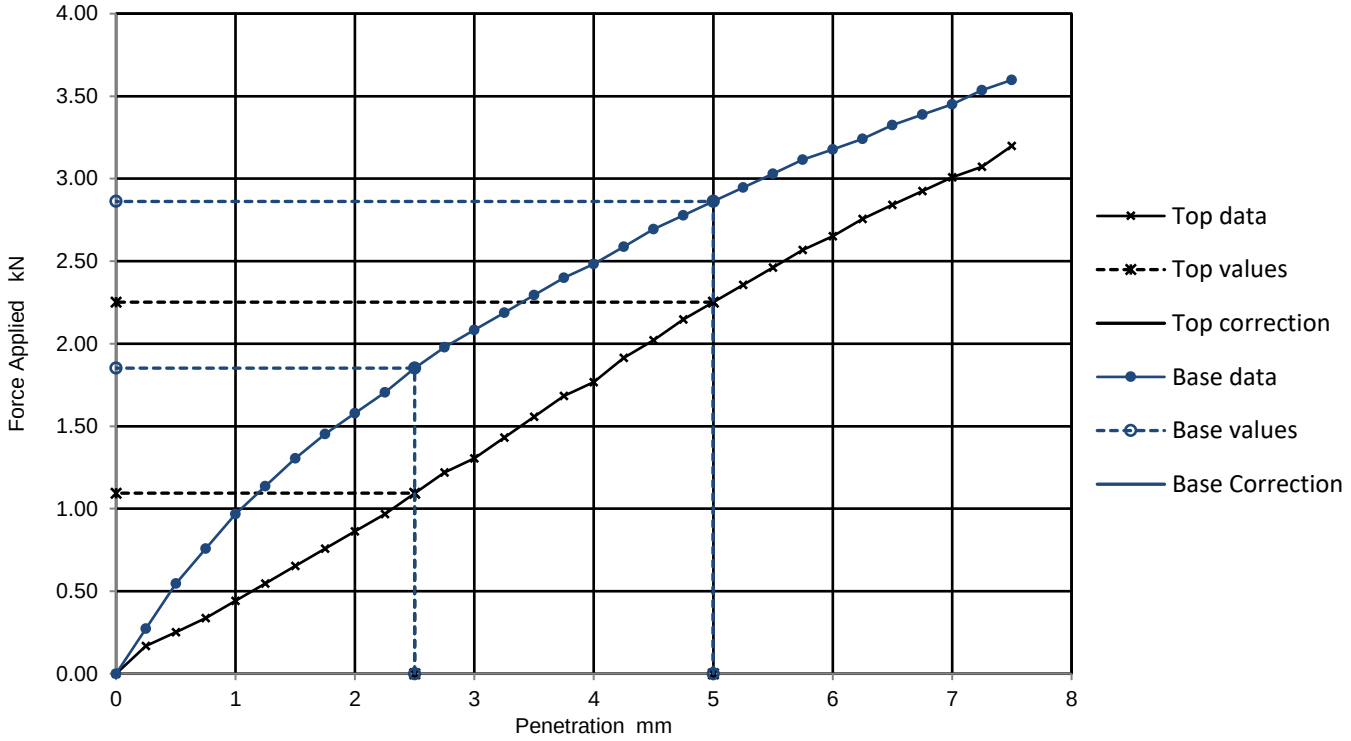
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT07
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607190
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.94	Mg/m3	Surcharge applied	2	kg
	Dry density	1.60	Mg/m3		1	kPa
	Moisture content	20.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		8.3	11.0	11.0		
BASE		14.0	14.0	14.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	73

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

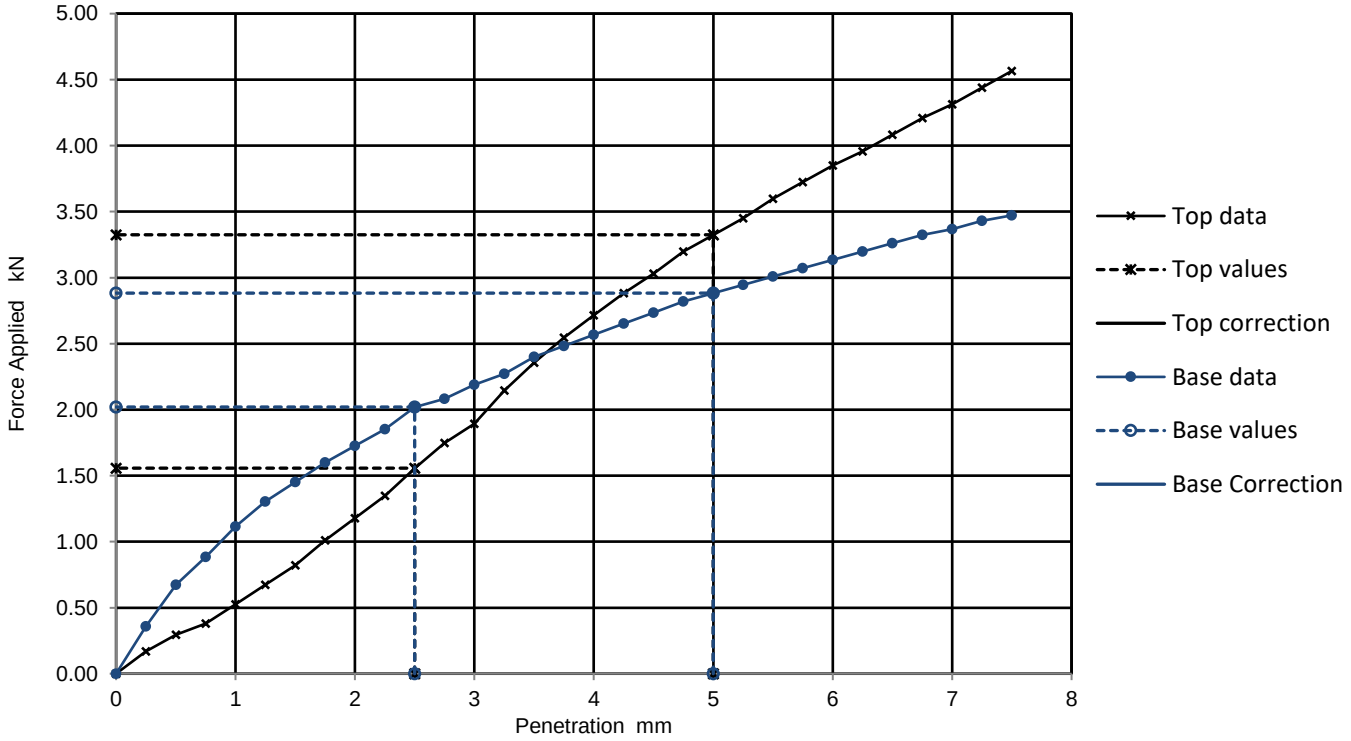
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT07
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607190
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.80	Mg/m3	Surcharge applied	2	kg
	Dry density	1.60	Mg/m3		1	kPa
	Moisture content	12.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		12.0	17.0	17.0	16.0	
BASE		15.0	14.0	15.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	74

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

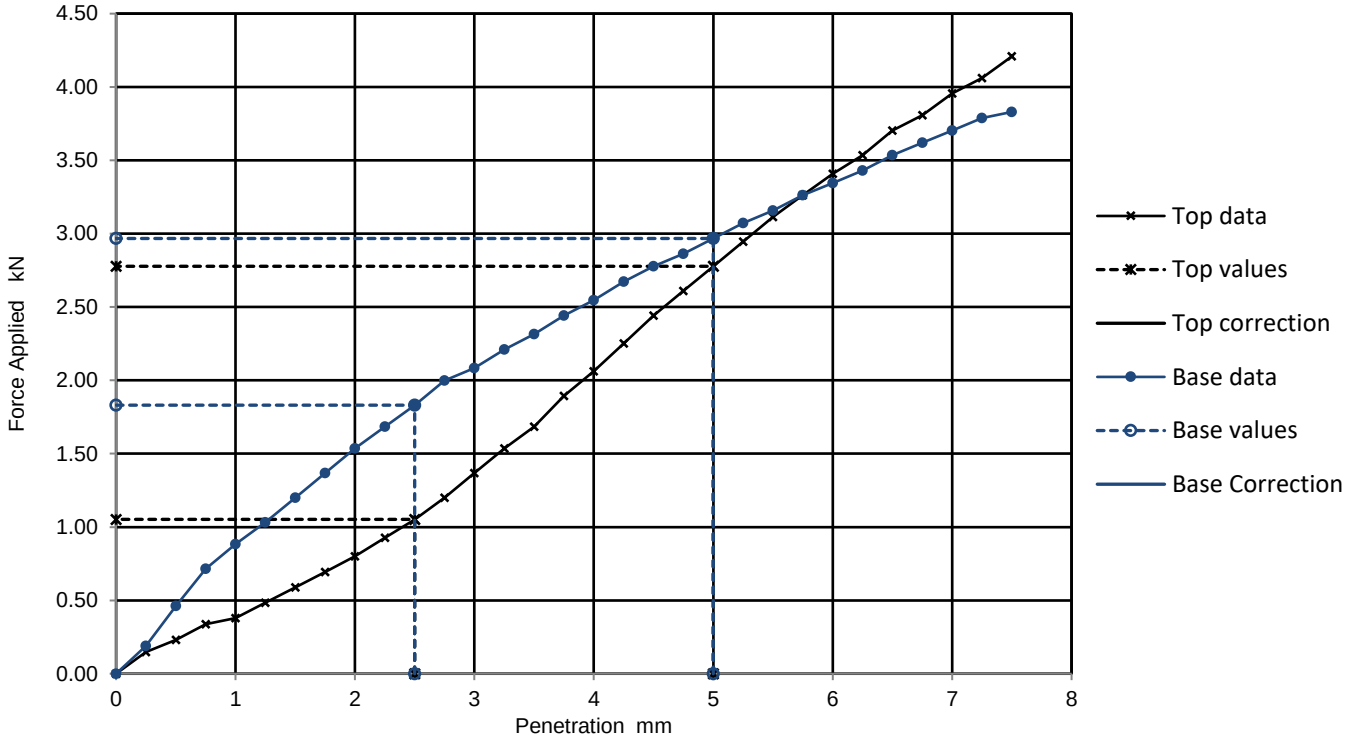
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT07
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230607190
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.72	Mg/m3	Surcharge applied	2	kg
	Dry density	1.57	Mg/m3		1	kPa
	Moisture content	9.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		8.0	14.0	14.0	14.0	
BASE		14.0	15.0	15.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	75

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

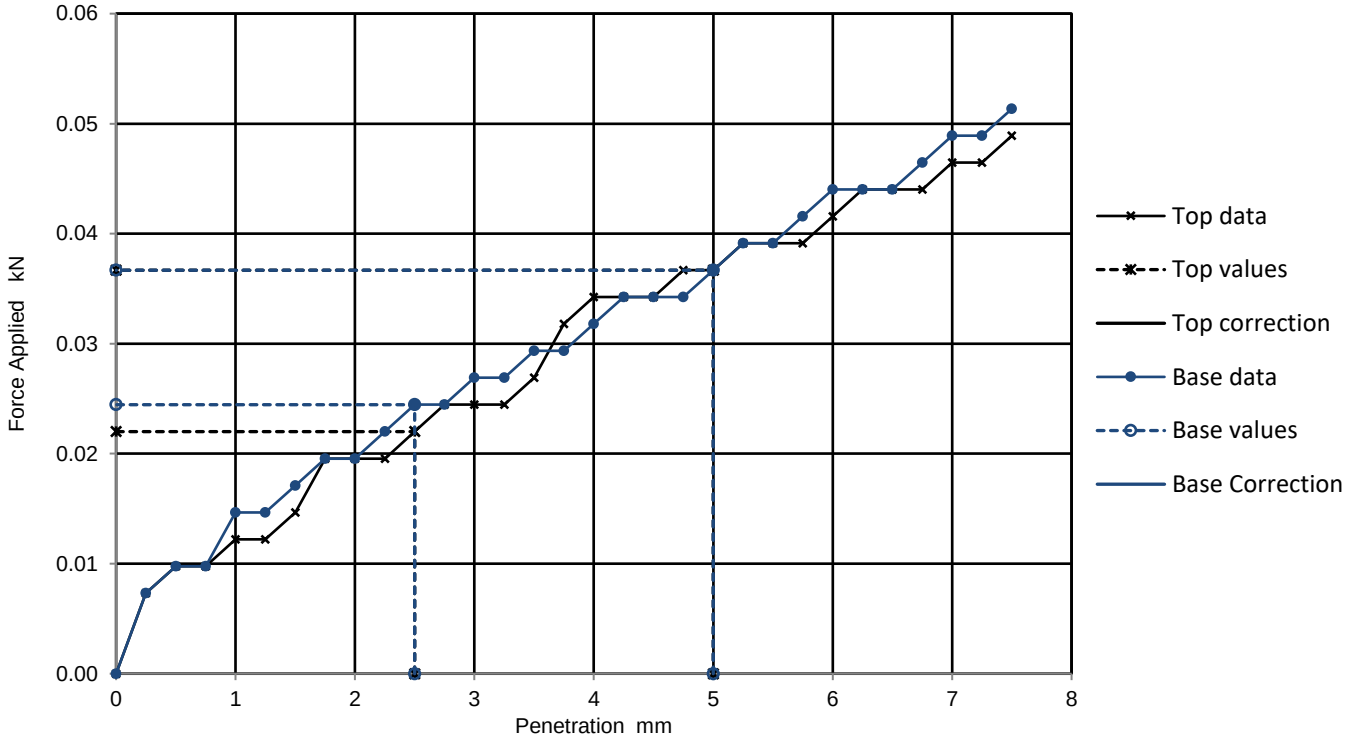
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description	Brownish-grey slightly gravelly sandy SILT.			Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023080820
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	1.95	Mg/m3		1	kPa
	Moisture content	14.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.2	0.2	0.2	0.2	
BASE		0.2	0.2	0.2		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	76

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

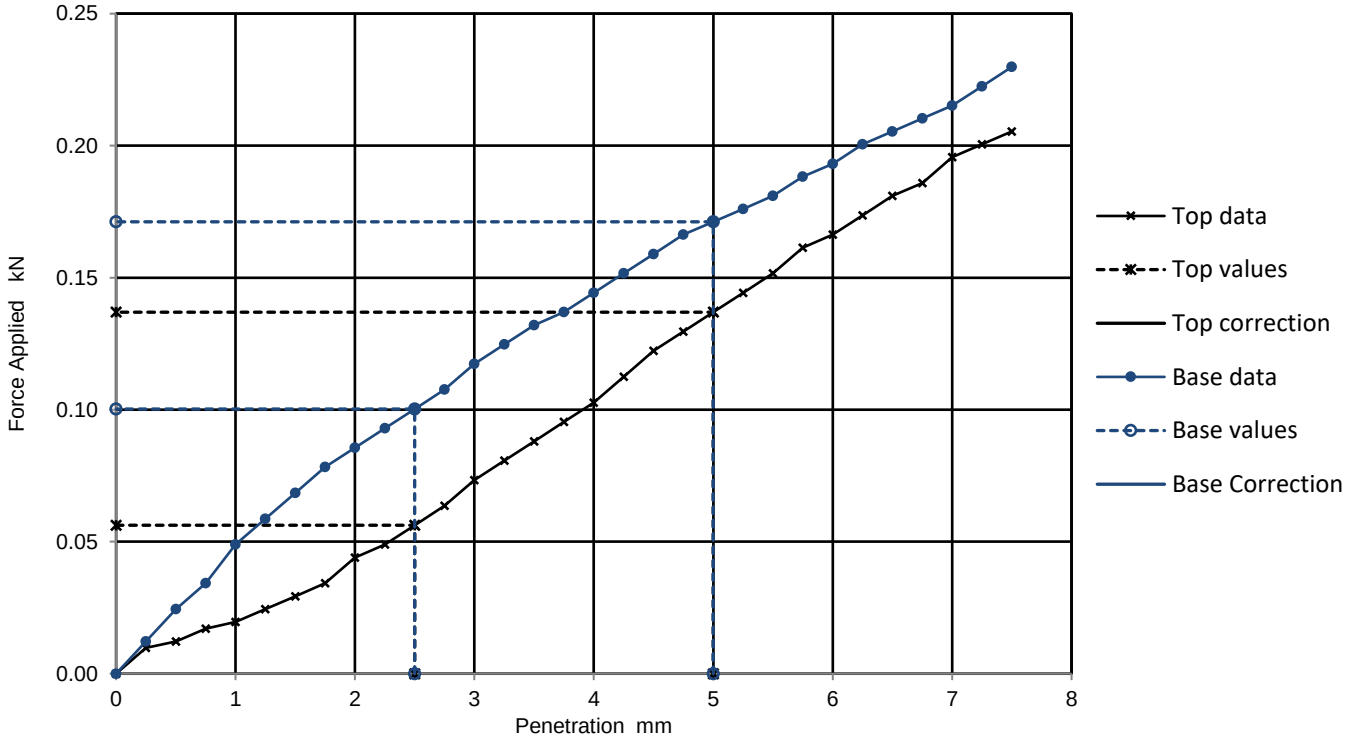
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023080820
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.28	Mg/m3	Surcharge applied	2	kg
	Dry density	2.03	Mg/m3		1	kPa
	Moisture content	12.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.4	0.7	0.7		
BASE		0.8	0.9	0.9		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	77

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

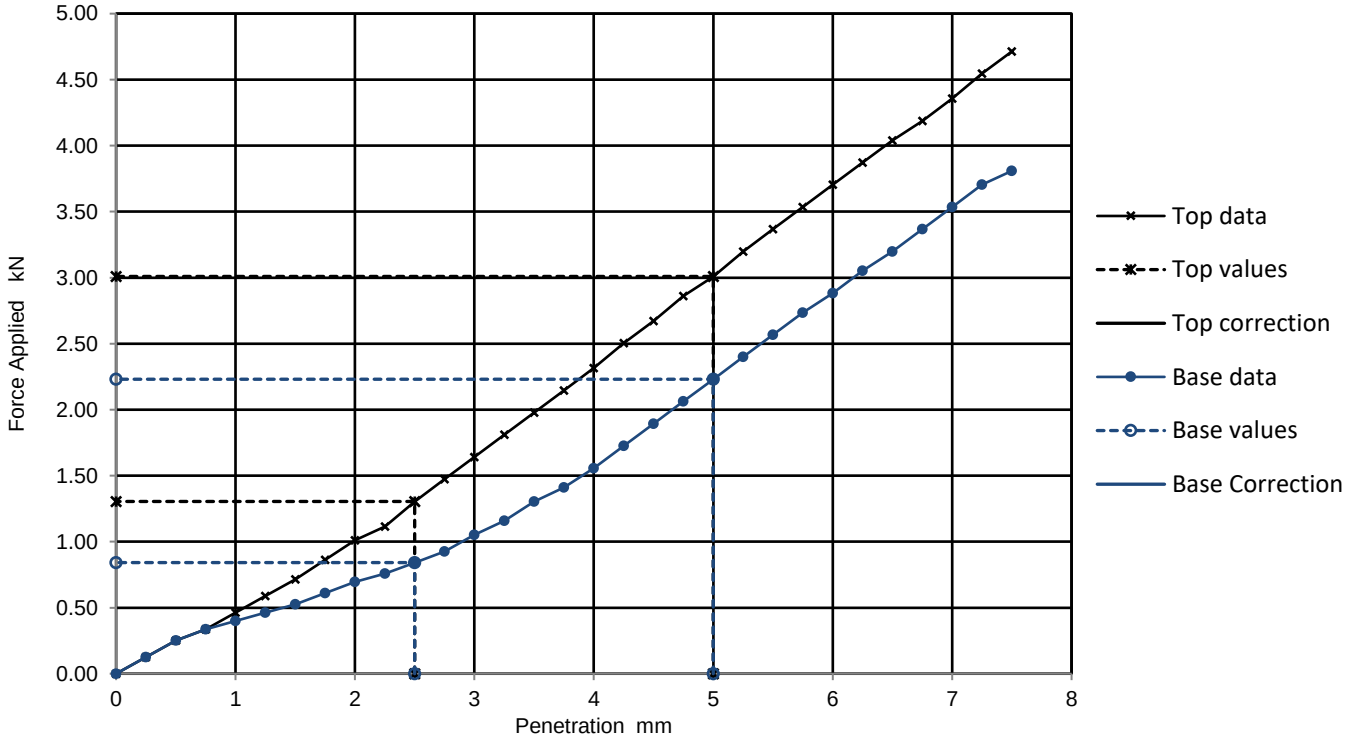
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023080820
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	9.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		9.9	15.0	15.0		
BASE		6.4	11.0	11.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	78

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

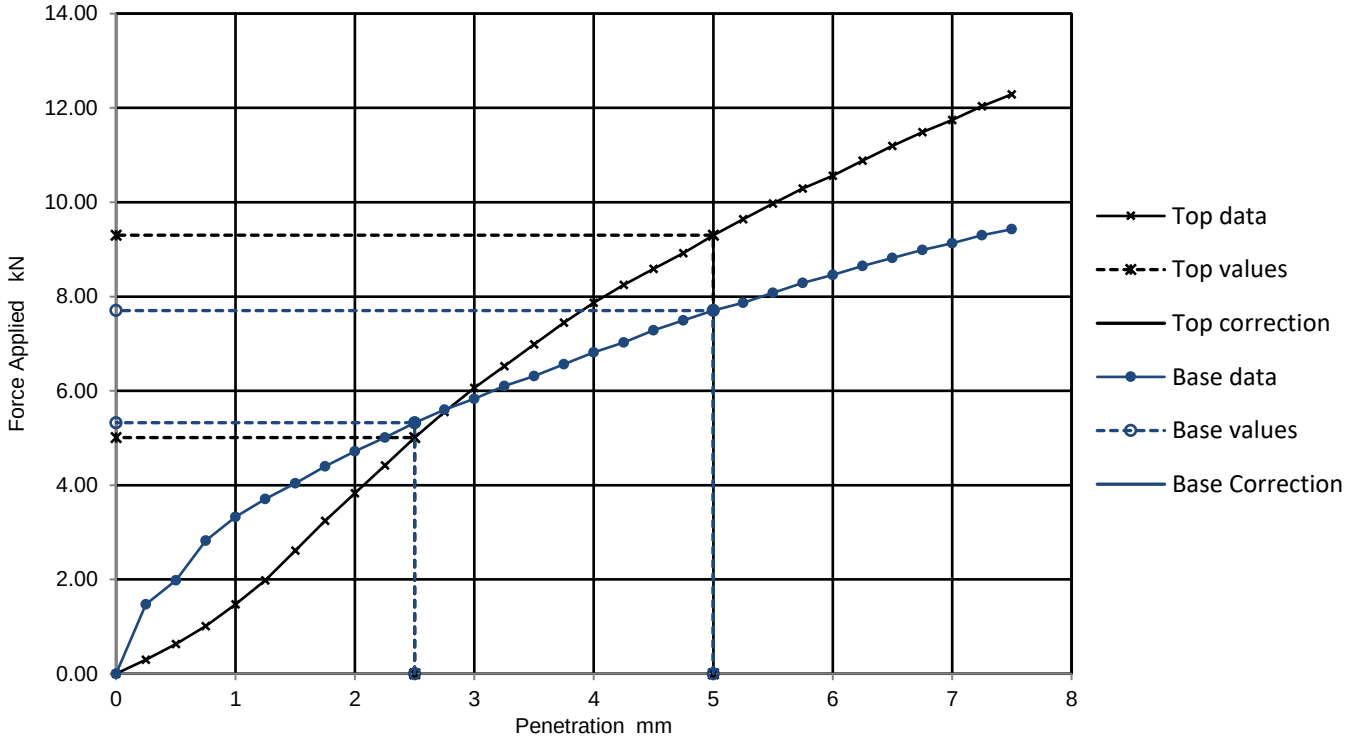
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023080820
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.20	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	7.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		38.0	47.0	47.0	43.0	
BASE		40.0	39.0	40.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	79

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

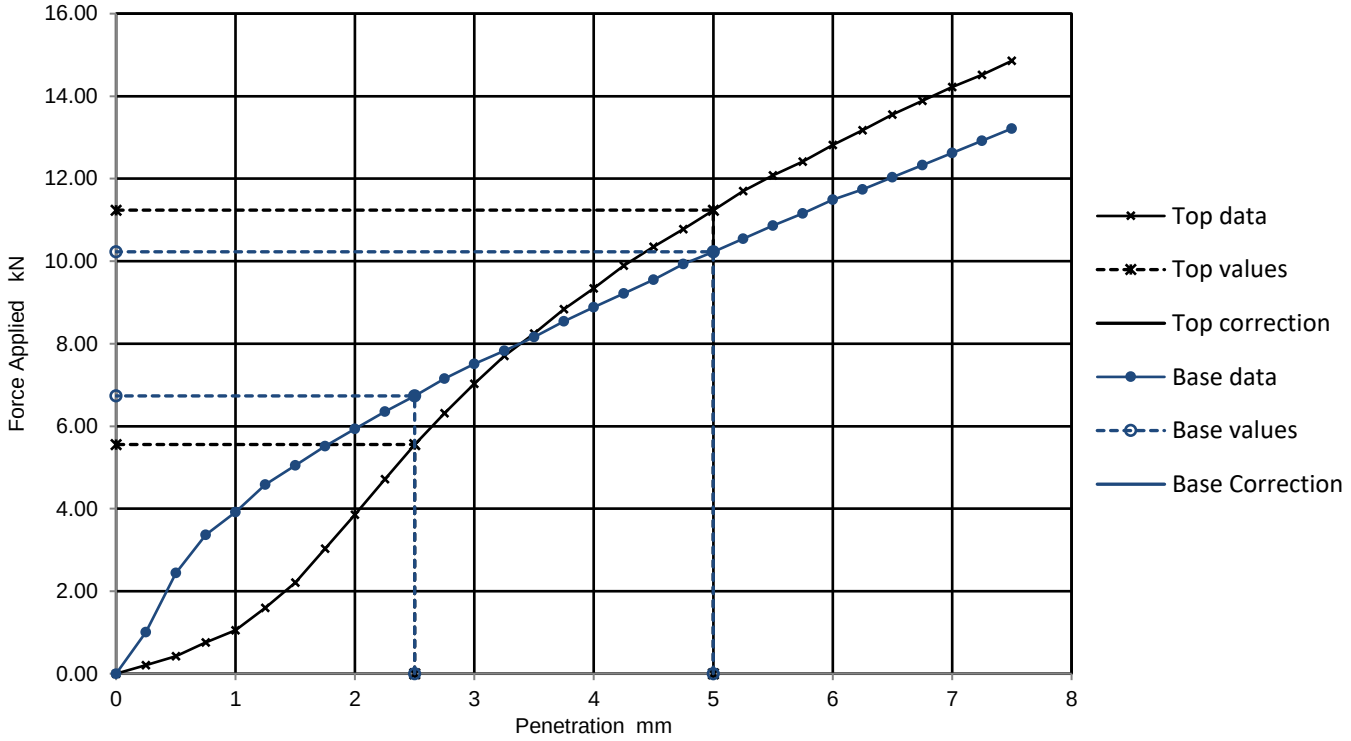
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	BHT17A
Site Name	Derrygreenagh Power			Sample No.	13
Soil Description				Depth m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023080820
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	2	kg
	Dry density	2.03	Mg/m3		1	kPa
	Moisture content	6.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		42.0	56.0	56.0	54.0	
BASE		51.0	51.0	51.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	80

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

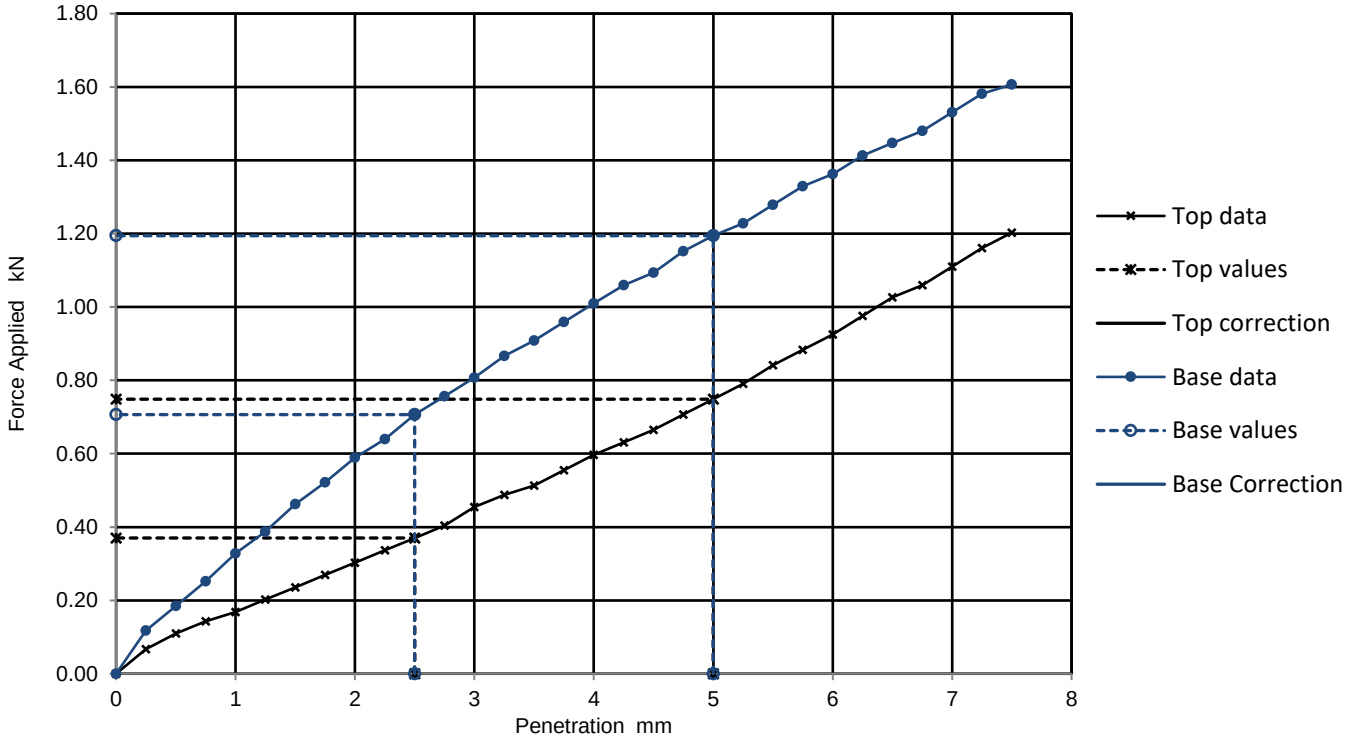
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP206A
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305170
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	2	kg
	Dry density	1.80	Mg/m3		1	kPa
	Moisture content	17.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.8	3.7	3.7		
BASE		5.4	6.0	6.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	81

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

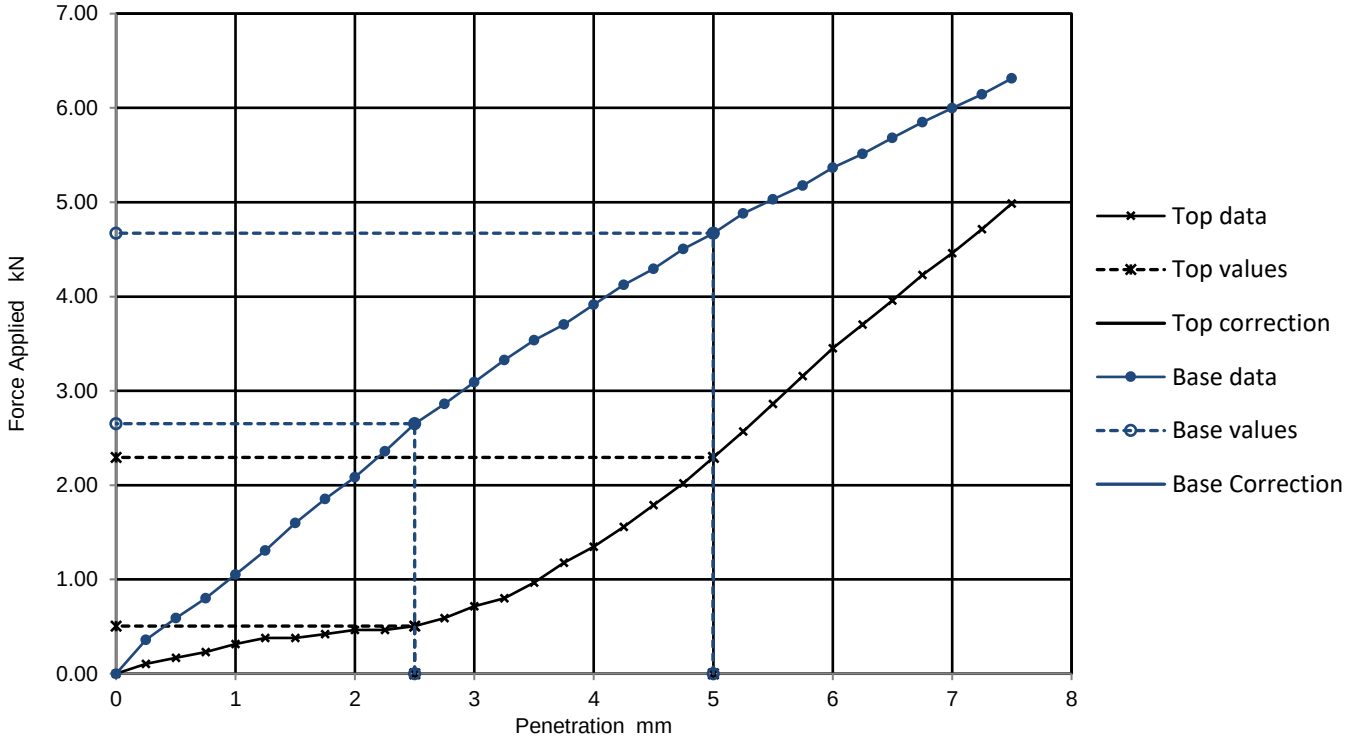
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP206A
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305170
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.11	Mg/m3	Surcharge applied	2	kg
	Dry density	1.85	Mg/m3		1	kPa
	Moisture content	14.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.8	11.0	11.0		
BASE		20.0	23.0	23.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	82

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

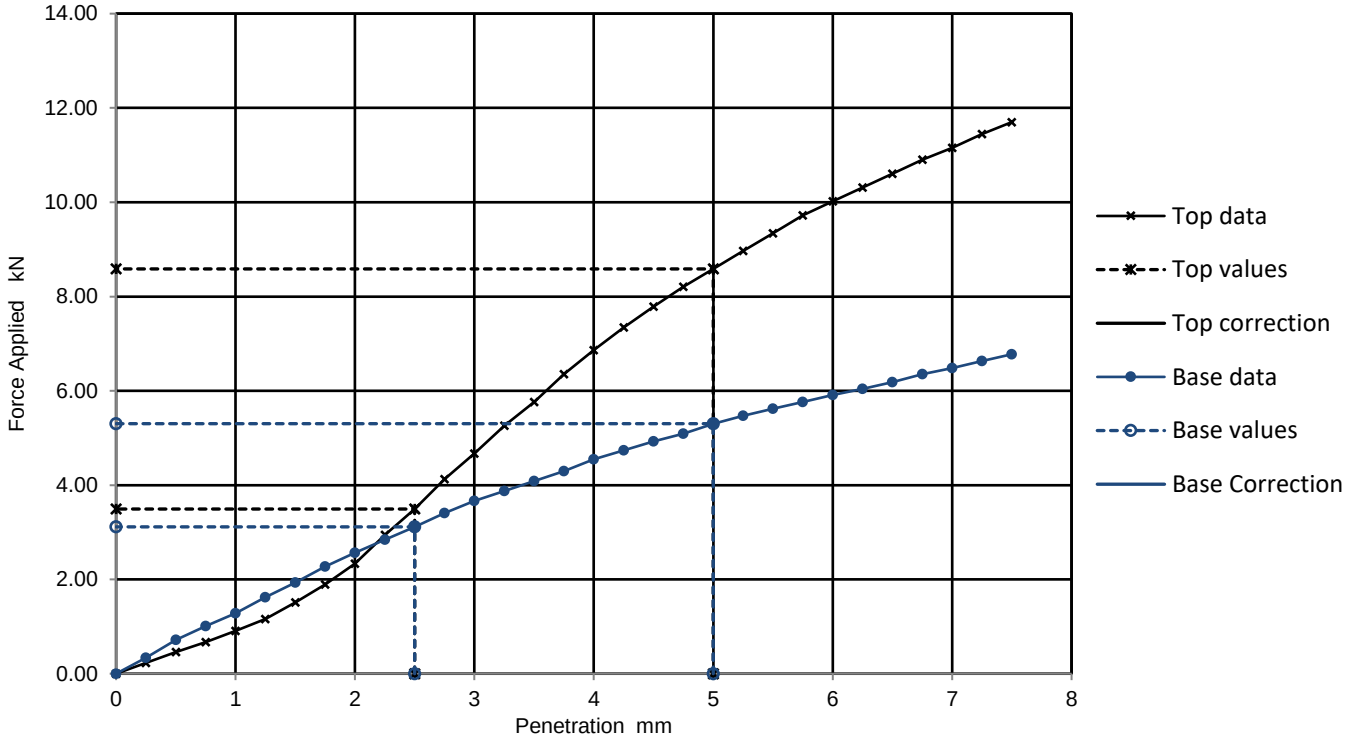
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP206A
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305170
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.79	Mg/m3		1	kPa
	Moisture content	12.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		26.0	43.0	43.0		
BASE		24.0	27.0	27.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	83

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

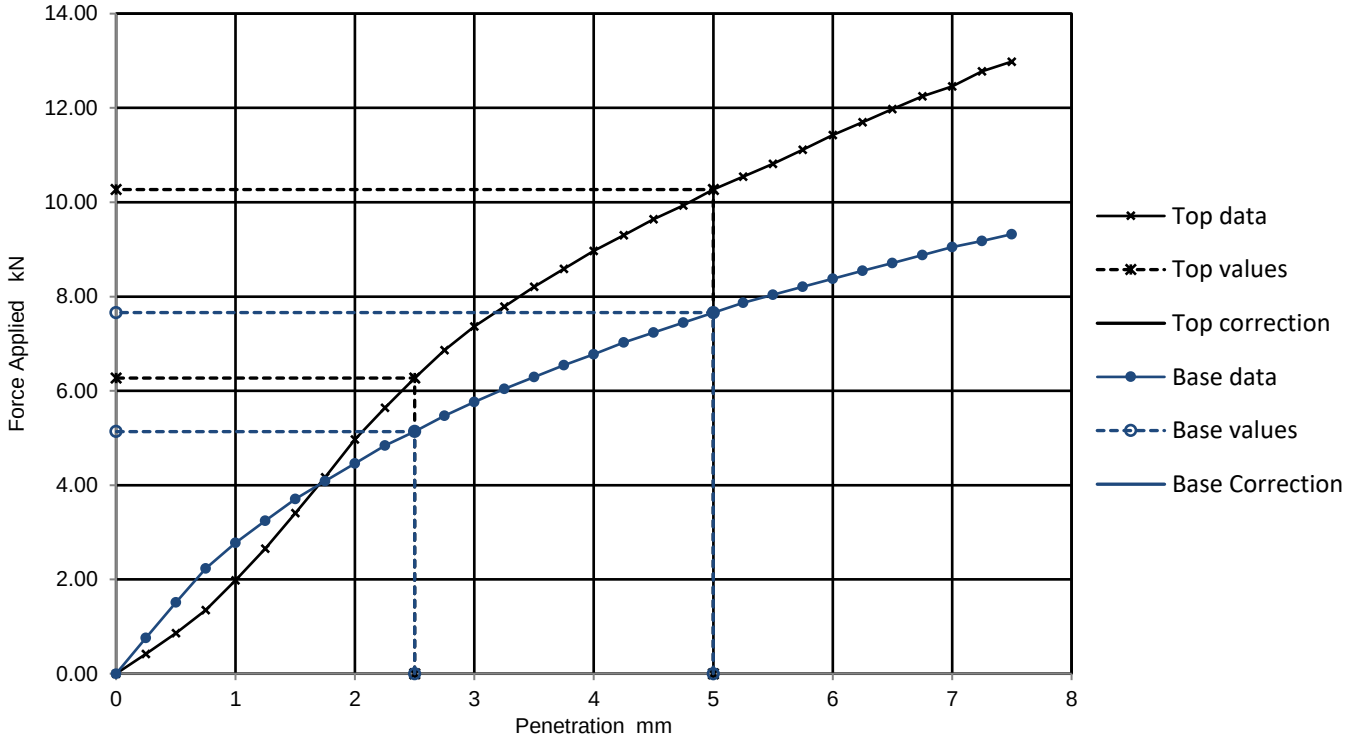
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP206A
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305170
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	2	kg
	Dry density	1.81	Mg/m3		1	kPa
	Moisture content	10.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		48.0	51.0	51.0		
BASE		39.0	38.0	39.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	84

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

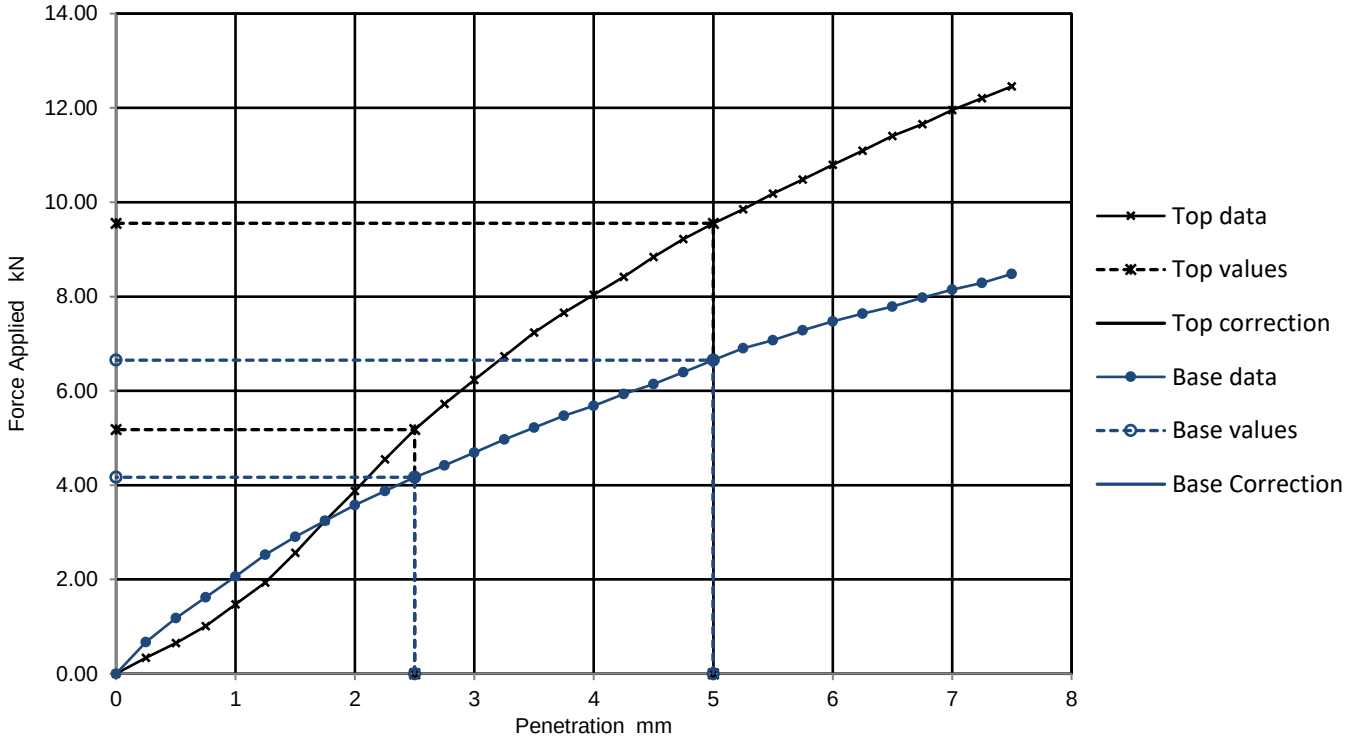
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP206A
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202305170
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.96	Mg/m3	Surcharge applied	2	kg
	Dry density	1.79	Mg/m3		1	kPa
	Moisture content	9.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		39.0	48.0	48.0		
BASE		32.0	33.0	33.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	85

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

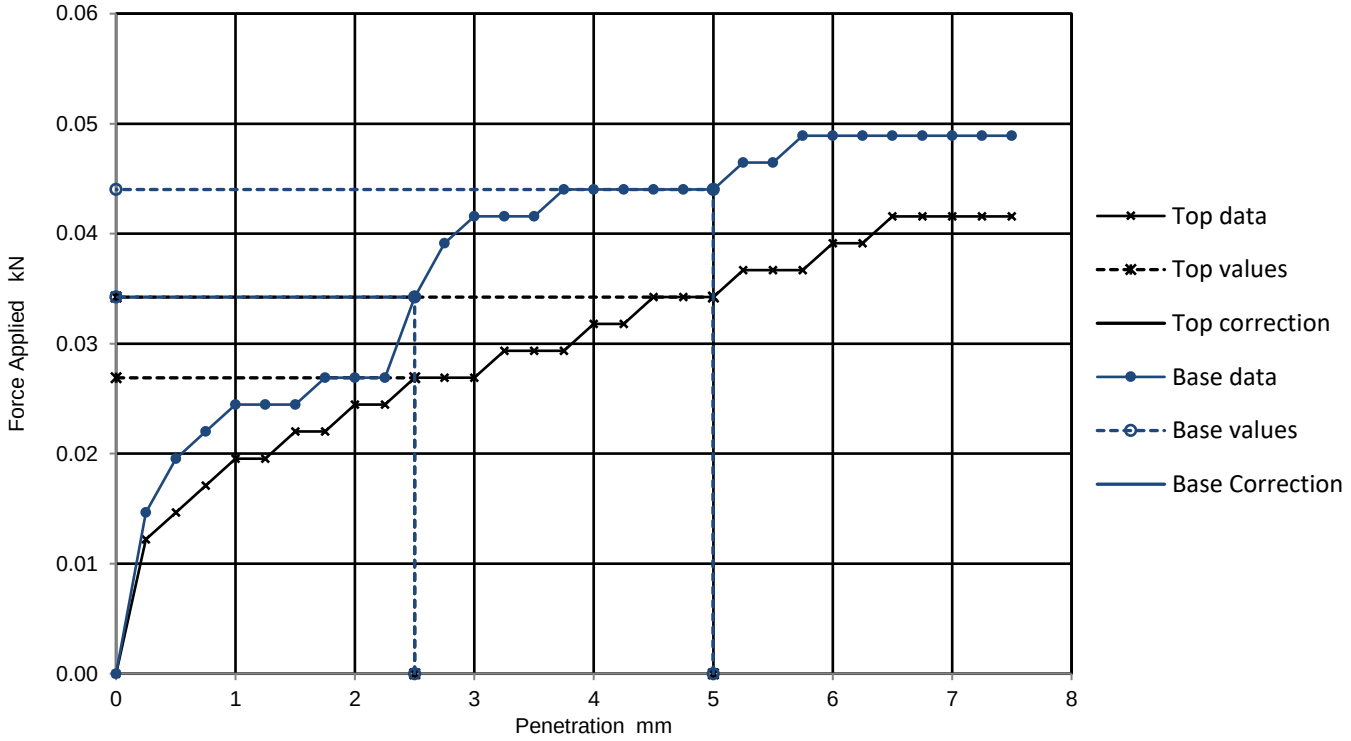
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description	Light brown slightly gravelly slightly sandy SILT.			Depth m	2.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202308165
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	2	kg
	Dry density	1.75	Mg/m3		1	kPa
	Moisture content	18.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.2	0.2	0.2		
BASE		0.3	0.2	0.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	86

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

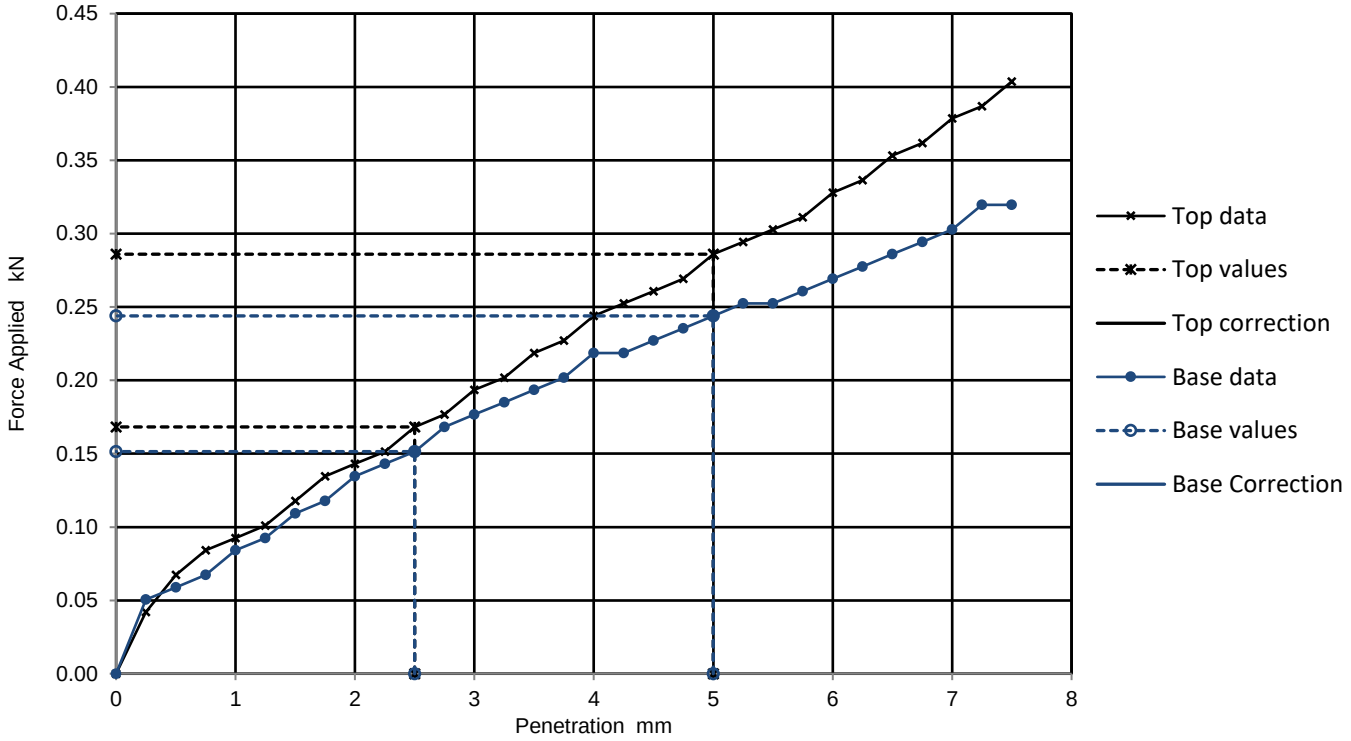
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202308165
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	2	kg
	Dry density	1.89	Mg/m3		1	kPa
	Moisture content	14.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.3	1.4	1.4	1.3	
BASE		1.1	1.2	1.2		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	87

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

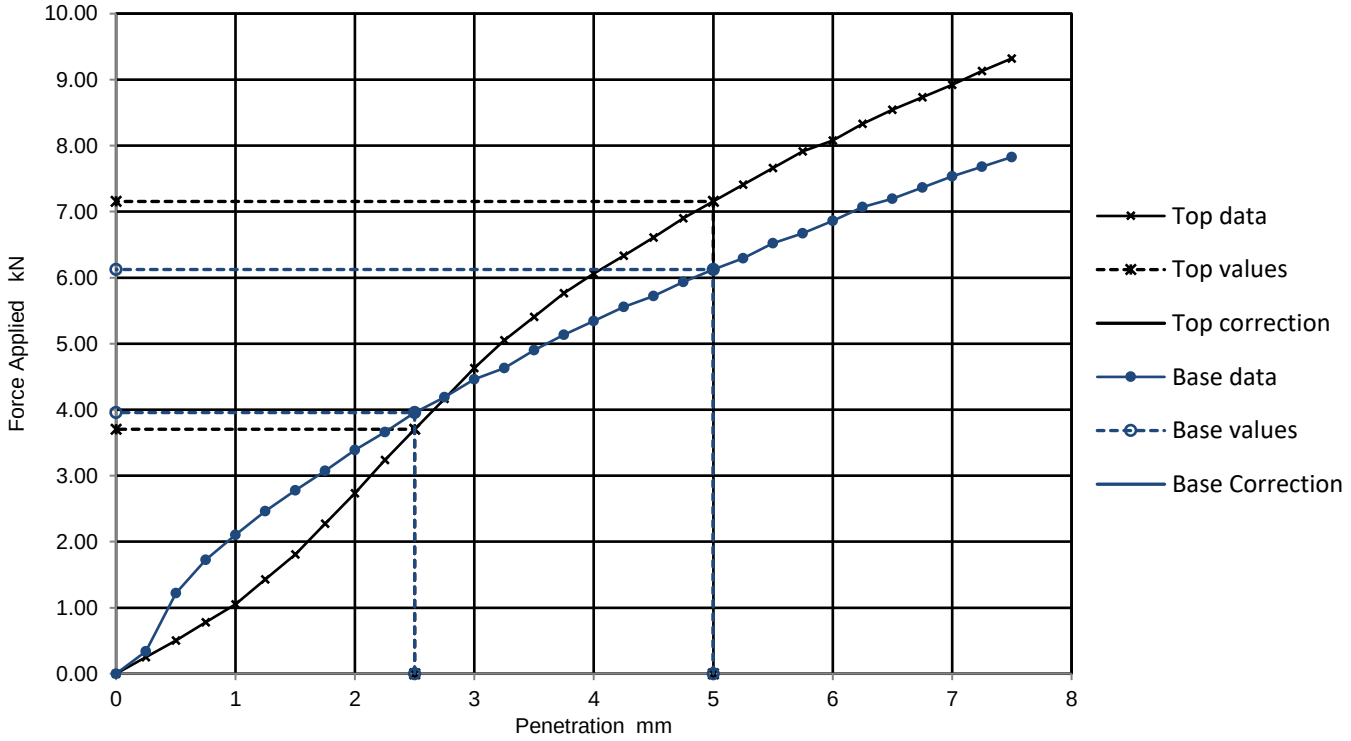
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202308165
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	2	kg
	Dry density	1.89	Mg/m3		1	kPa
	Moisture content	10.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		28.0	36.0	36.0	33.0	
BASE		30.0	31.0	31.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	88

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

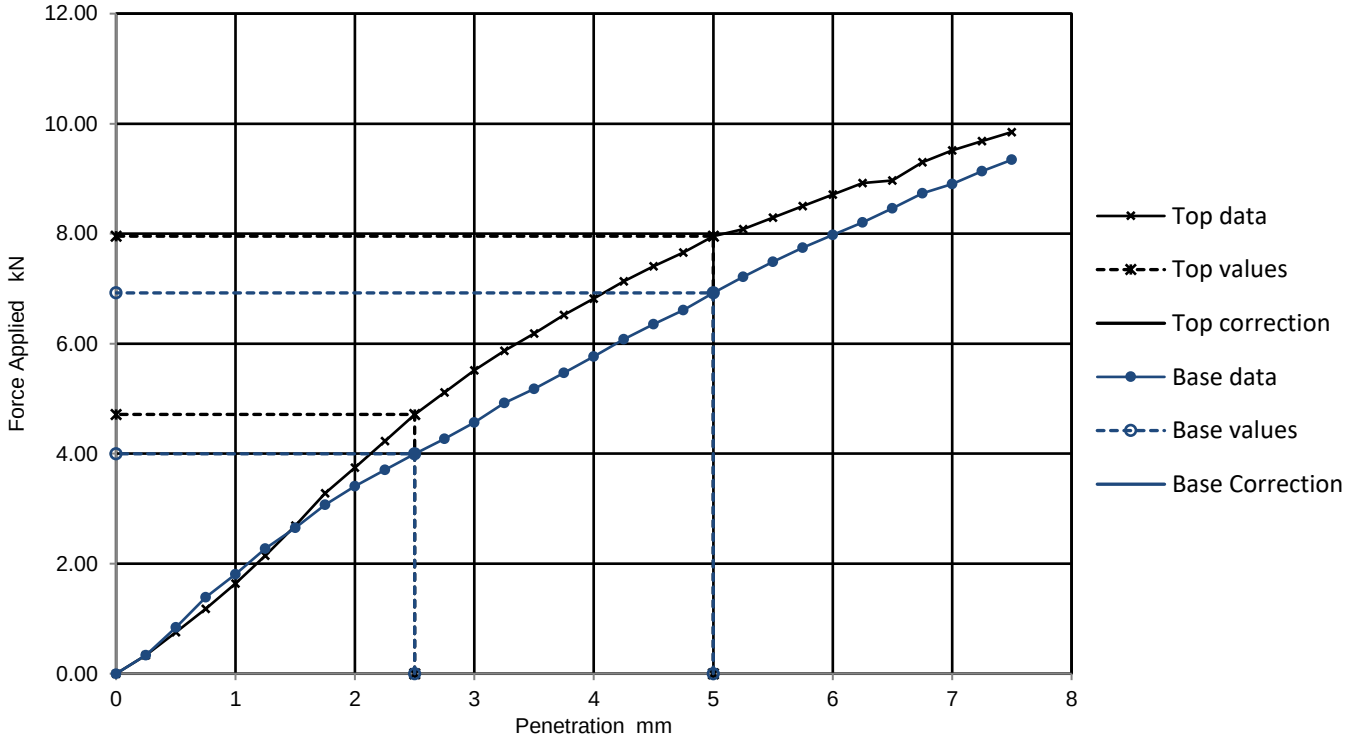
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202308165
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	2	kg
	Dry density	1.87	Mg/m3		1	kPa
	Moisture content	9.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		36.0	40.0	40.0	37.0	
BASE		30.0	35.0	35.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	89

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

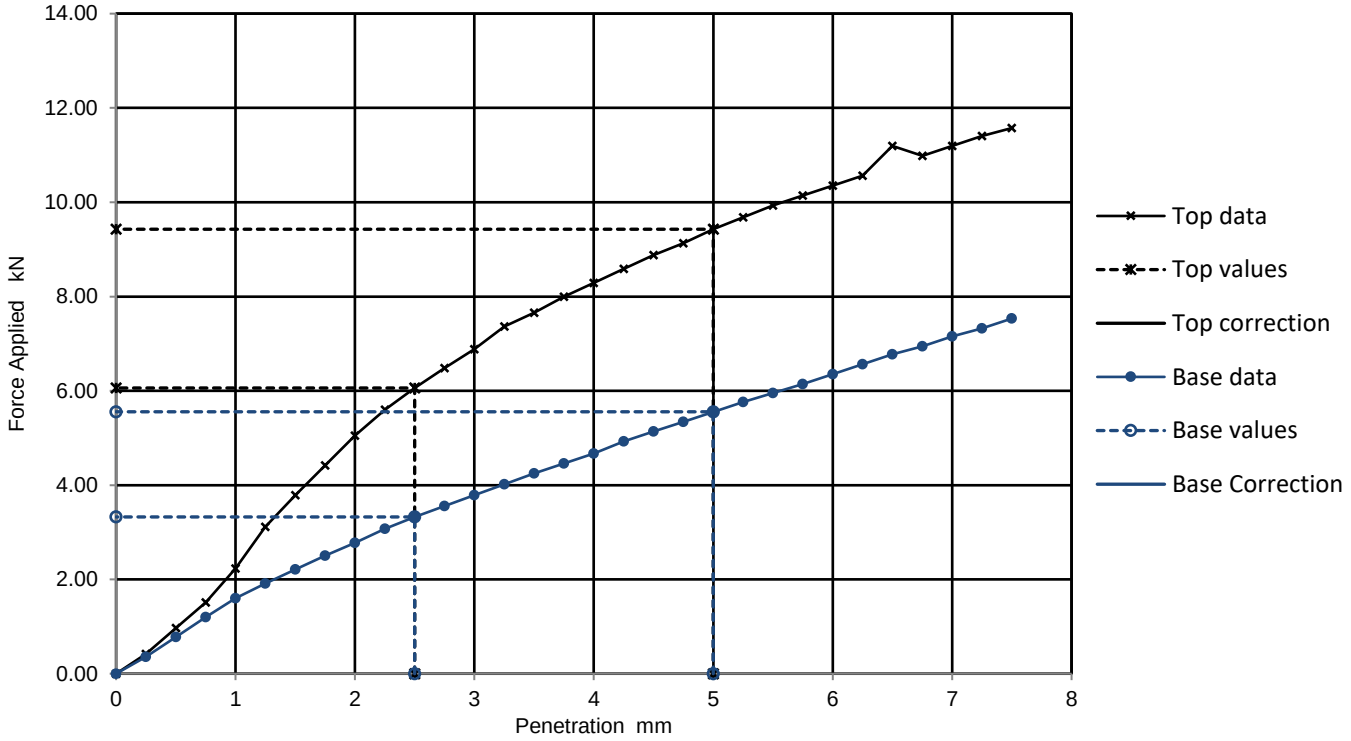
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP208
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202308165
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.85	Mg/m3		1	kPa
	Moisture content	8.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		46.0	47.0	47.0		
BASE		25.0	28.0	28.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	90

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

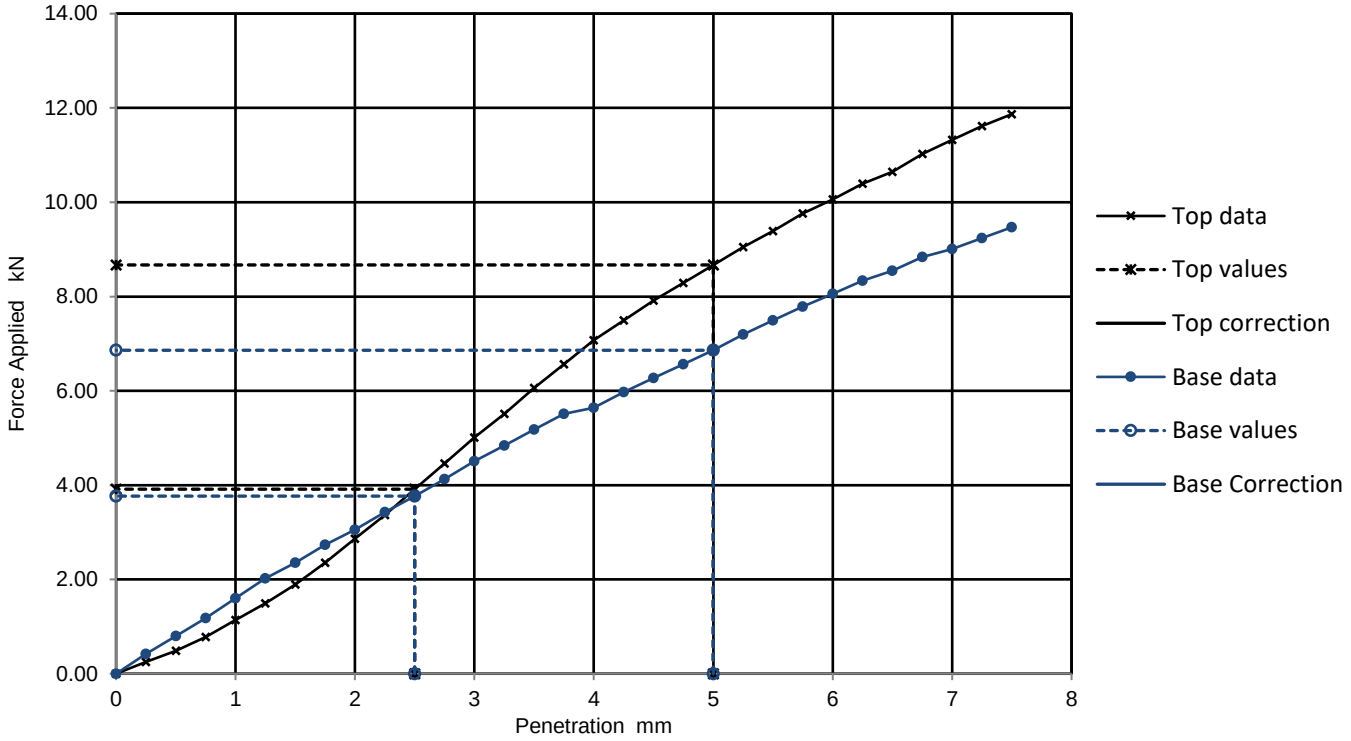
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP209
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051711
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	2	kg
	Dry density	1.82	Mg/m3		1	kPa
	Moisture content	14.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		30.0	43.0	43.0		
BASE		29.0	34.0	34.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	91

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

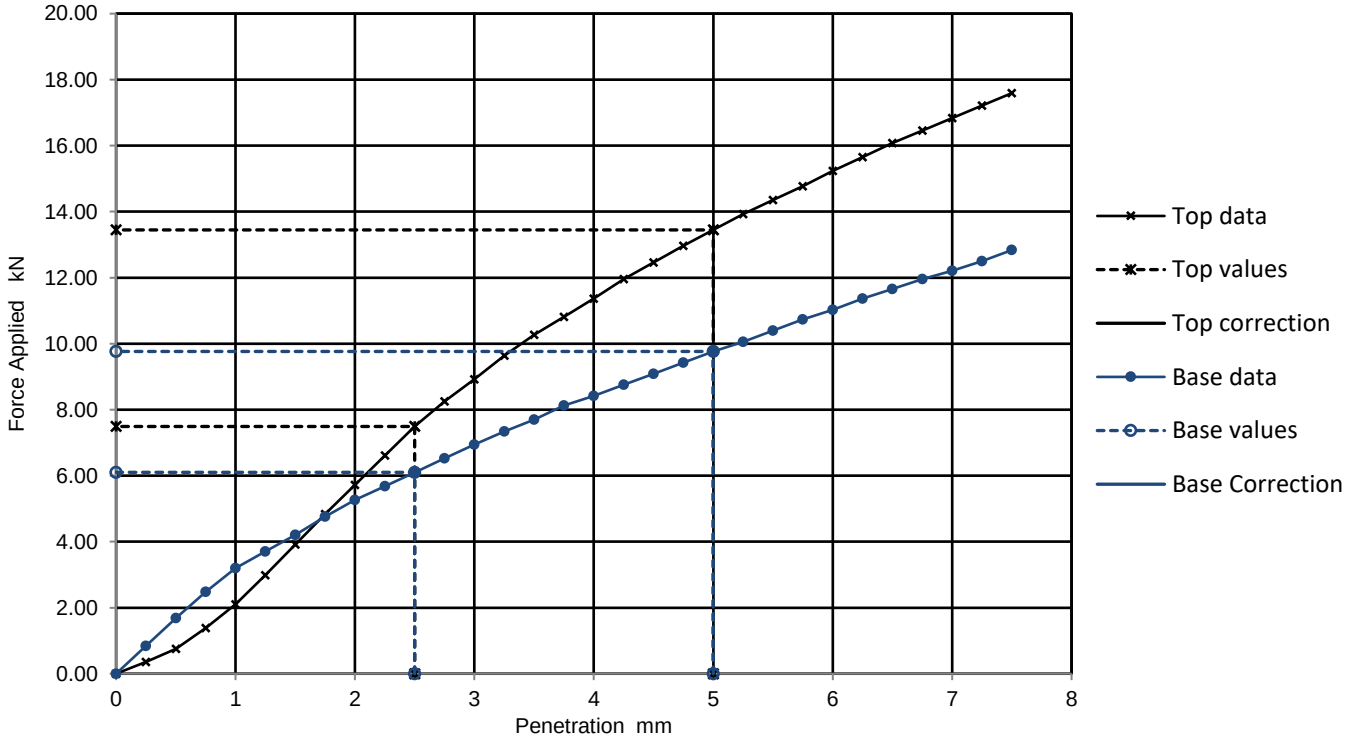
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP209
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051711
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.01	Mg/m3	Surcharge applied	2	kg
	Dry density	1.77	Mg/m3		1	kPa
	Moisture content	13.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		57.0	67.0	67.0		
BASE		46.0	49.0	49.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	92

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

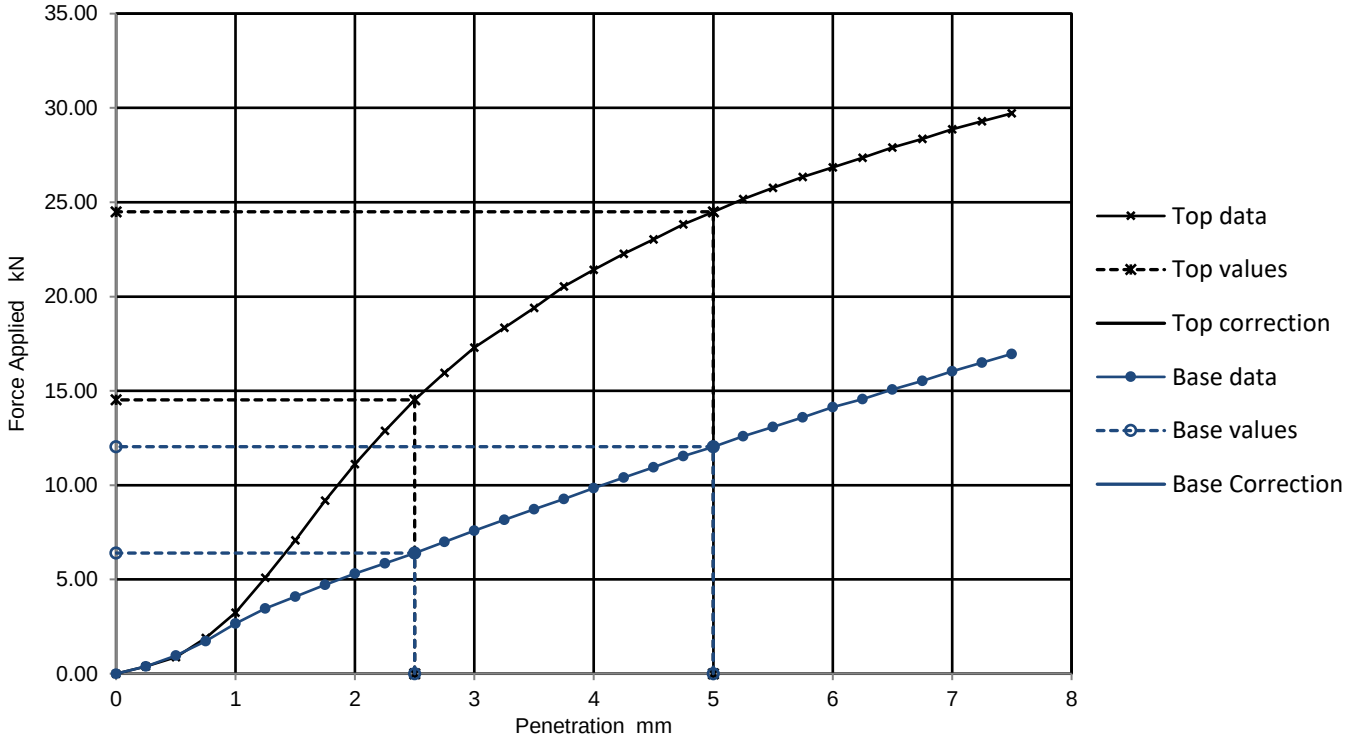
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP209
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051711
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.01	Mg/m3	Surcharge applied	2	kg
	Dry density	1.79	Mg/m3		1	kPa
	Moisture content	12.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		110.0	120.0	120.0		
BASE		48.0	60.0	60.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	93

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

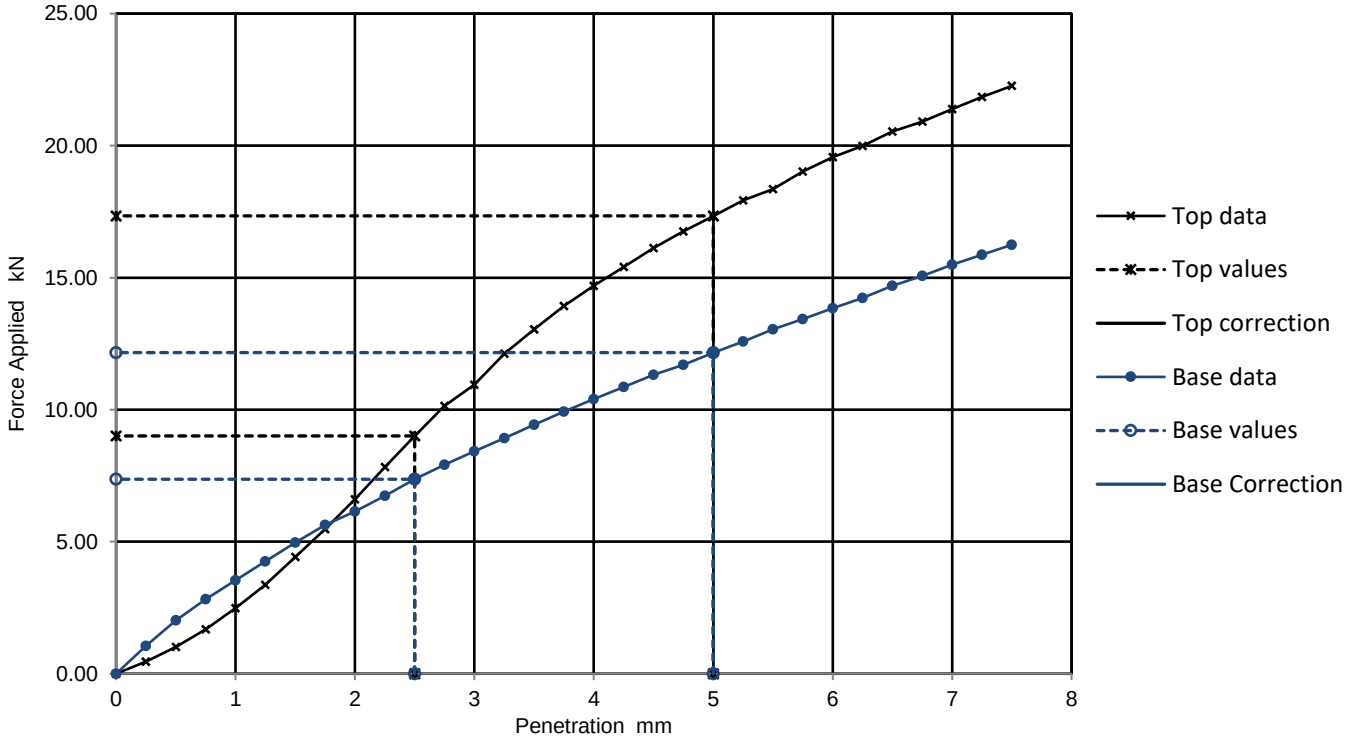
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP209
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051711
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.05	Mg/m3	Surcharge applied	2	kg
	Dry density	1.81	Mg/m3		1	kPa
	Moisture content	13.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		68.0	87.0	87.0		
BASE		56.0	61.0	61.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	94

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

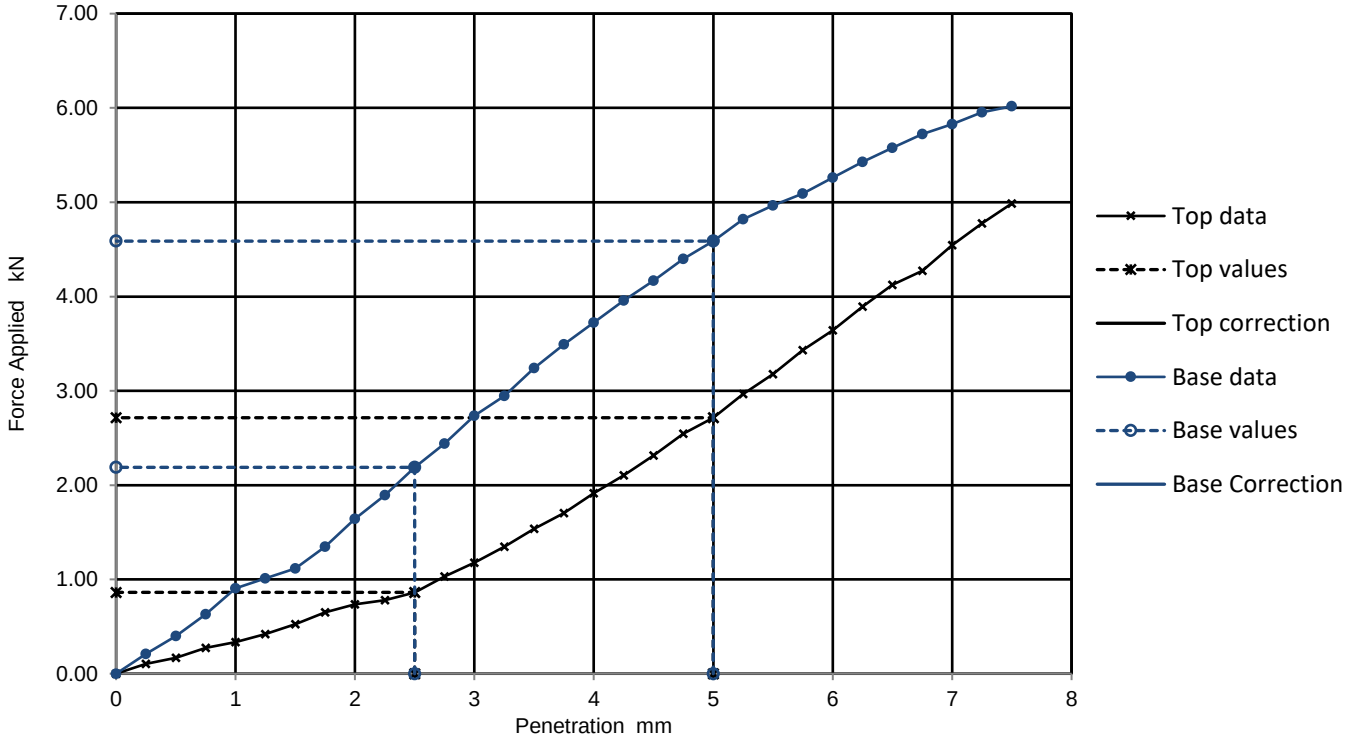
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP209
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051711
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	2	kg
	Dry density	1.84	Mg/m3		1	kPa
	Moisture content	15.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		6.5	14.0	14.0		
BASE		17.0	23.0	23.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	95

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

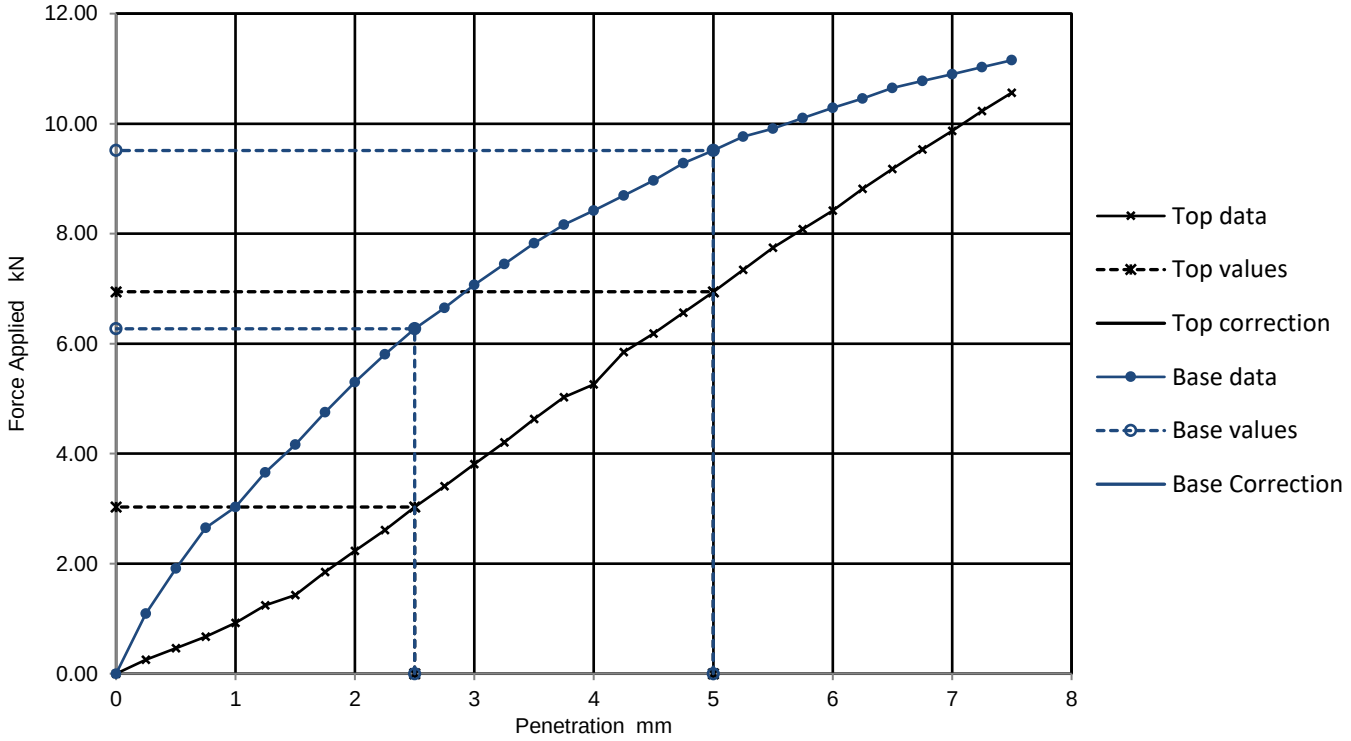
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP210
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description	Light brown slightly sandy slightly gravelly SILT.			Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051715
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.04	Mg/m3	Surcharge applied	2	kg
	Dry density	1.67	Mg/m3		1	kPa
	Moisture content	21.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		23.0	35.0	35.0		
BASE		48.0	48.0	48.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	96

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

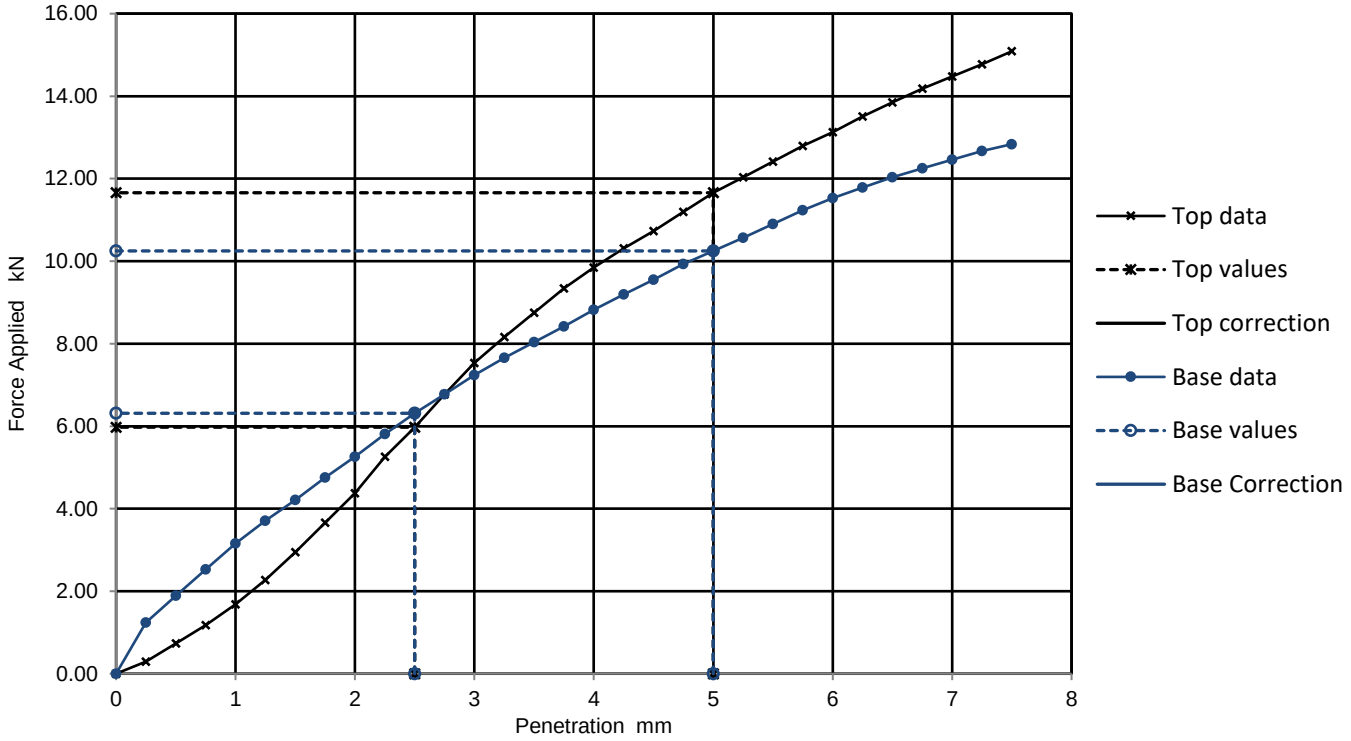
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP210
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051715
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition				Soaking details	Not soaked	
Details				Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed			%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.98	Mg/m3	Surcharge applied	2	kg
	Dry density	1.67	Mg/m3		1	kPa
	Moisture content	18.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		45.0	58.0	58.0	55.0	
BASE		48.0	51.0	51.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	97

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

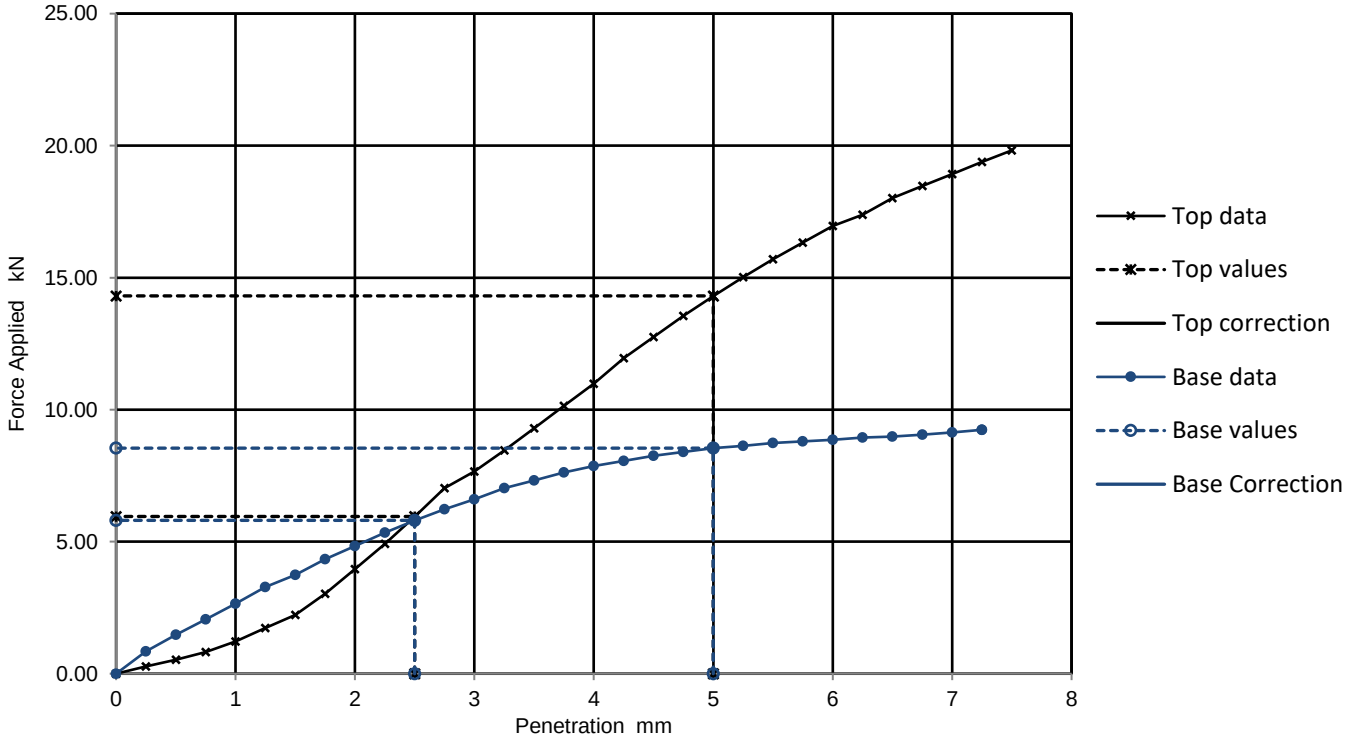
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP210
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051715
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.94	Mg/m3	Surcharge applied	2	kg
	Dry density	1.67	Mg/m3		1	kPa
	Moisture content	15.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		45.0	72.0	72.0		
BASE		44.0	43.0	44.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	98

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

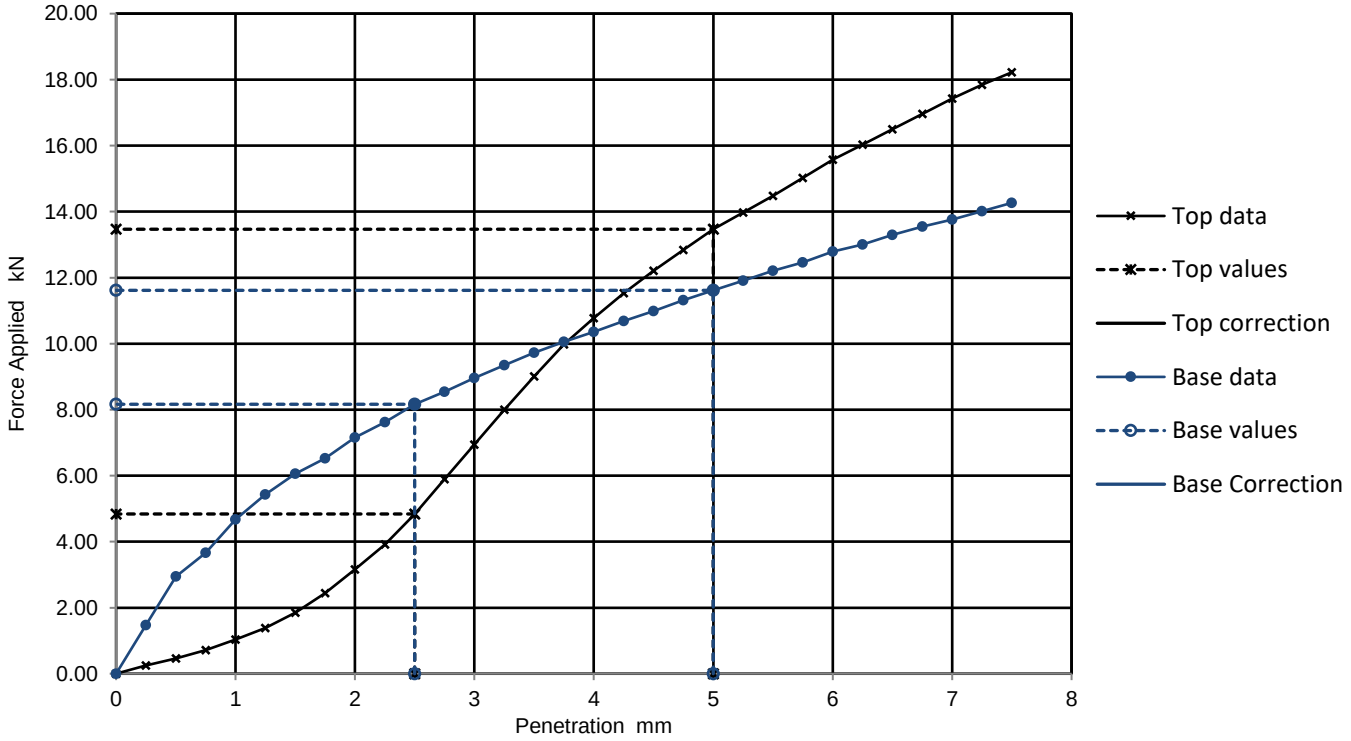
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP210
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051715
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.90	Mg/m3	Surcharge applied	2	kg
	Dry density	1.65	Mg/m3		1	kPa
	Moisture content	14.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		37.0	67.0	67.0	65.0	
BASE		62.0	58.0	62.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	99

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

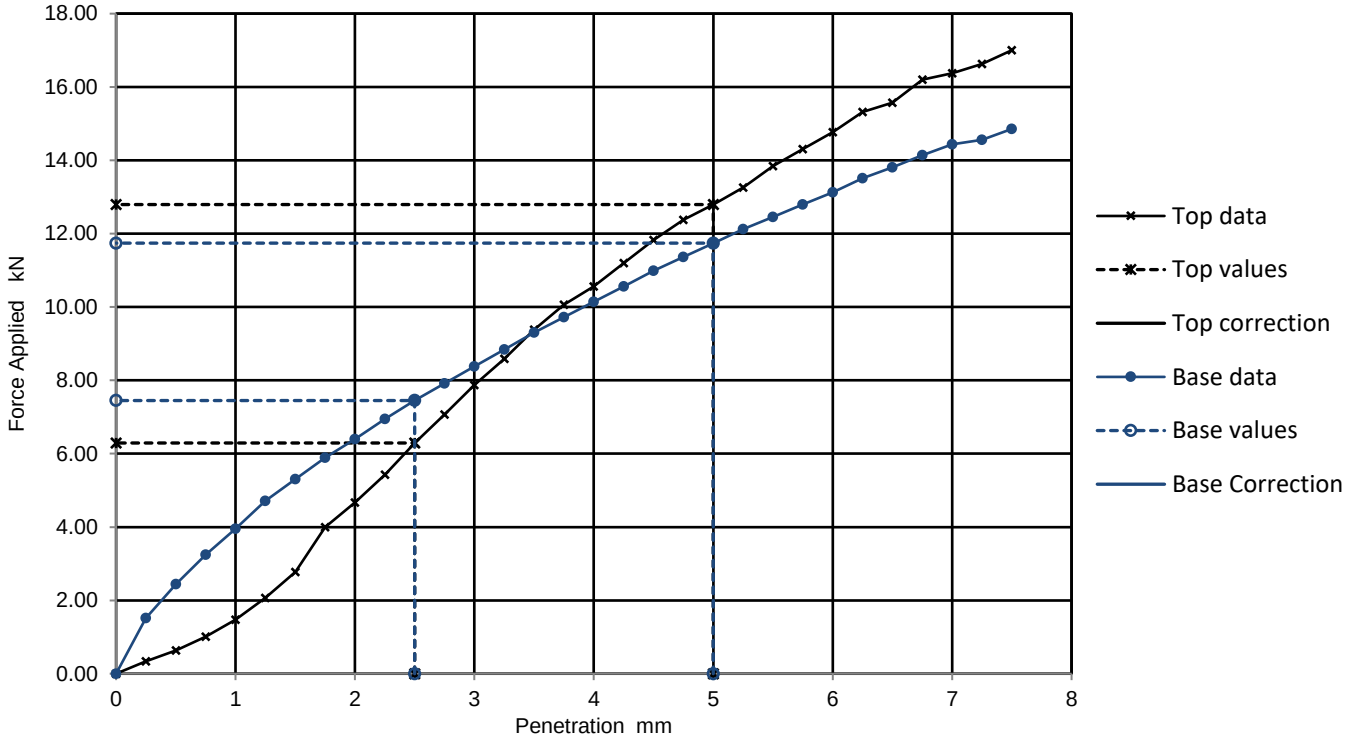
IRISH DRILLING LIMITED	**California Bearing Ratio (CBR)**			Job Ref	2023OY104
				Borehole/Pit No.	TP210
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051715
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.86	Mg/m3	Surcharge applied	2	kg
	Dry density	1.66	Mg/m3		1	kPa
	Moisture content	11.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		48.0	64.0	64.0	61.0	
BASE		56.0	59.0	59.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	100

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

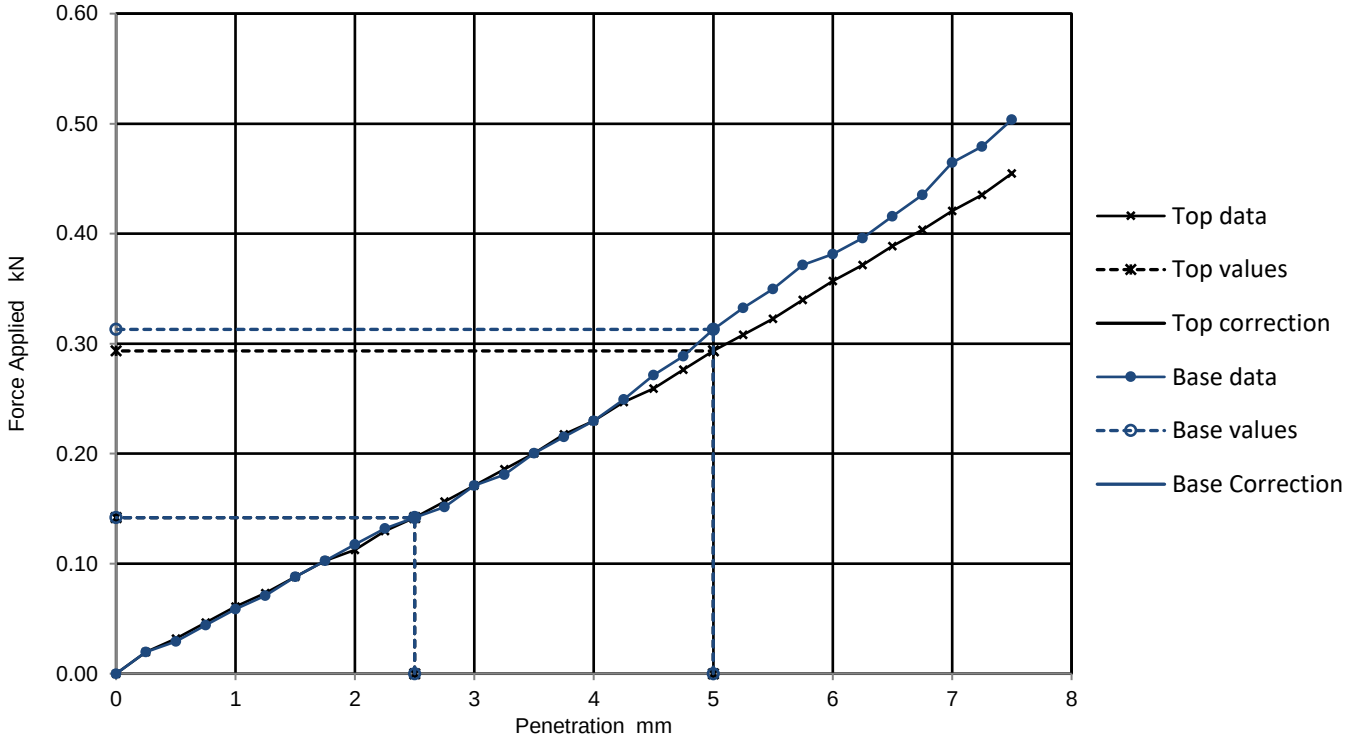
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP211
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051723
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition				Soaking details	Not soaked	
Details				Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed			%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	1.99	Mg/m3		1	kPa
	Moisture content	12.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.1	1.5	1.5	1.5	
BASE		1.1	1.6	1.6		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	101

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

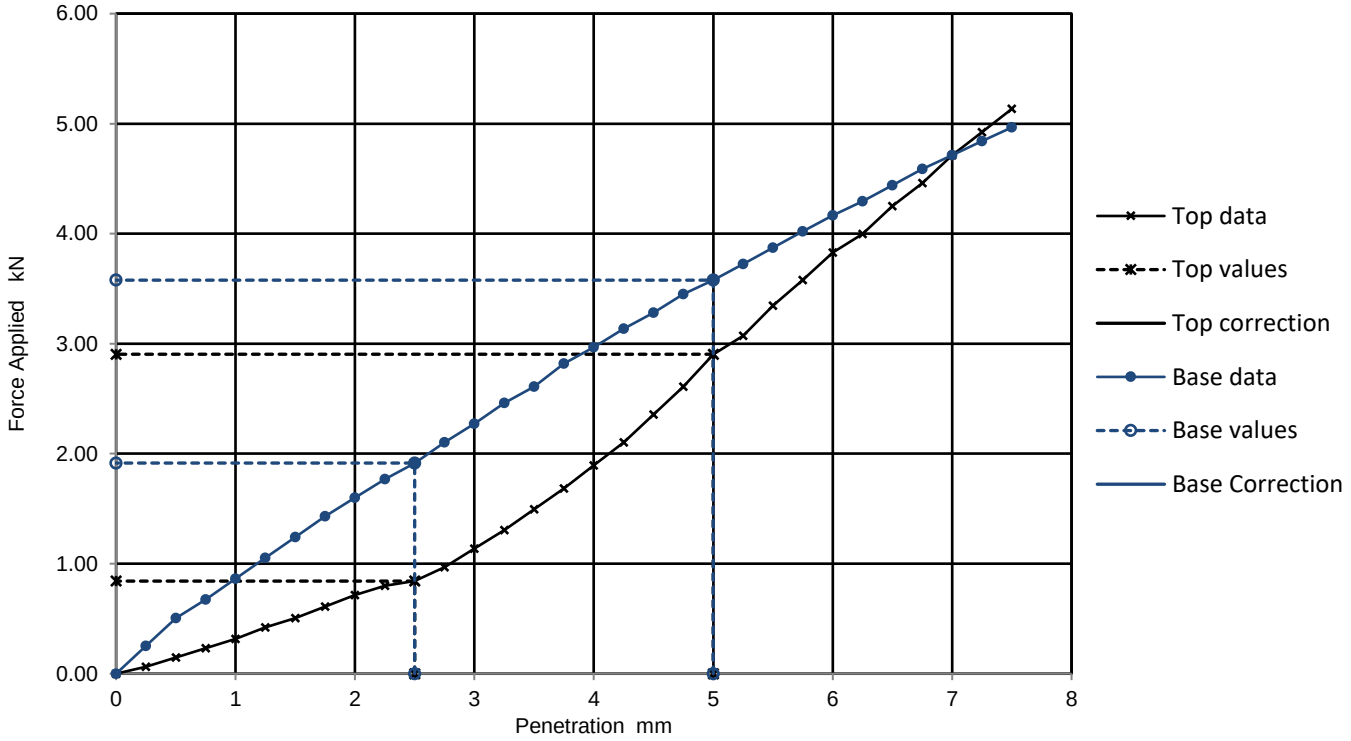
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP211
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051723
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.19	Mg/m3	Surcharge applied	2	kg
	Dry density	1.99	Mg/m3		1	kPa
	Moisture content	9.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		6.4	15.0	15.0		
BASE		15.0	18.0	18.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	102

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

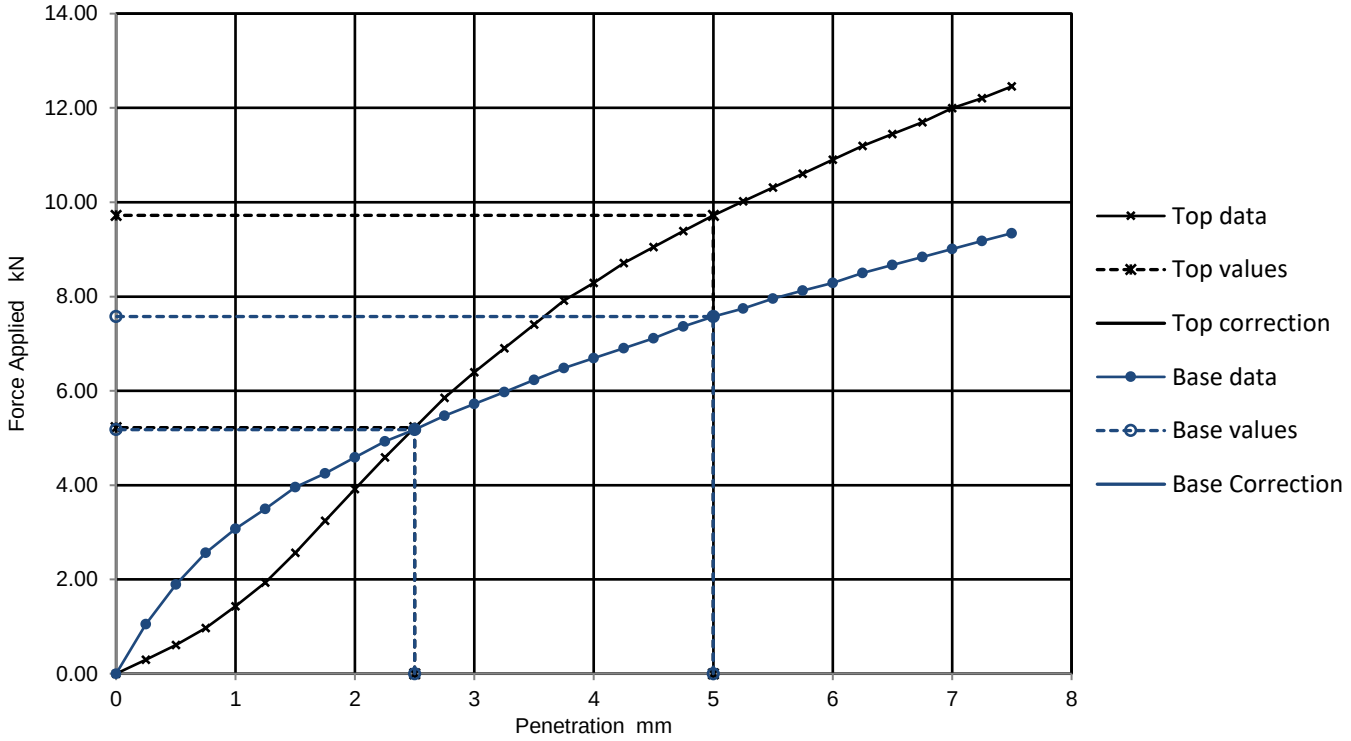
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP211
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051723
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	8.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		40.0	49.0	49.0		
BASE		39.0	38.0	39.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	103

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

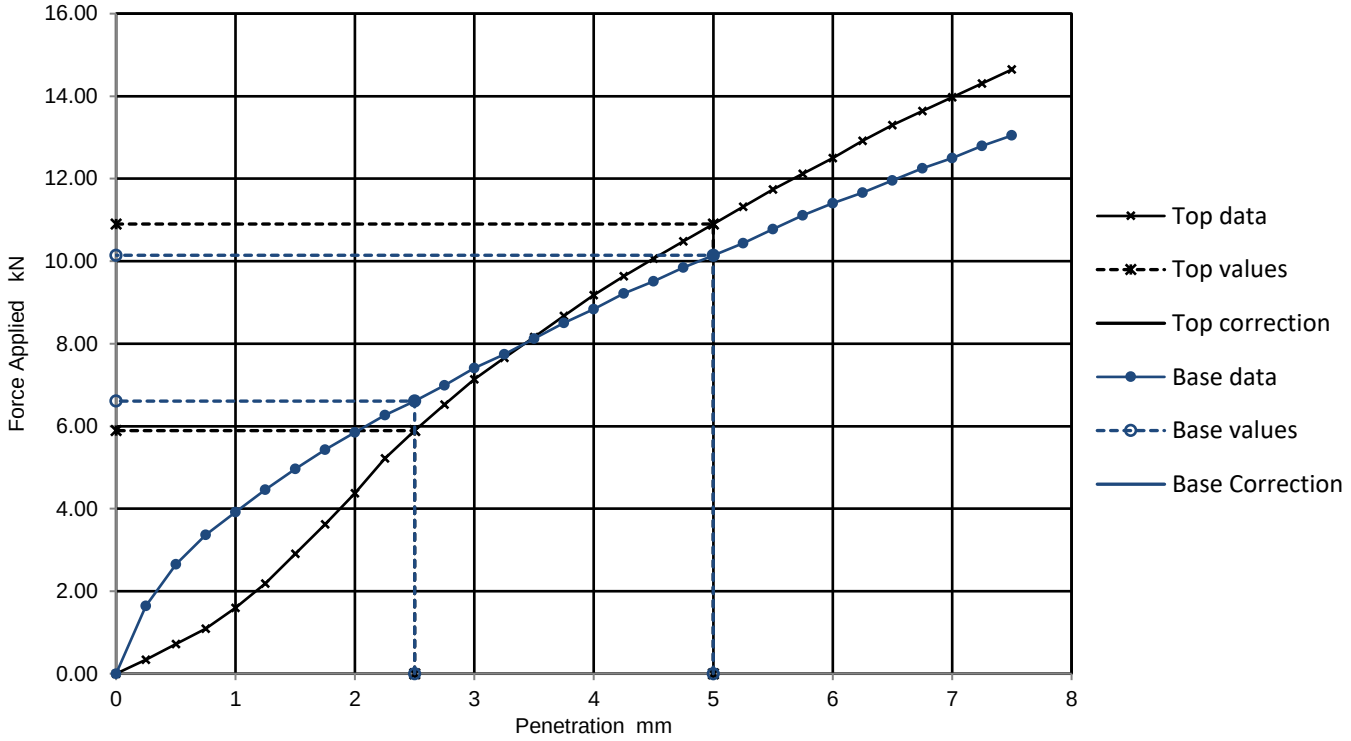
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP211
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051723
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	2	kg
	Dry density	1.96	Mg/m3		1	kPa
	Moisture content	8.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		45.0	55.0	55.0	53.0	
BASE		50.0	51.0	51.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	104

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

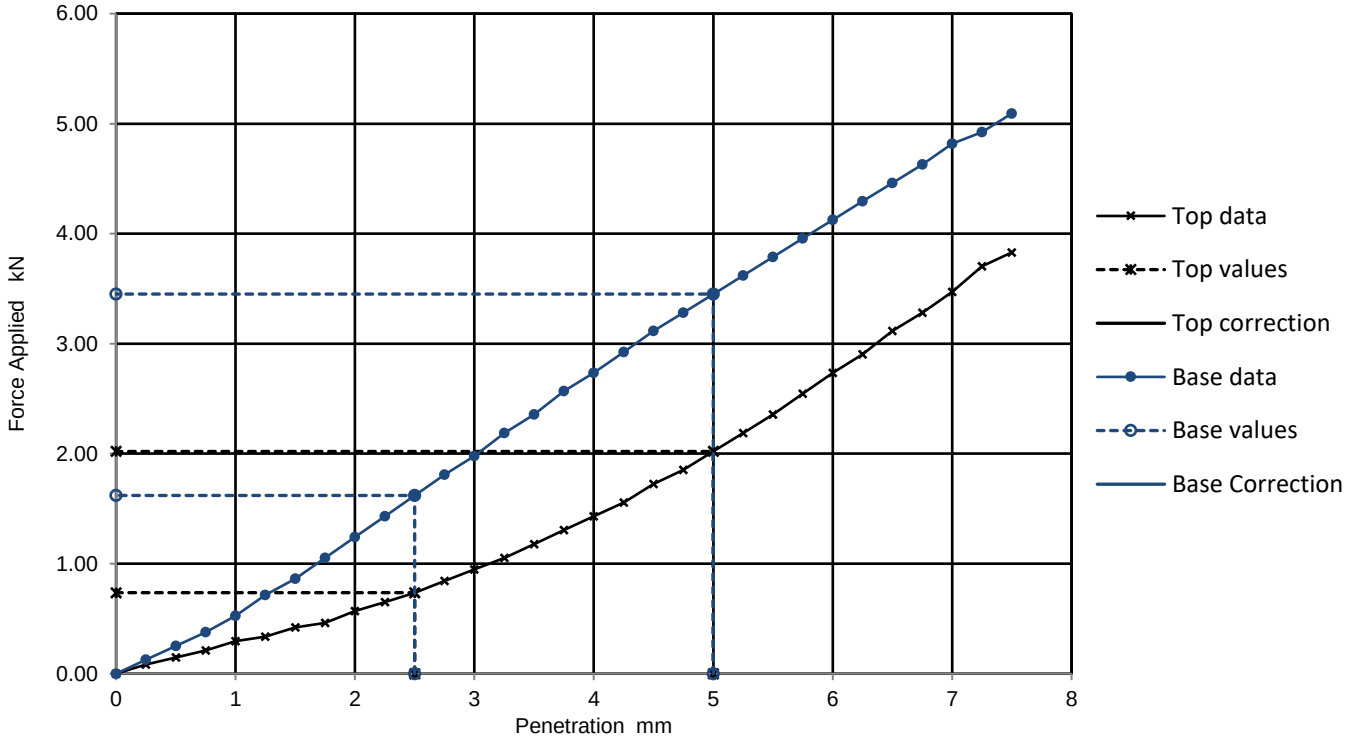
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP211
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051723
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	9.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		5.6	10.0	10.0		
BASE		12.0	17.0	17.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	105

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

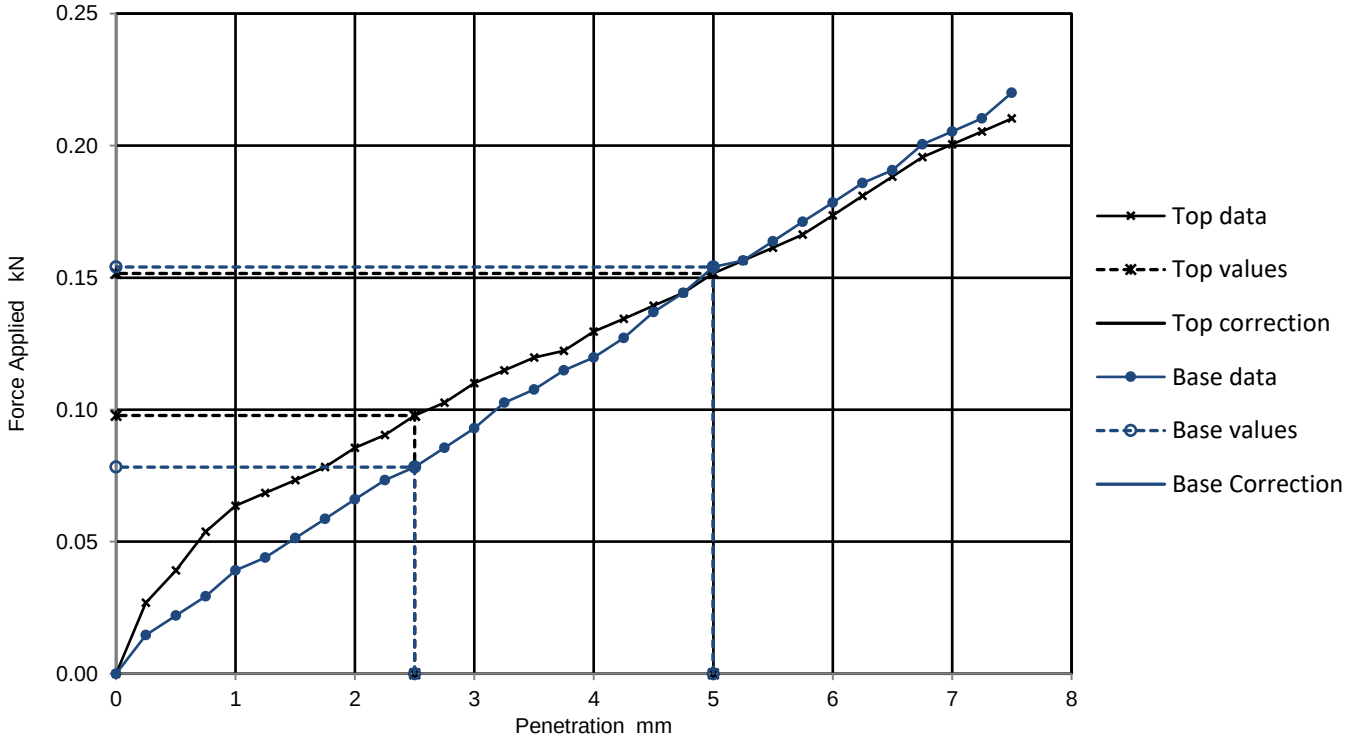
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP212
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description	Brown slightly gravelly sandy SILT. Sand is fine.			Depth m	1.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051732
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.19	Mg/m3	Surcharge applied	2	kg
	Dry density	1.93	Mg/m3		1	kPa
	Moisture content	13.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.7	0.8	0.8	0.8	
BASE		0.6	0.8	0.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	106

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

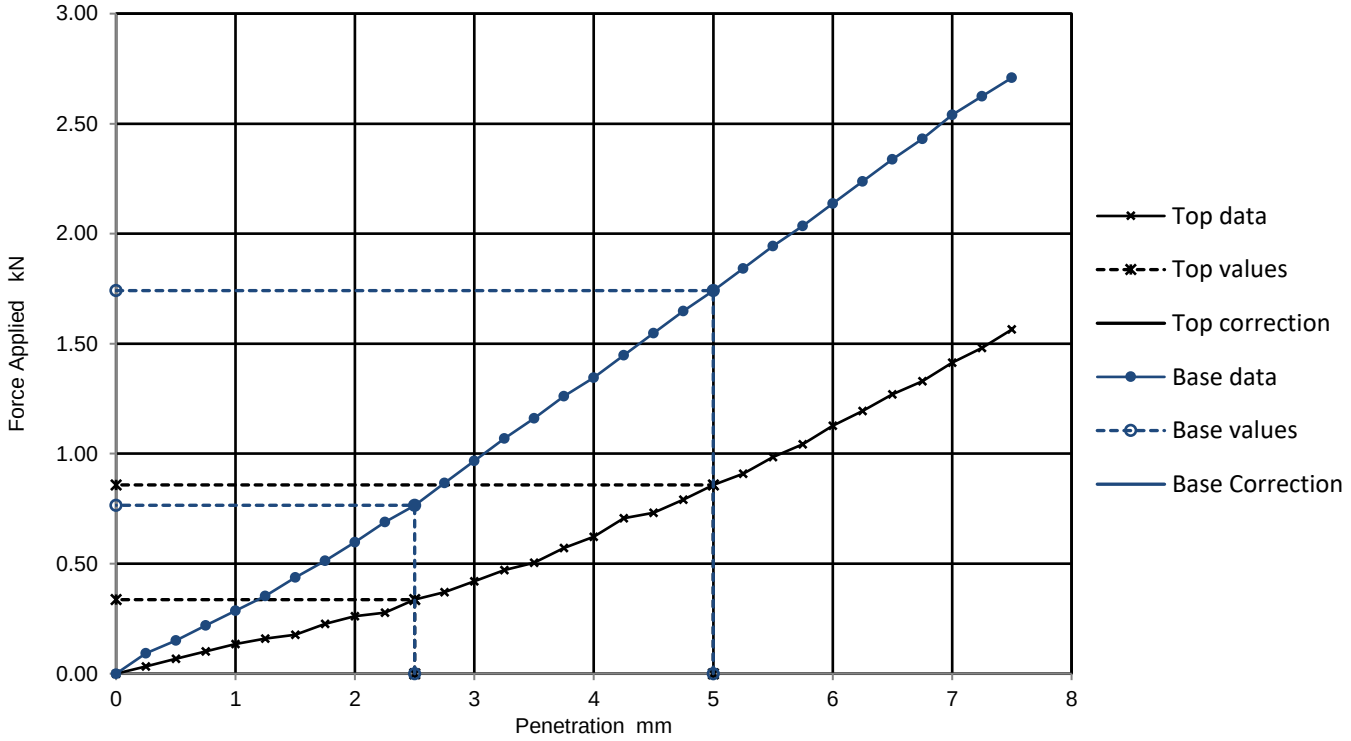
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP212
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051732
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.21	Mg/m3	Surcharge applied	2	kg
	Dry density	1.99	Mg/m3		1	kPa
	Moisture content	11.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.5	4.3	4.3		
BASE		5.8	8.7	8.7		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	107

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

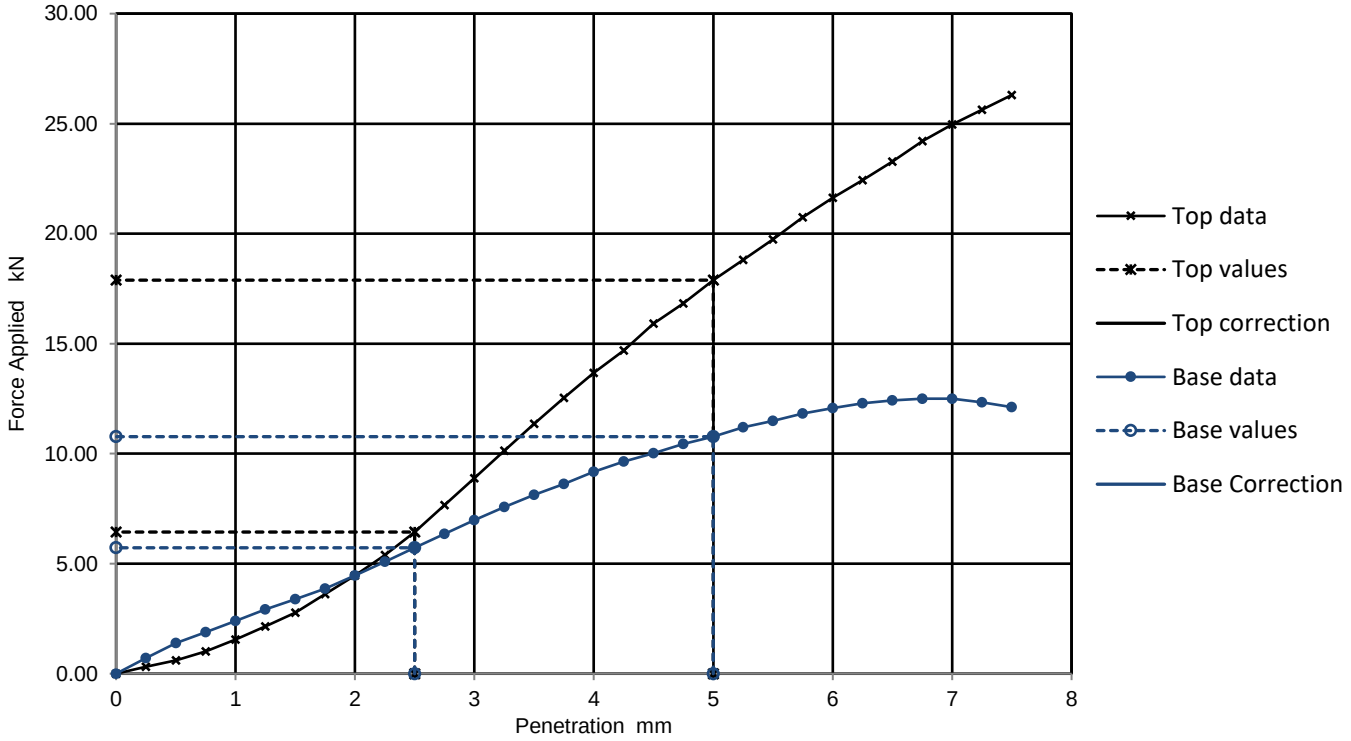
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP212
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051732
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.21	Mg/m3	Surcharge applied	2	kg
	Dry density	2.01	Mg/m3		1	kPa
	Moisture content	10.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		49.0	89.0	89.0		
BASE		43.0	54.0	54.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	108

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

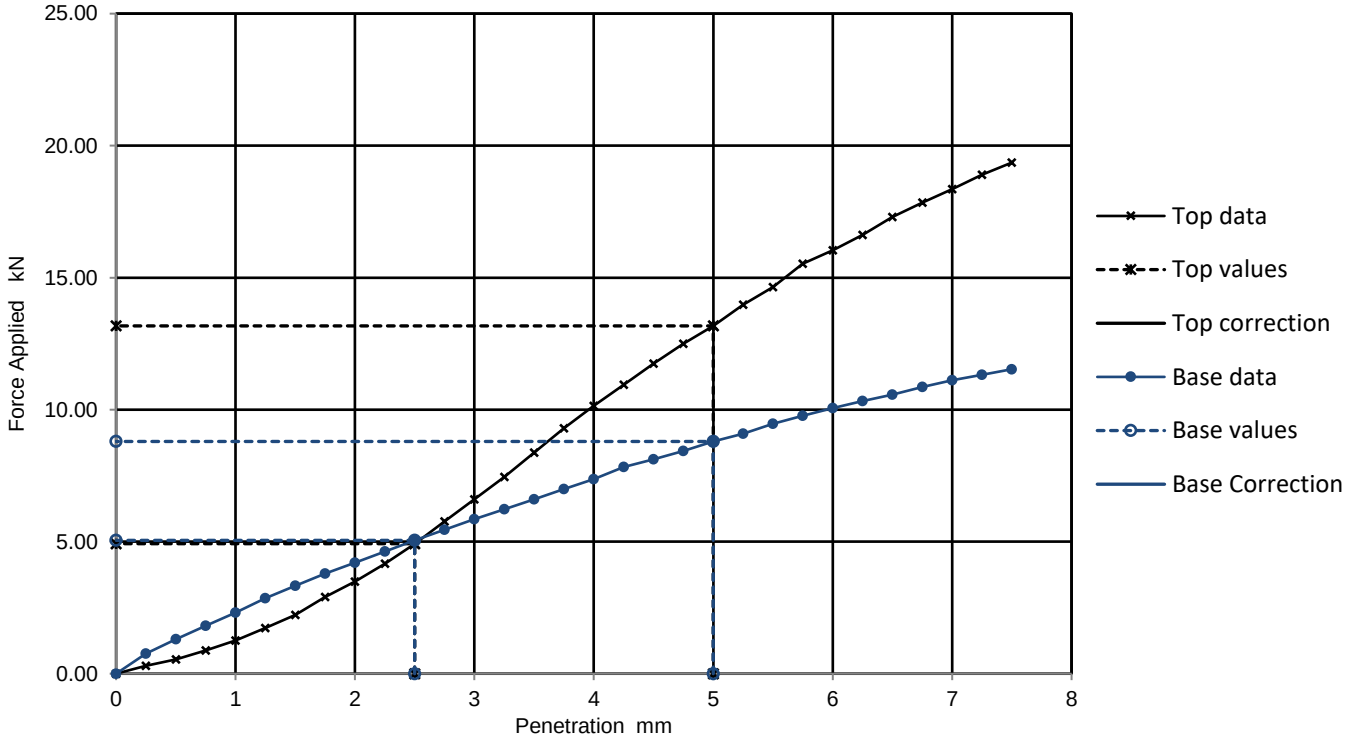
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP212
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051732
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.18	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	9.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		37.0	66.0	66.0		
BASE		38.0	44.0	44.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	109

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

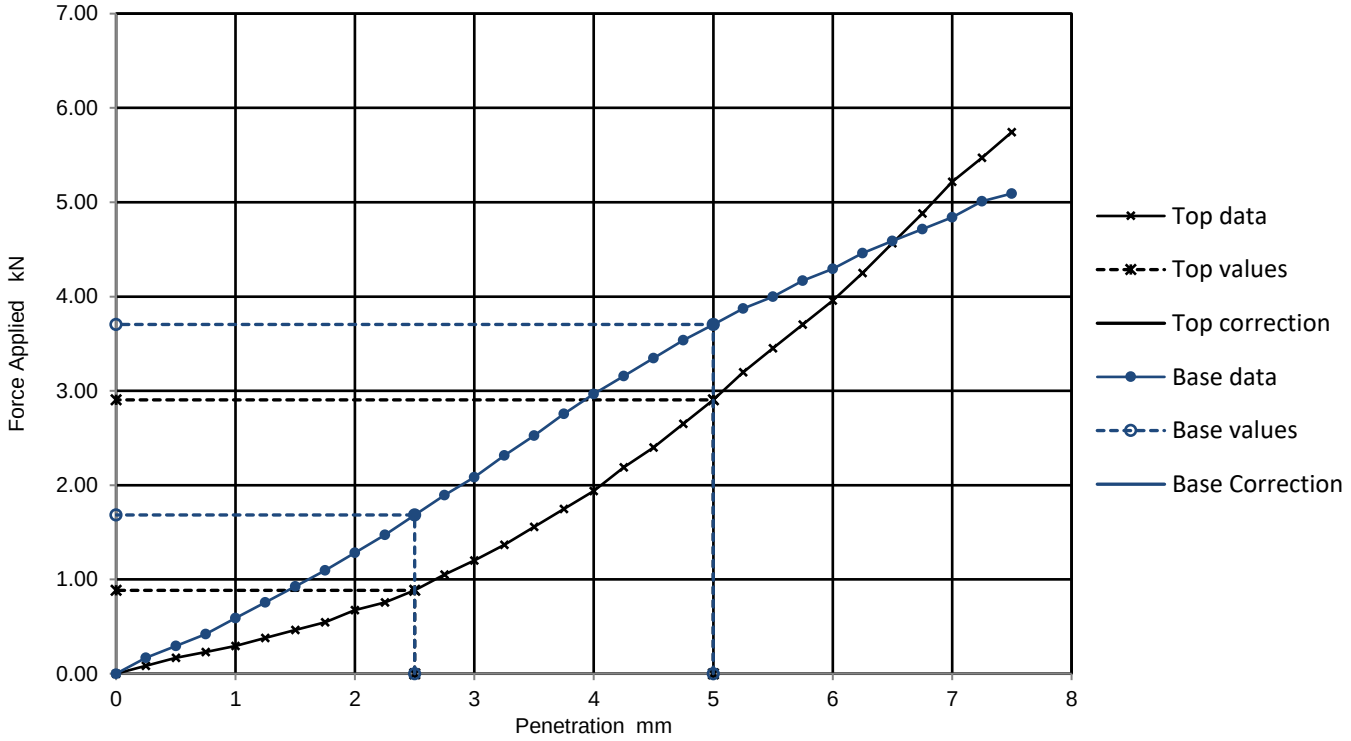
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP212
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051732
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.20	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	11.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		6.7	15.0	15.0		
BASE		13.0	19.0	19.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	110

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

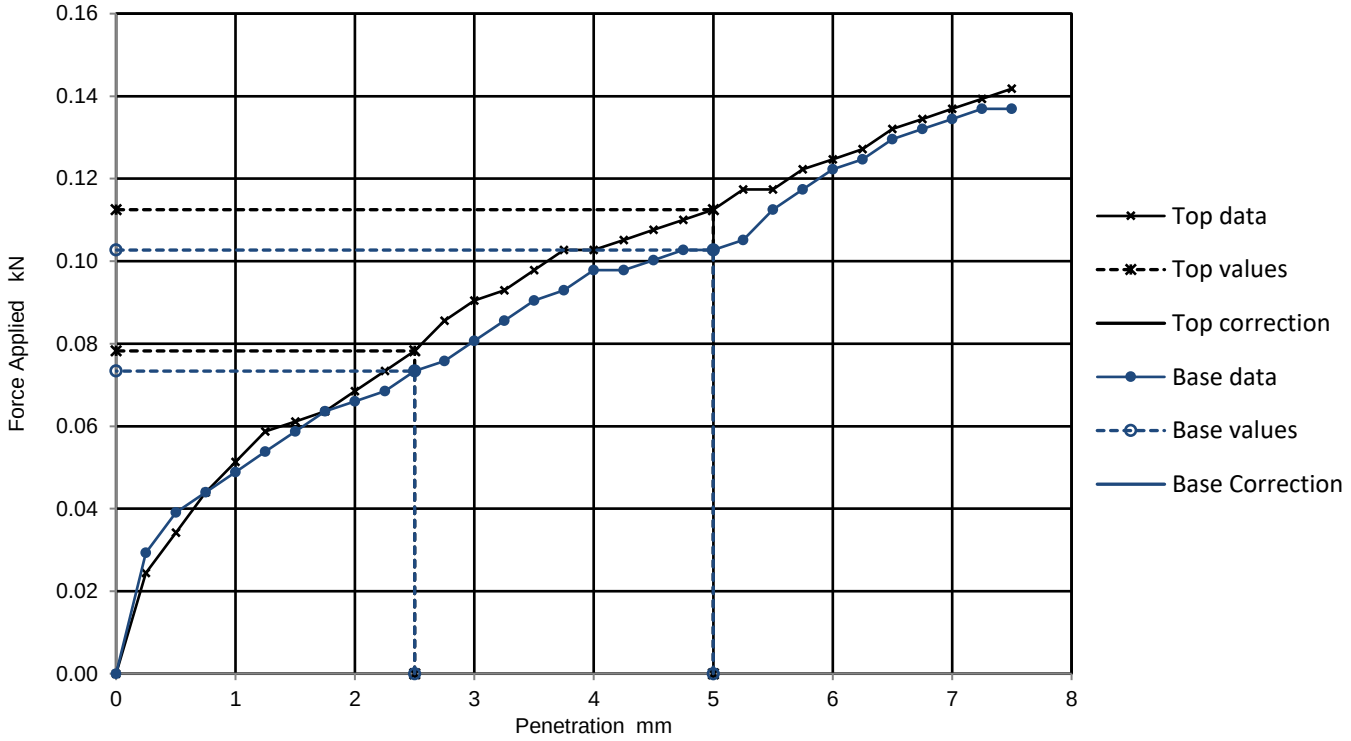
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP216
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description	Brown slightly gravelly sandy SILT.			Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051738
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.99	Mg/m3	Surcharge applied	kg
	Dry density	1.64	Mg/m3		kPa
	Moisture content	21.7	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.6	0.6	0.6	0.6	
BASE		0.6	0.5	0.6		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	111

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

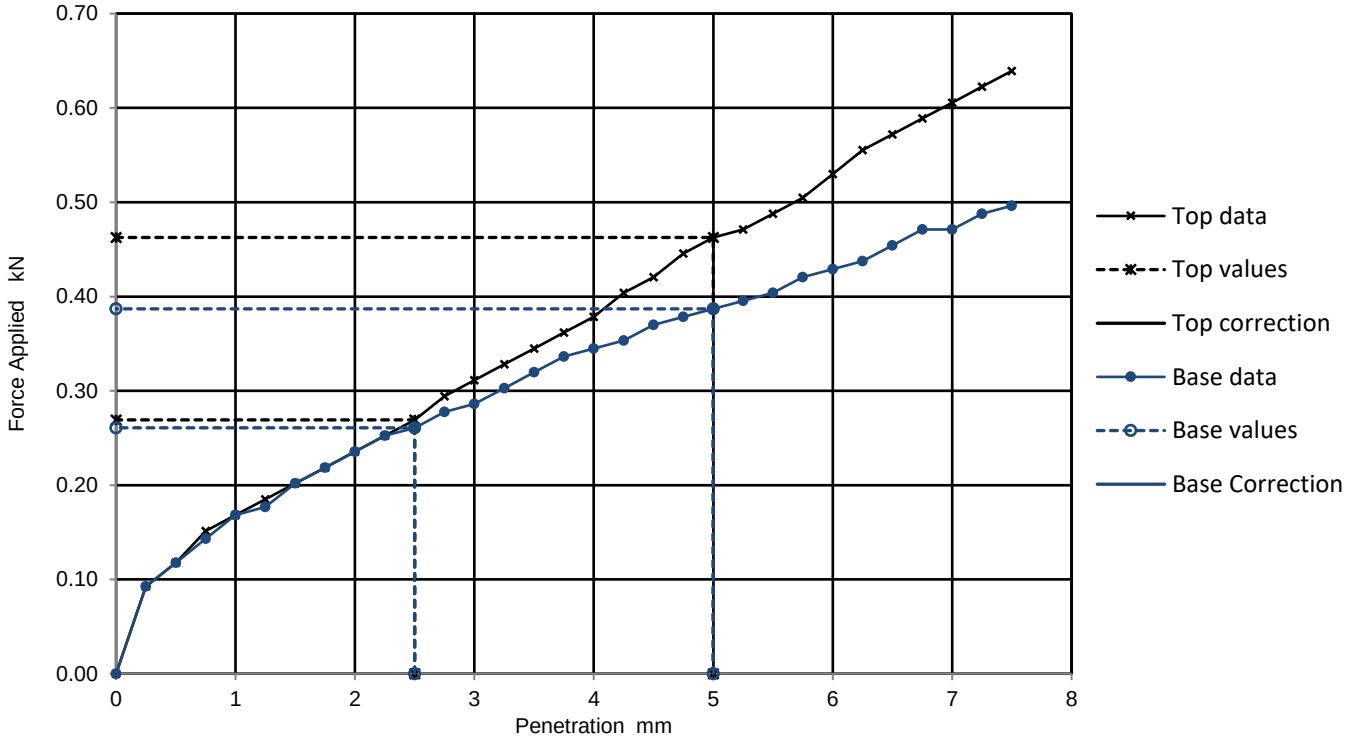
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP216
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051738
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	2	kg
	Dry density	1.70	Mg/m3		1	kPa
	Moisture content	21.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.0	2.3	2.3	2.1	
BASE		2.0	1.9	2.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	112

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

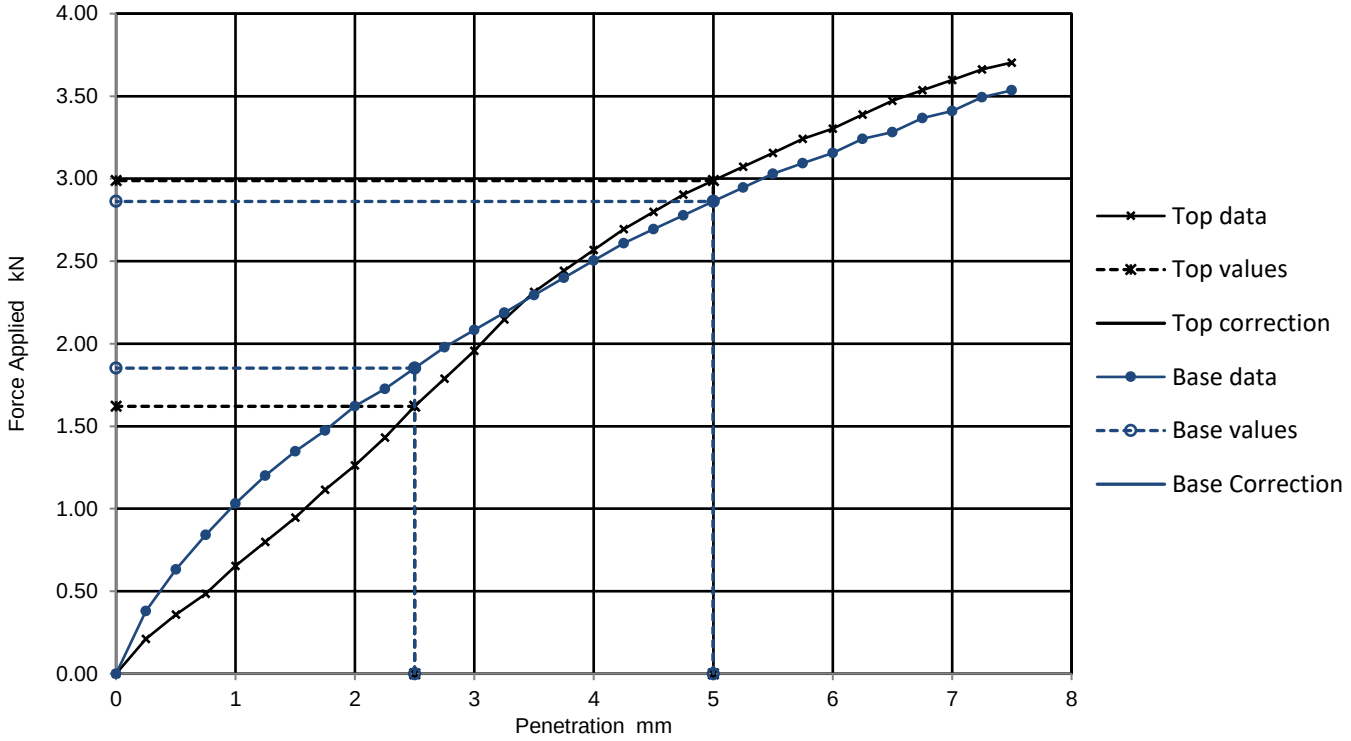
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP216
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051738
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	2	kg
	Dry density	1.74	Mg/m3		1	kPa
	Moisture content	14.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		12.0	15.0	15.0	15.0	
BASE		14.0	14.0	14.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	113

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

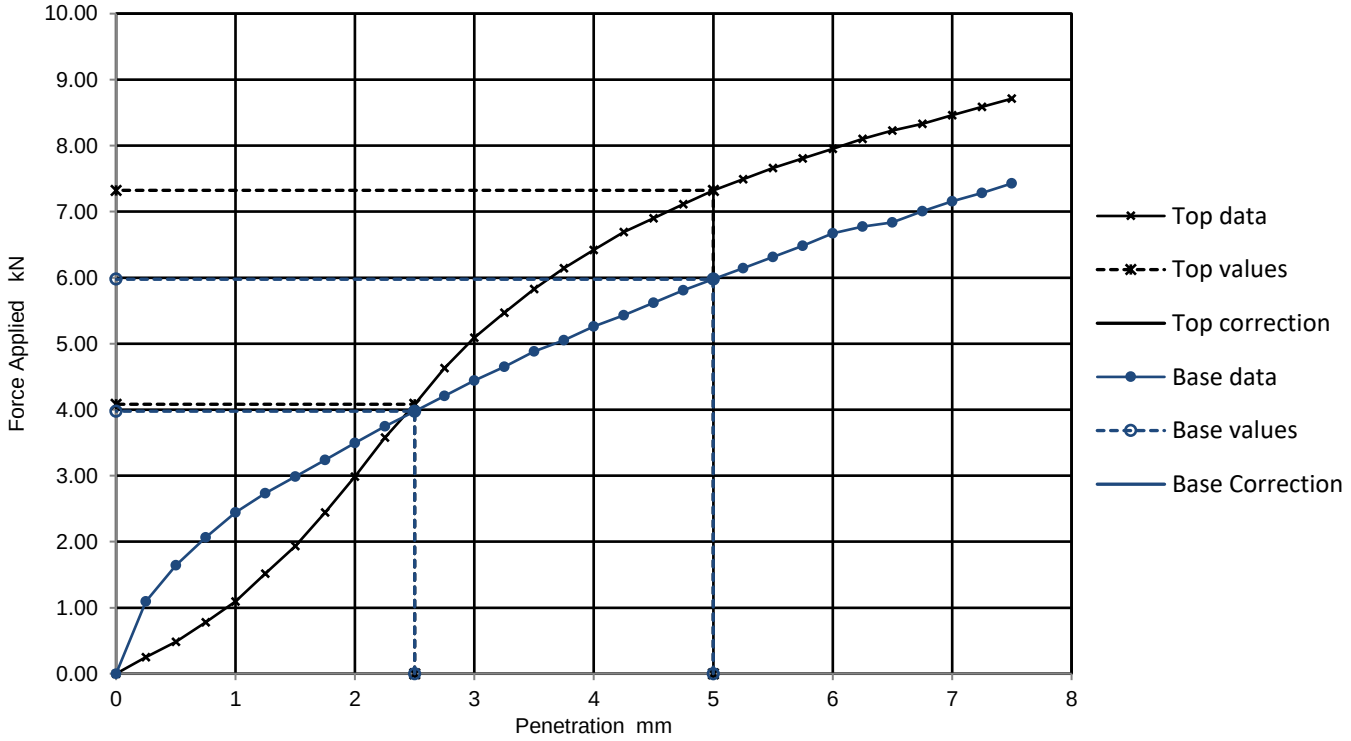
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP216
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051738
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.80	Mg/m3	Surcharge applied	2	kg
	Dry density	1.65	Mg/m3		1	kPa
	Moisture content	9.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		31.0	37.0	37.0	33.0	
BASE		30.0	30.0	30.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	114

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

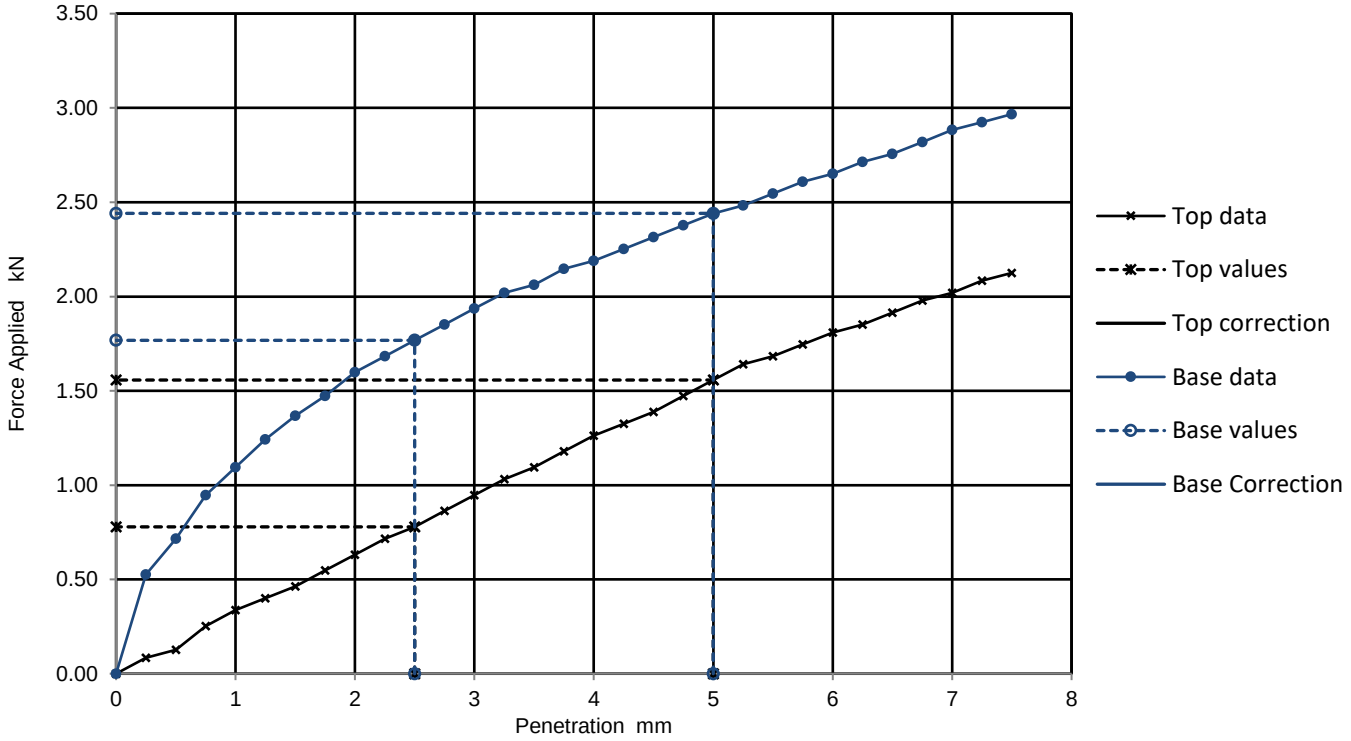
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP216
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051738
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.10	Mg/m3	Surcharge applied	2	kg
	Dry density	1.78	Mg/m3		1	kPa
	Moisture content	17.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		5.9	7.8	7.8		
BASE		13.0	12.0	13.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	115

Lab Sheet Reference : 01/11/2023

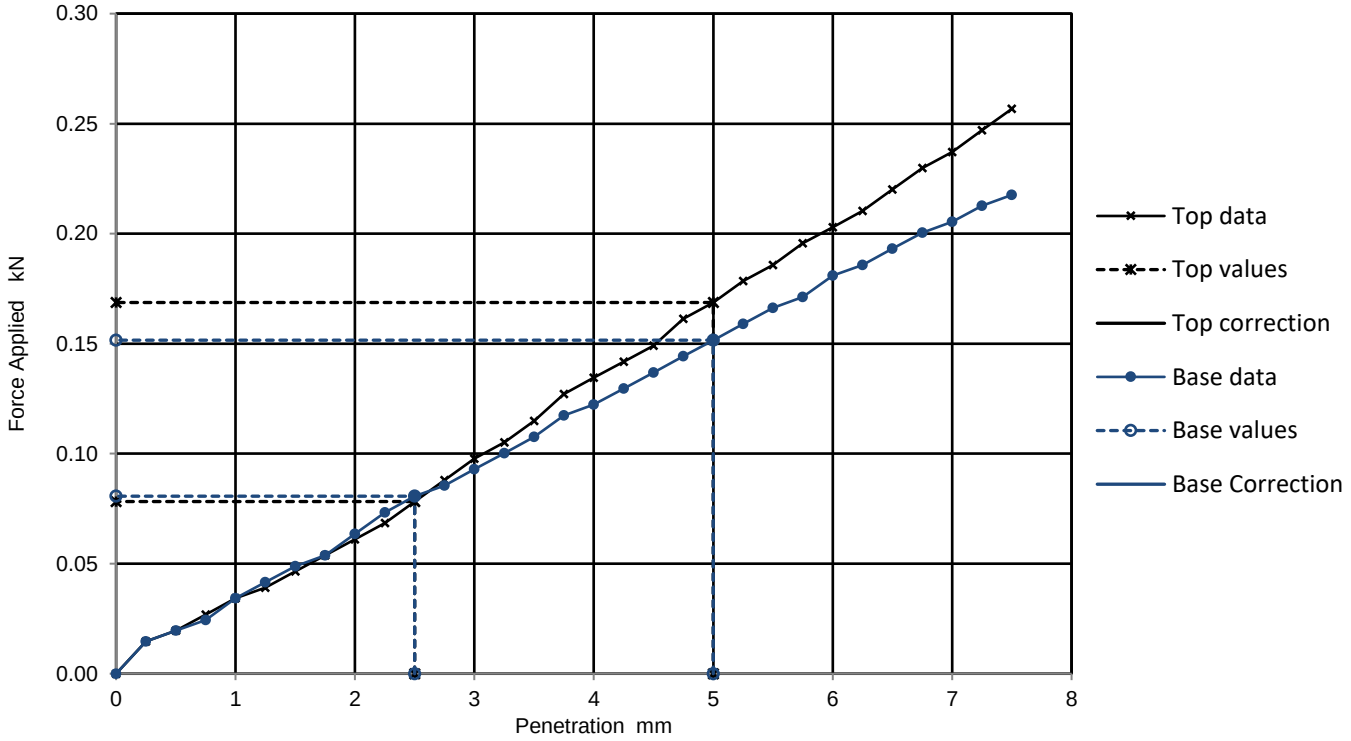
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP217
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Greyish-brown slightly gravelly sandy SILT.			Depth m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051747
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		15	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.29	Mg/m3	Surcharge applied	2	kg
	Dry density	2.06	Mg/m3		1	kPa
	Moisture content	10.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.6	0.8	0.8	0.8	
BASE		0.6	0.8	0.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	116

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

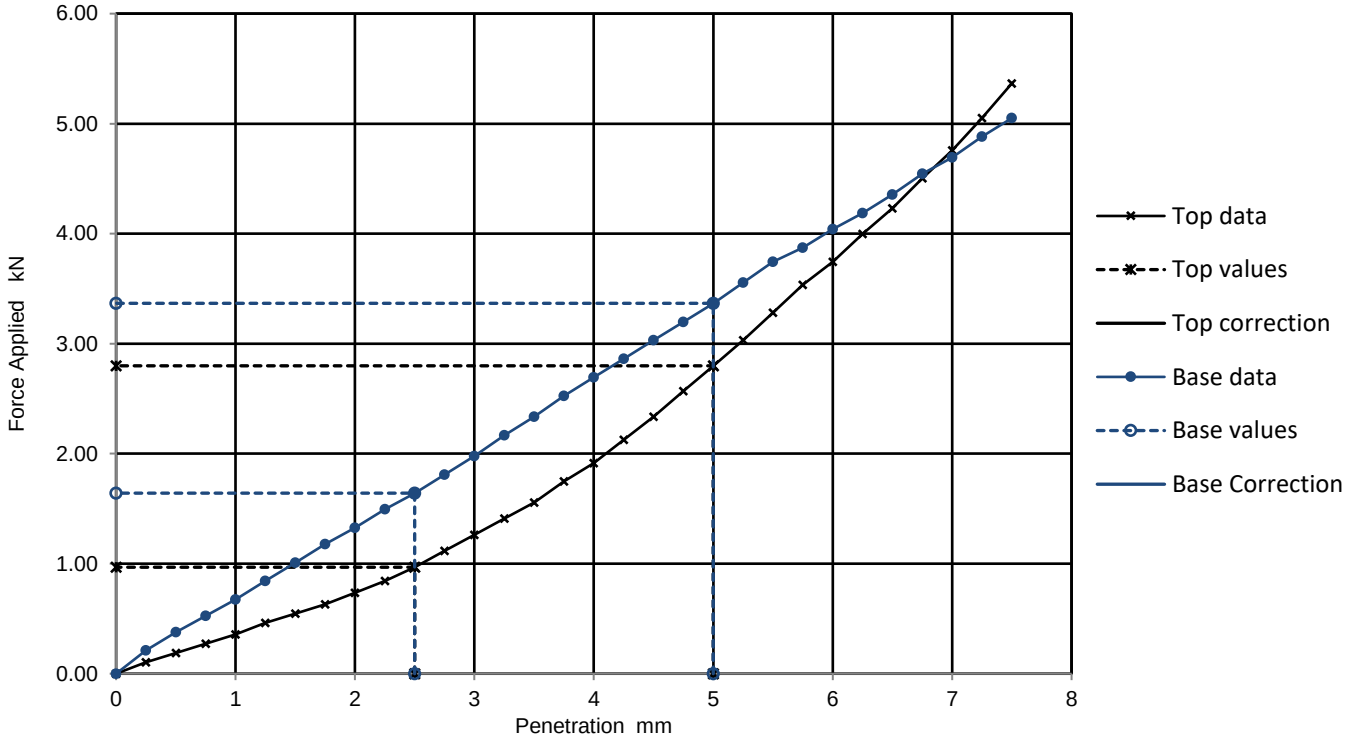
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP217
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051747
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.27	Mg/m3	Surcharge applied	2	kg
	Dry density	2.08	Mg/m3		1	kPa
	Moisture content	9.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		7.3	14.0	14.0	15.0	
BASE		12.0	17.0	17.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	117

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

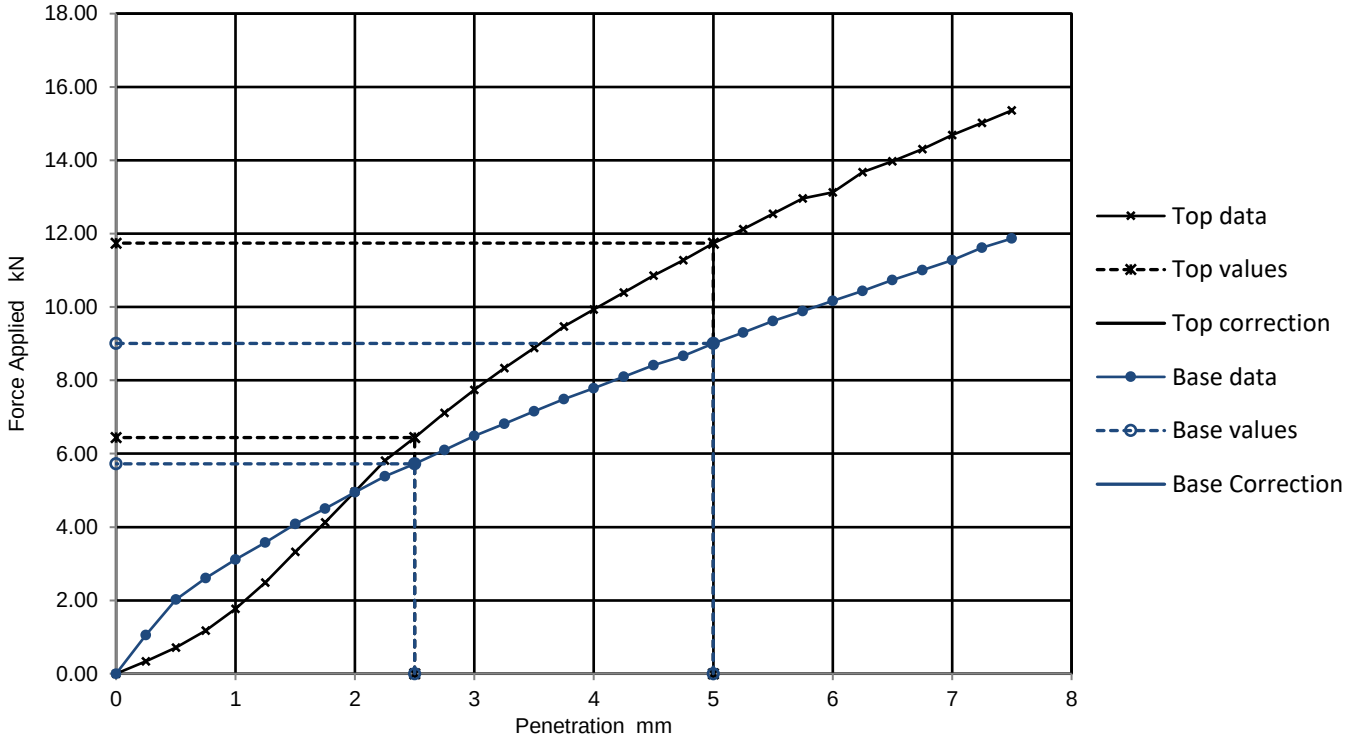
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP217
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051747
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.16	Mg/m3	Surcharge applied	kg
	Dry density	2.01	Mg/m3		kPa
	Moisture content	7.2	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		49.0	59.0	59.0		
BASE		43.0	45.0	45.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	118

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

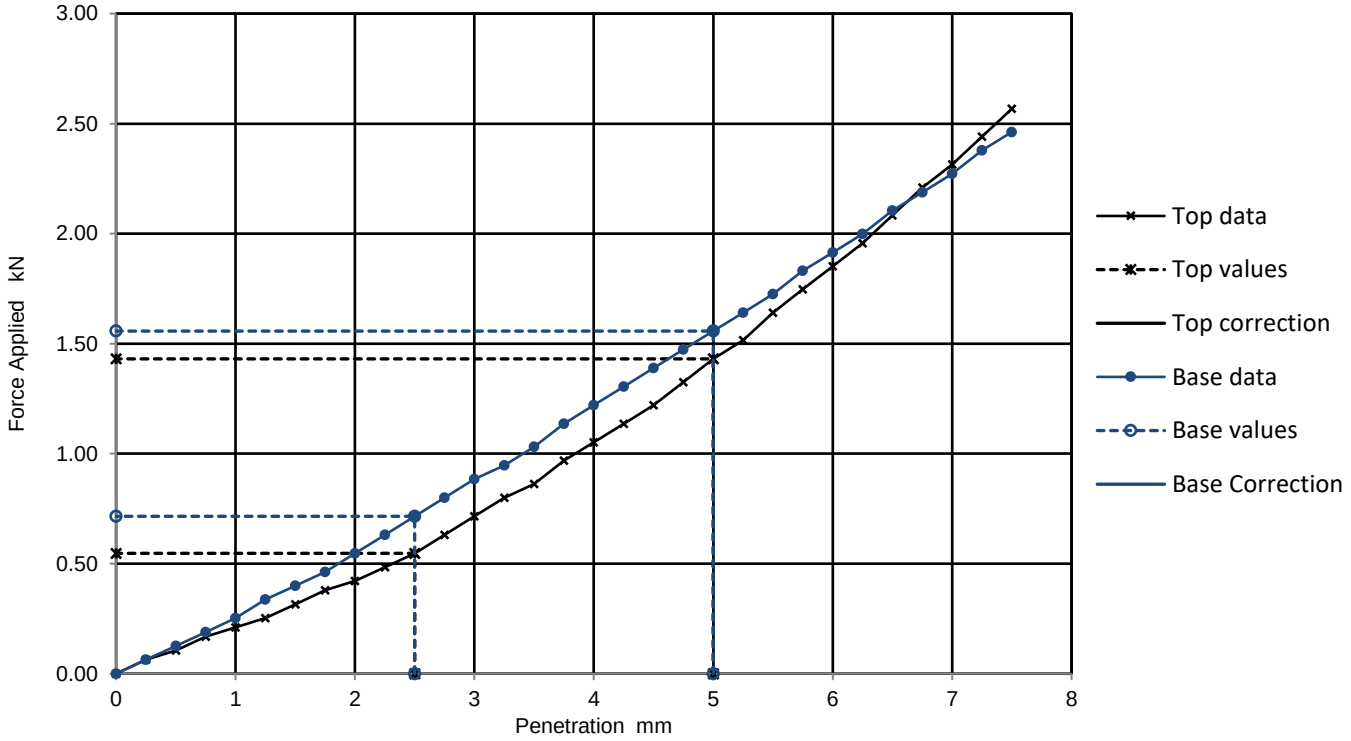
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP217
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051747
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.29	Mg/m3	Surcharge applied	2	kg
	Dry density	2.10	Mg/m3		1	kPa
	Moisture content	8.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.1	7.2	7.2	7.5	
BASE		5.4	7.8	7.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	119

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

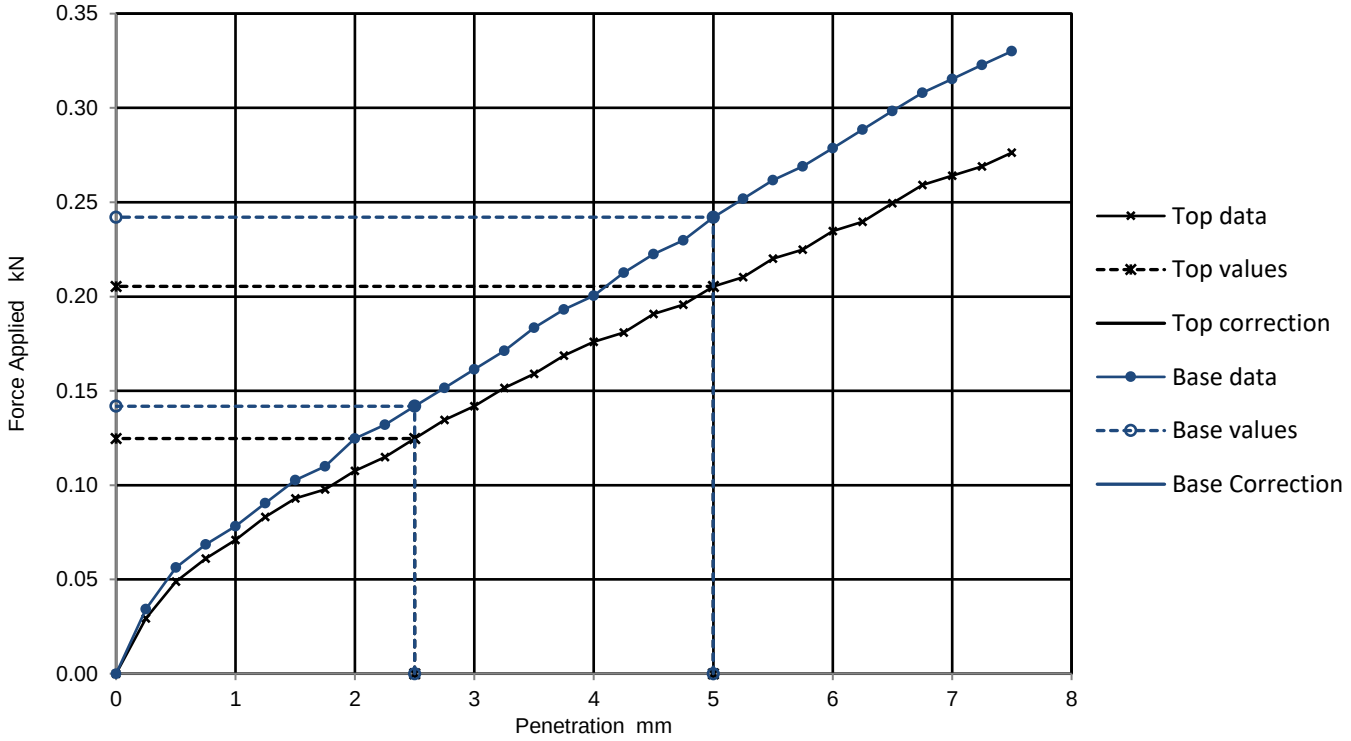
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP217
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051747
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.28	Mg/m3	Surcharge applied	kg
	Dry density	2.05	Mg/m3		kPa
	Moisture content	11.3	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.9	1.0	1.0	1.1	
BASE		1.1	1.2	1.2		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	120

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

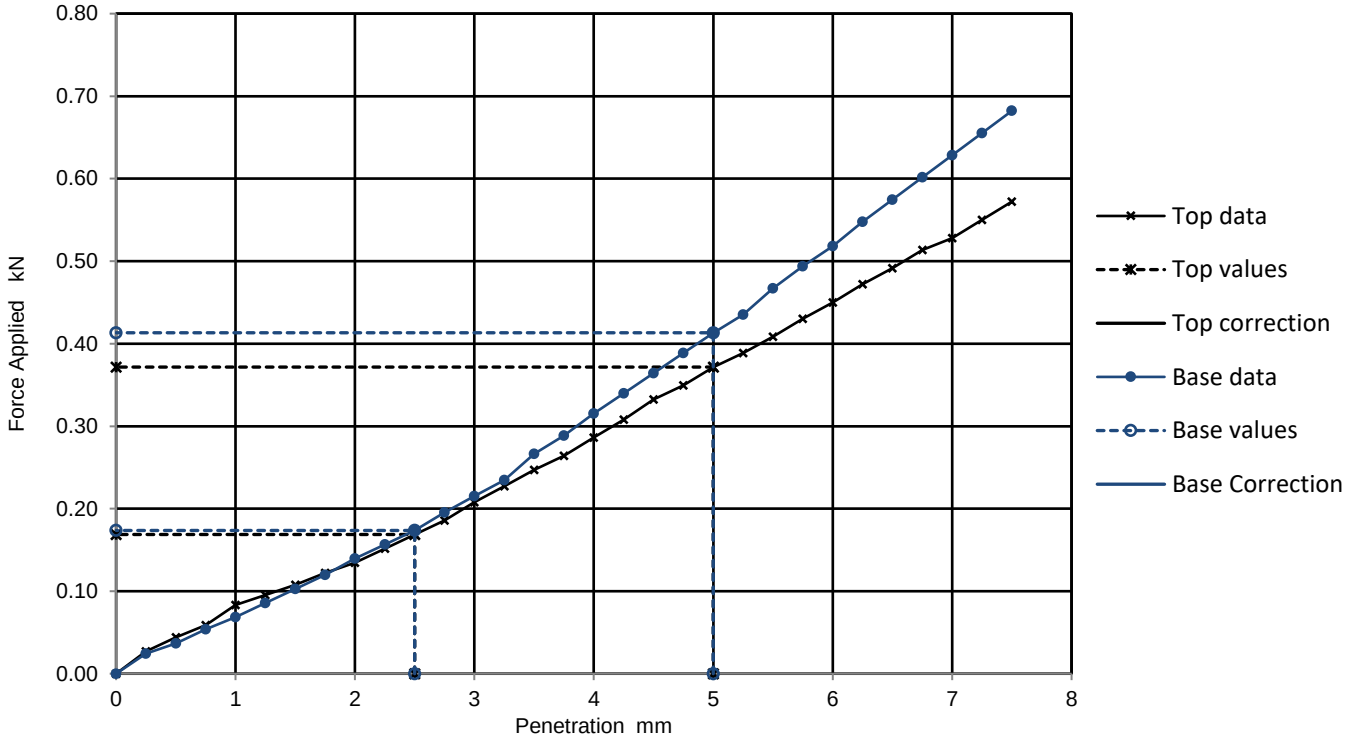
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP218
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description	Brown slightly sandy slightly gravelly SILT.			Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051753
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.22	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	11.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		1.3	1.9	1.9	2.0	
BASE		1.3	2.1	2.1		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	121

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

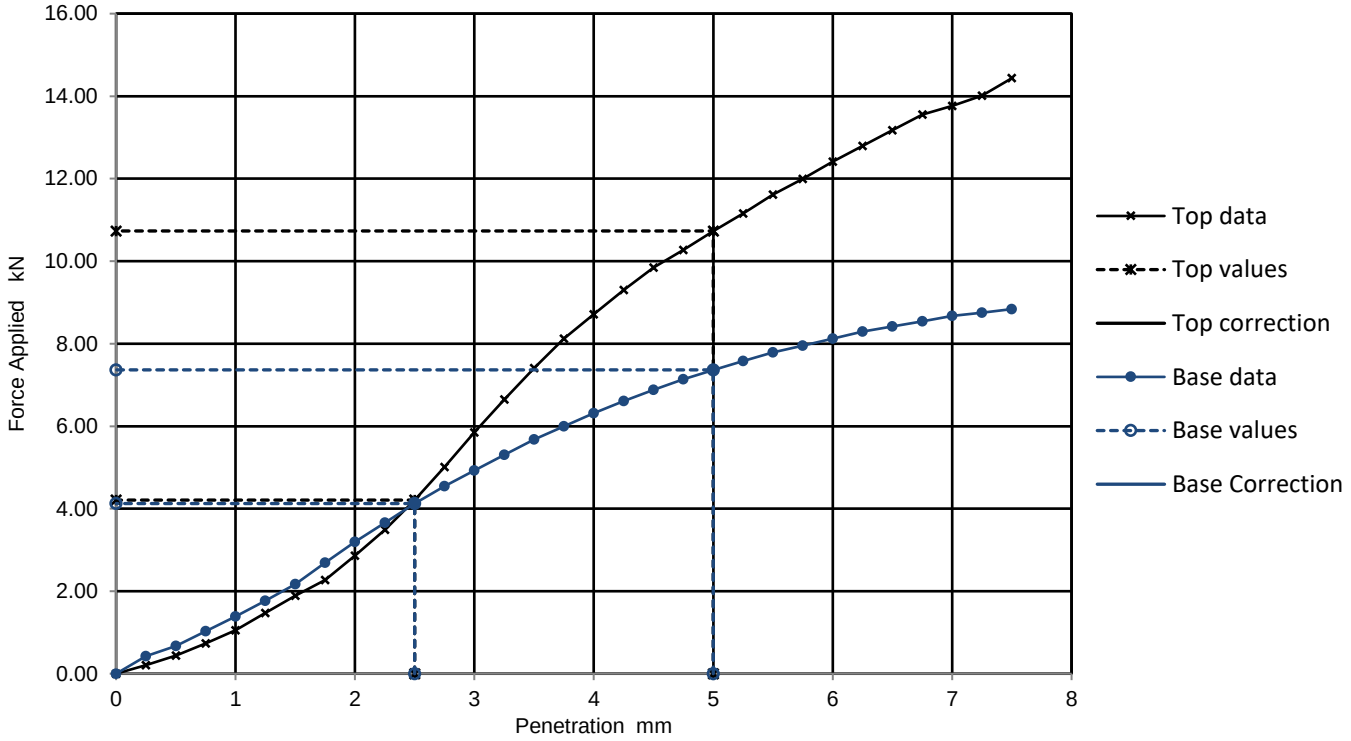
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP218
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051753
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	2	kg
	Dry density	1.94	Mg/m3		1	kPa
	Moisture content	9.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		32.0	54.0	54.0		
BASE		31.0	37.0	37.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	122

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

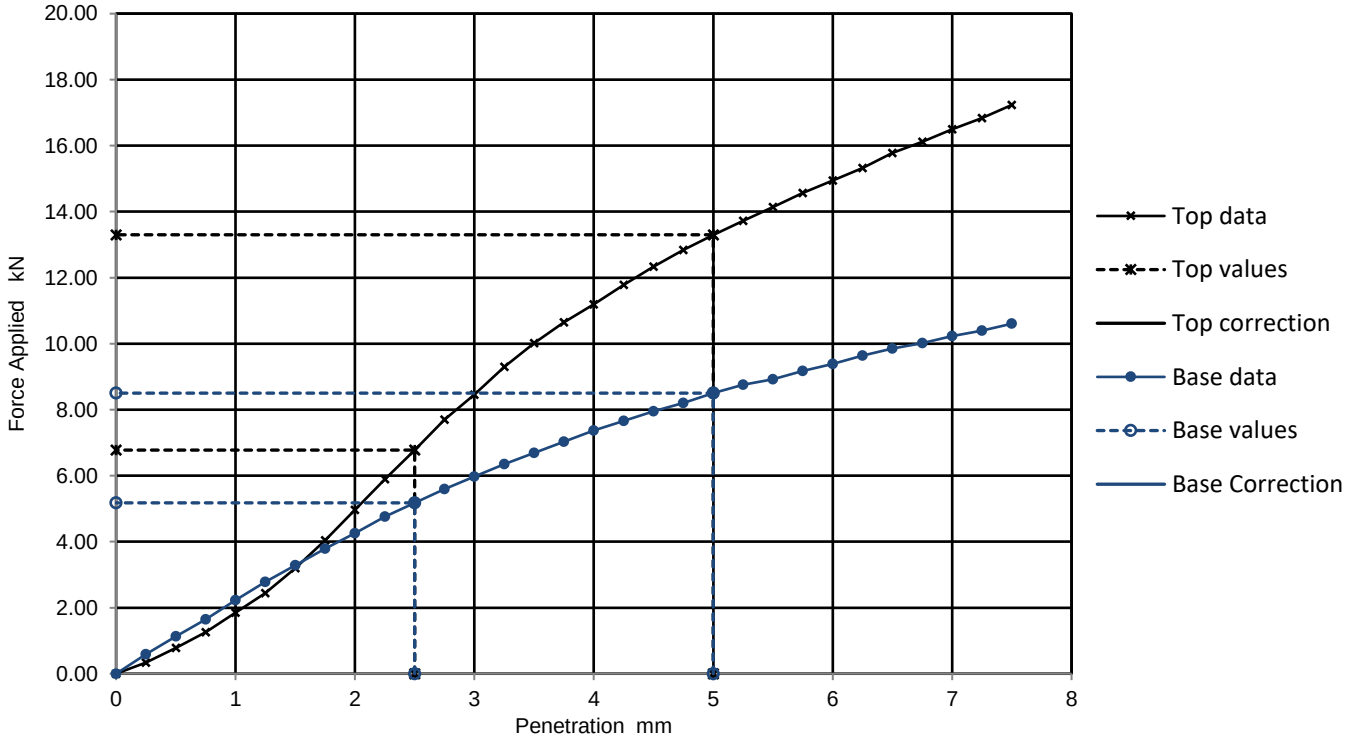
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP218
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051753
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.07	Mg/m3	Surcharge applied	2	kg
	Dry density	1.92	Mg/m3		1	kPa
	Moisture content	8.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		51.0	66.0	66.0		
BASE		39.0	43.0	43.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	123

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

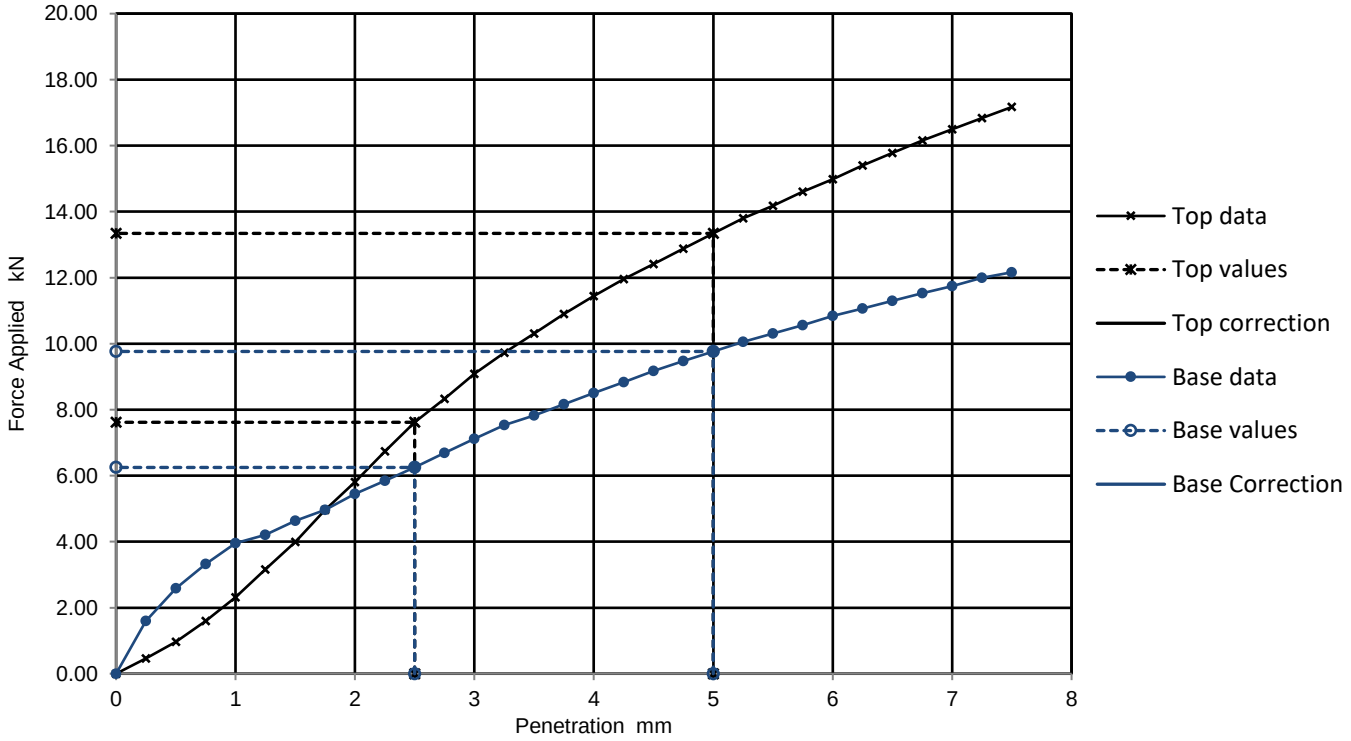
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP218
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051753
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.03	Mg/m3	Surcharge applied	2	kg
	Dry density	1.93	Mg/m3		1	kPa
	Moisture content	5.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		58.0	67.0	67.0		
BASE		47.0	49.0	49.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	124

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

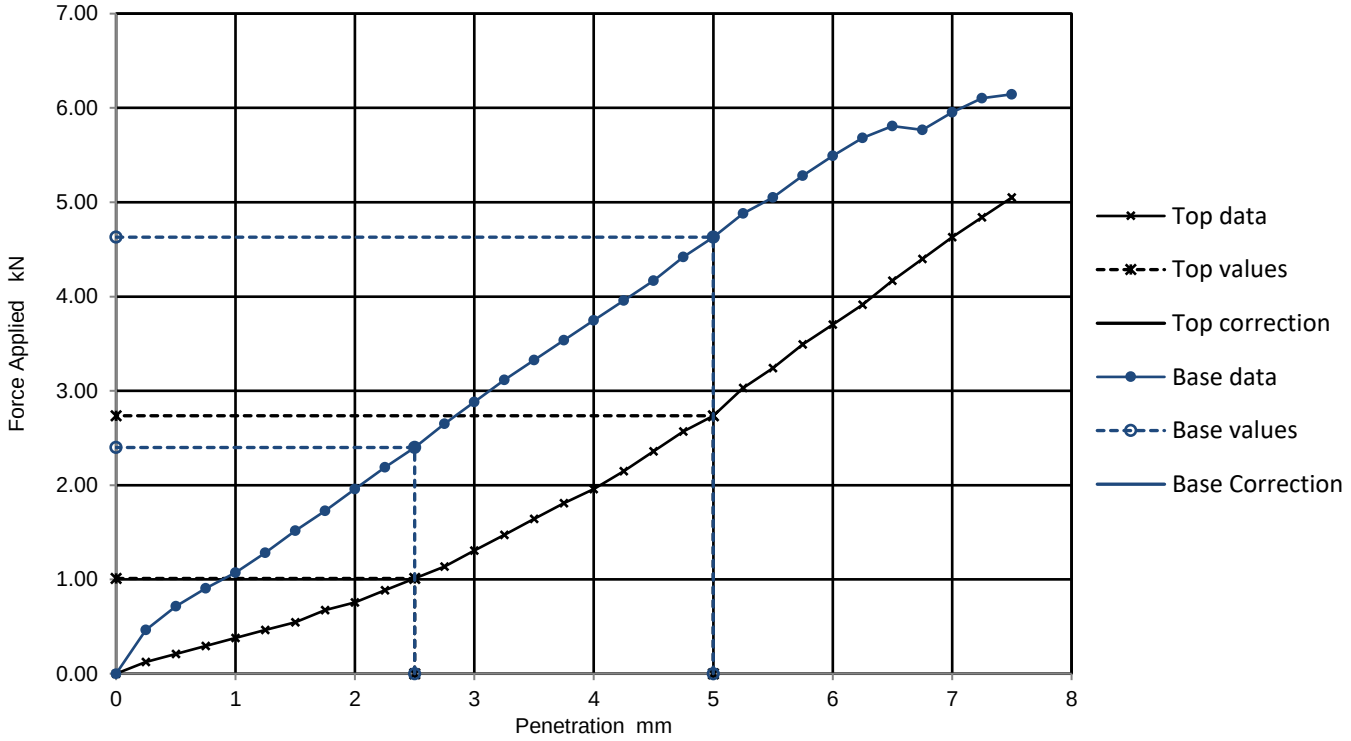
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP218
Site Name	Derrygreenagh Power			Sample No.	1
Soil Description				Depth m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051753
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.20	Mg/m3	Surcharge applied	kg
	Dry density	1.98	Mg/m3		kPa
	Moisture content	11.1	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		7.7	14.0	14.0		
BASE		18.0	23.0	23.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	125

Lab Sheet Reference : 01/11/2023

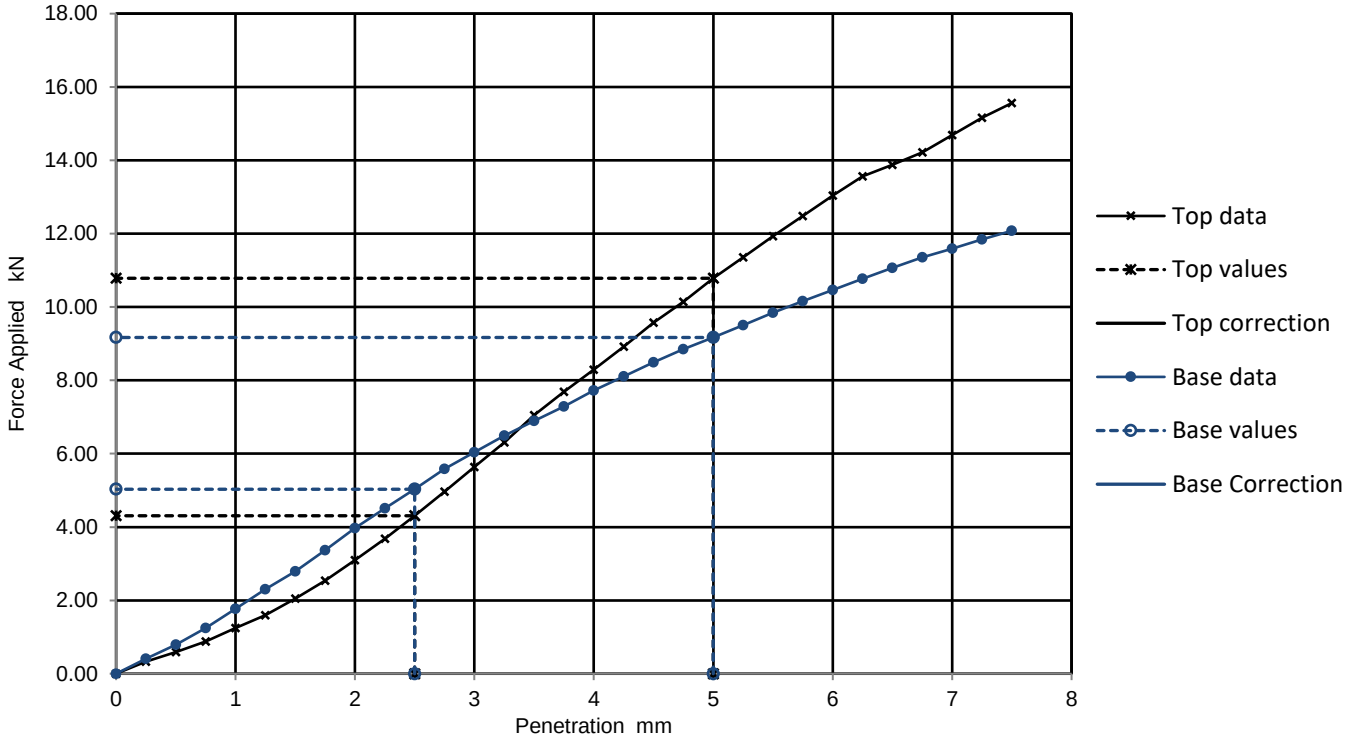
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP220
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Greyish-brown very silty SAND and GRAVEL.			Depth m	2.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051771
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		5	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	2	kg
	Dry density	1.91	Mg/m3		1	kPa
	Moisture content	12.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		33.0	54.0	54.0	50.0	
BASE		38.0	46.0	46.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	126

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

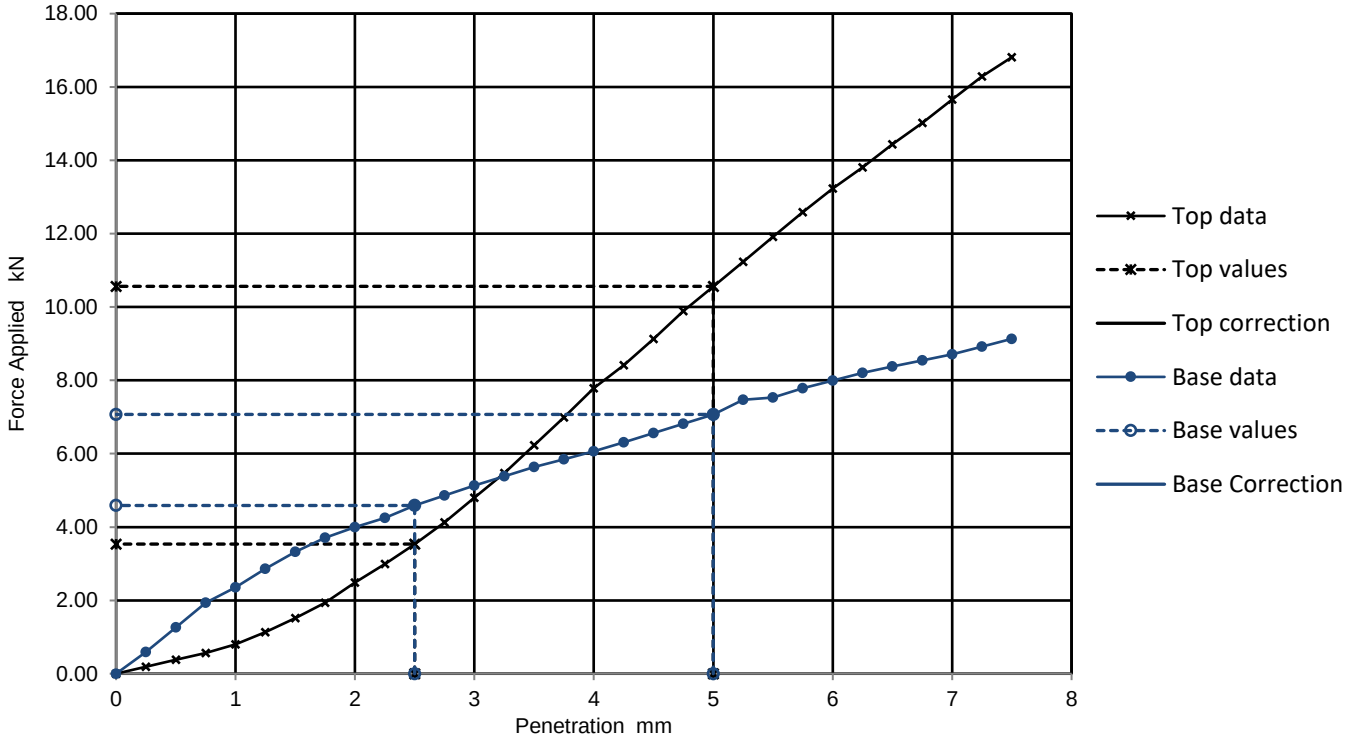
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP220
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	2.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051771
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	2	kg
	Dry density	1.86	Mg/m3		1	kPa
	Moisture content	10.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		27.0	53.0	53.0		
BASE		35.0	35.0	35.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	127

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

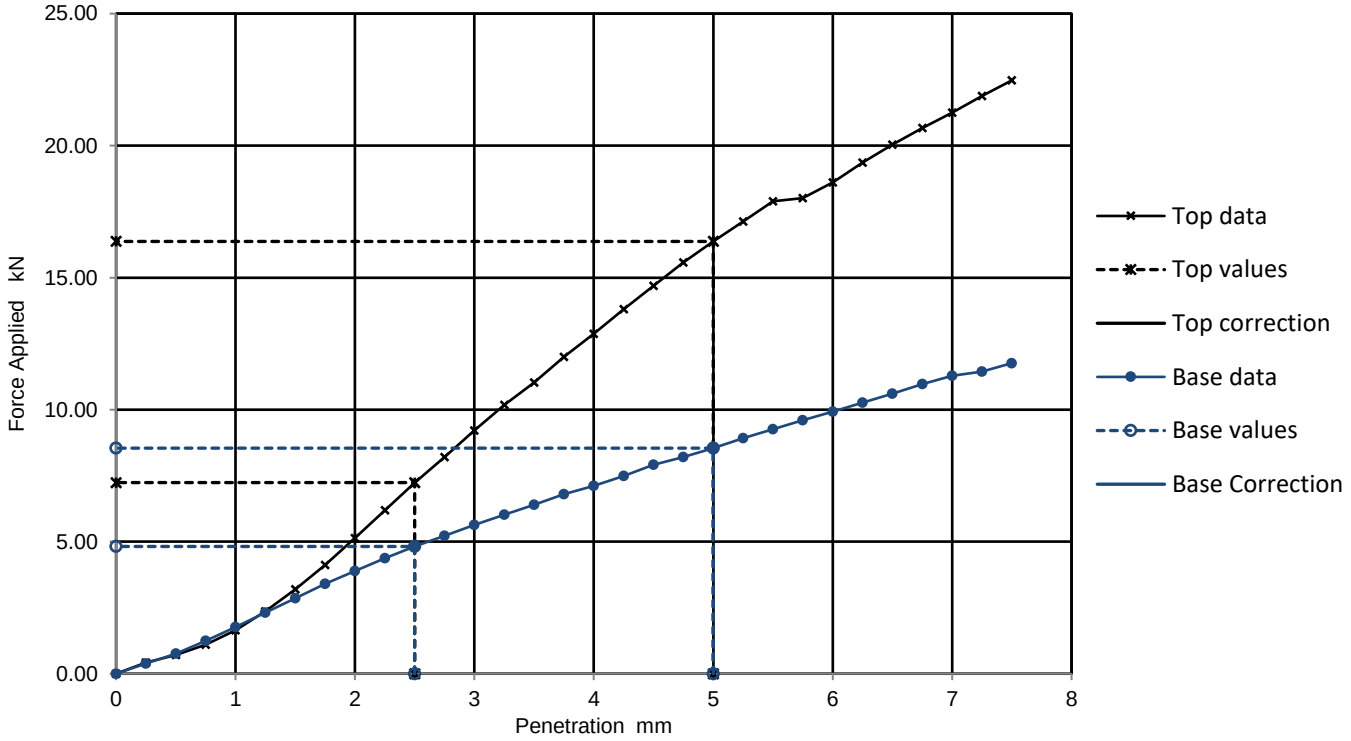
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP220
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	2.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051771
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2	kg
	Dry density	1.84	Mg/m3		1	kPa
	Moisture content	9.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		55.0	82.0	82.0		
BASE		37.0	43.0	43.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	128

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

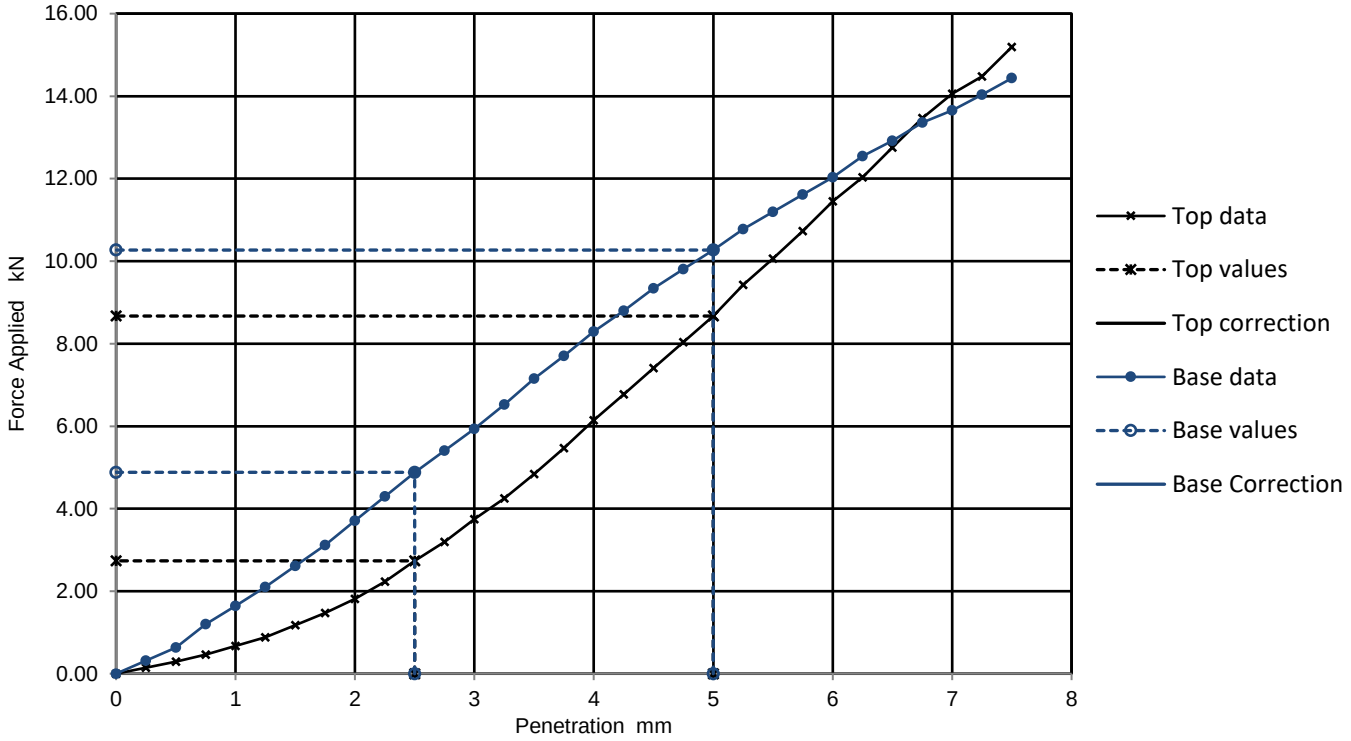
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP220
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	2.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023051771
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.18	Mg/m3	Surcharge applied	2	kg
	Dry density	1.92	Mg/m3		1	kPa
	Moisture content	13.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		21.0	43.0	43.0	47.0	
BASE		37.0	51.0	51.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	129

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

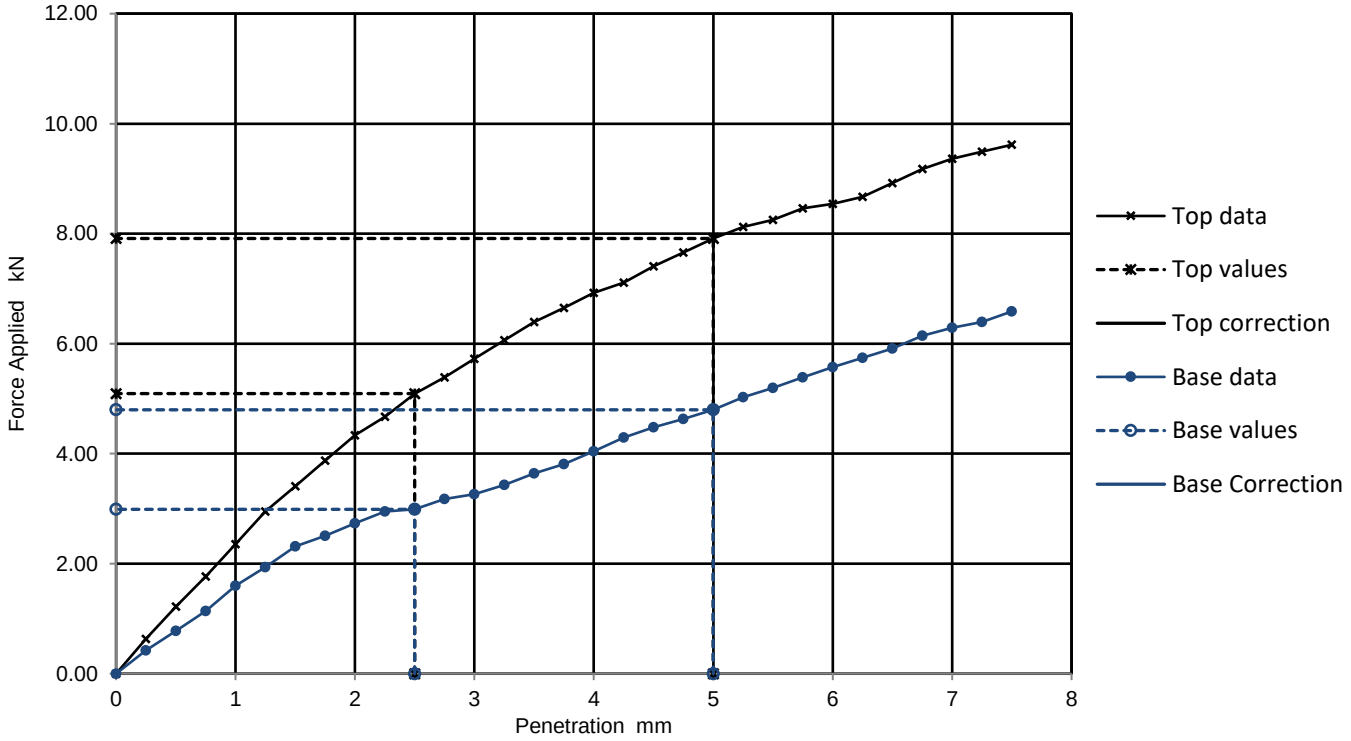
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP222
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description	Greyish-black very silty very sandy fine GRAVEL.			Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202306224
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.92	Mg/m3	Surcharge applied	2	kg
	Dry density	1.71	Mg/m3		1	kPa
	Moisture content	12.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		39.0	40.0	40.0		
BASE		23.0	24.0	24.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	130

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

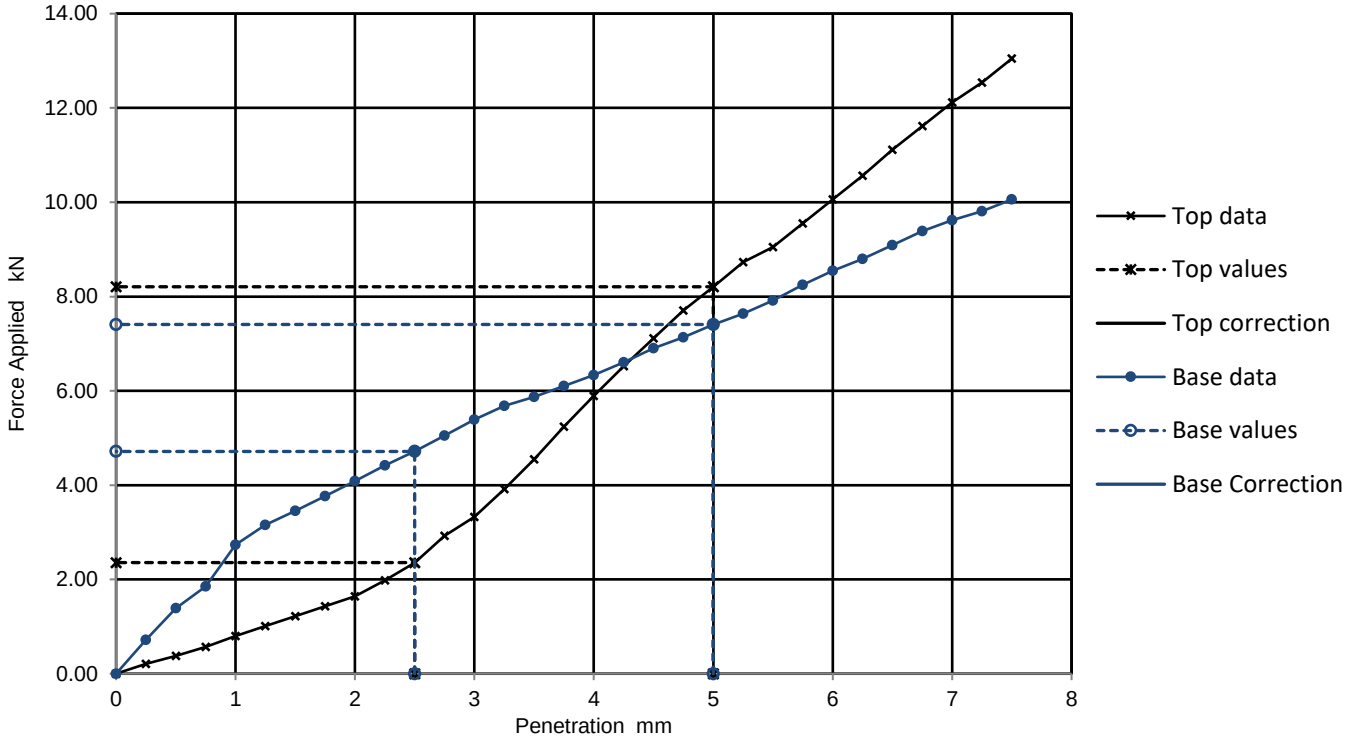
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP222
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202306224
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.87	Mg/m3	Surcharge applied	2	kg
	Dry density	1.67	Mg/m3		1	kPa
	Moisture content	11.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		18.0	41.0	41.0	39.0	
BASE		36.0	37.0	37.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	131

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

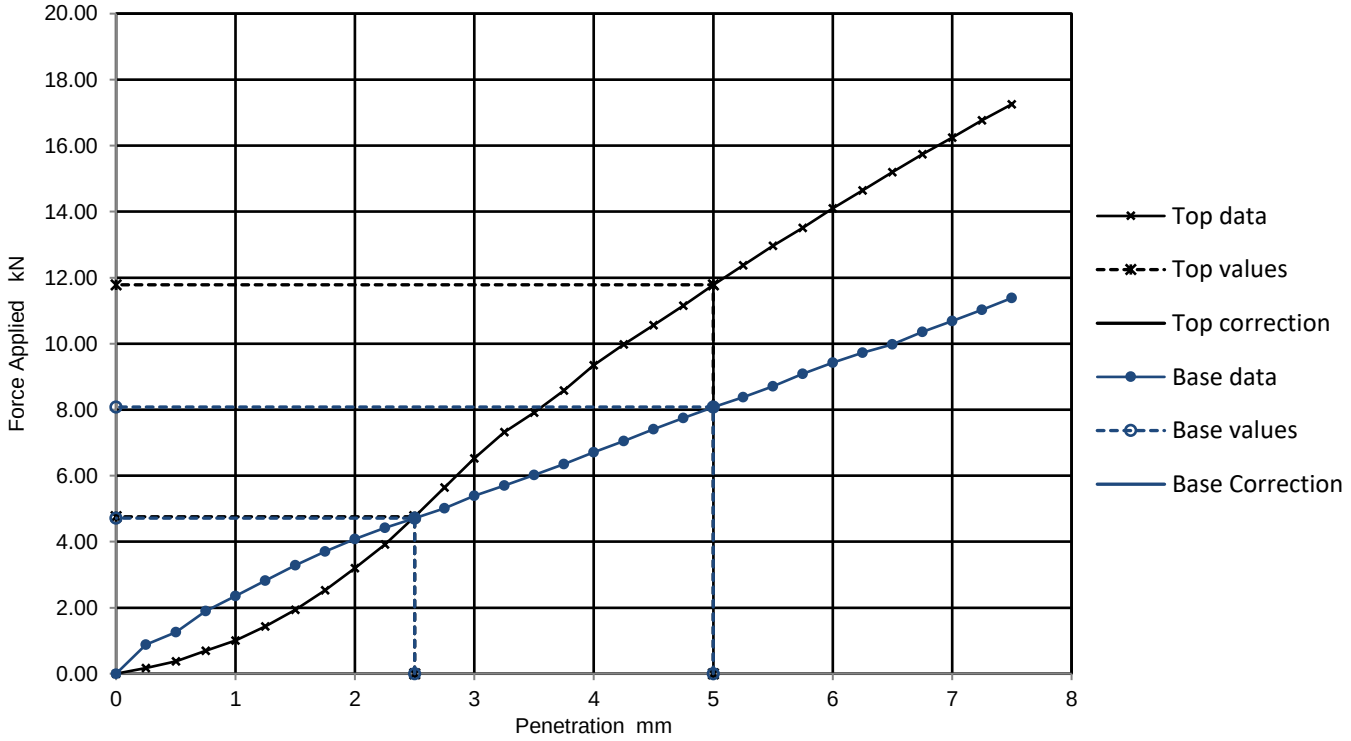
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP222
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202306224
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.89	Mg/m3	Surcharge applied	2	kg
	Dry density	1.71	Mg/m3		1	kPa
	Moisture content	10.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		36.0	59.0	59.0		
BASE		36.0	40.0	40.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	132

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

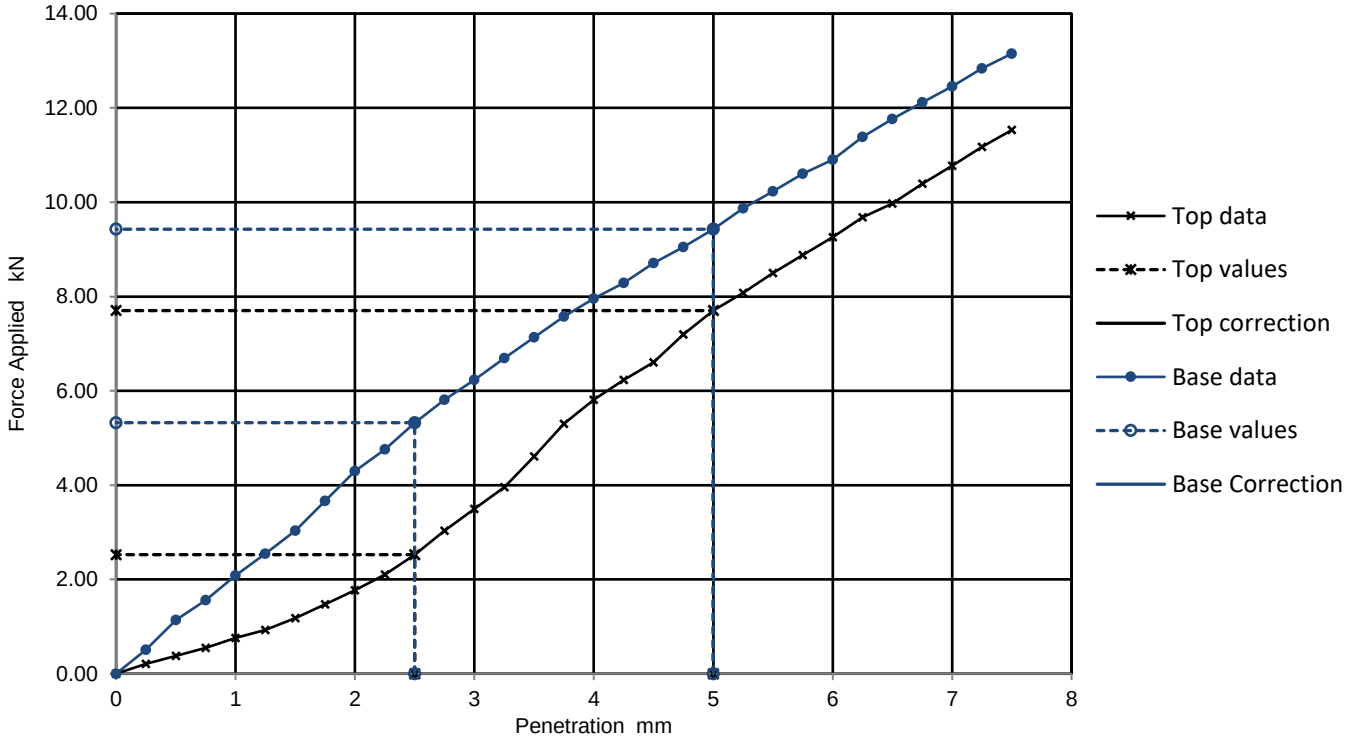
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP222
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202306224
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.99	Mg/m3	Surcharge applied	2	kg
	Dry density	1.78	Mg/m3		1	kPa
	Moisture content	12.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		19.0	39.0	39.0		
BASE		40.0	47.0	47.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	133

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

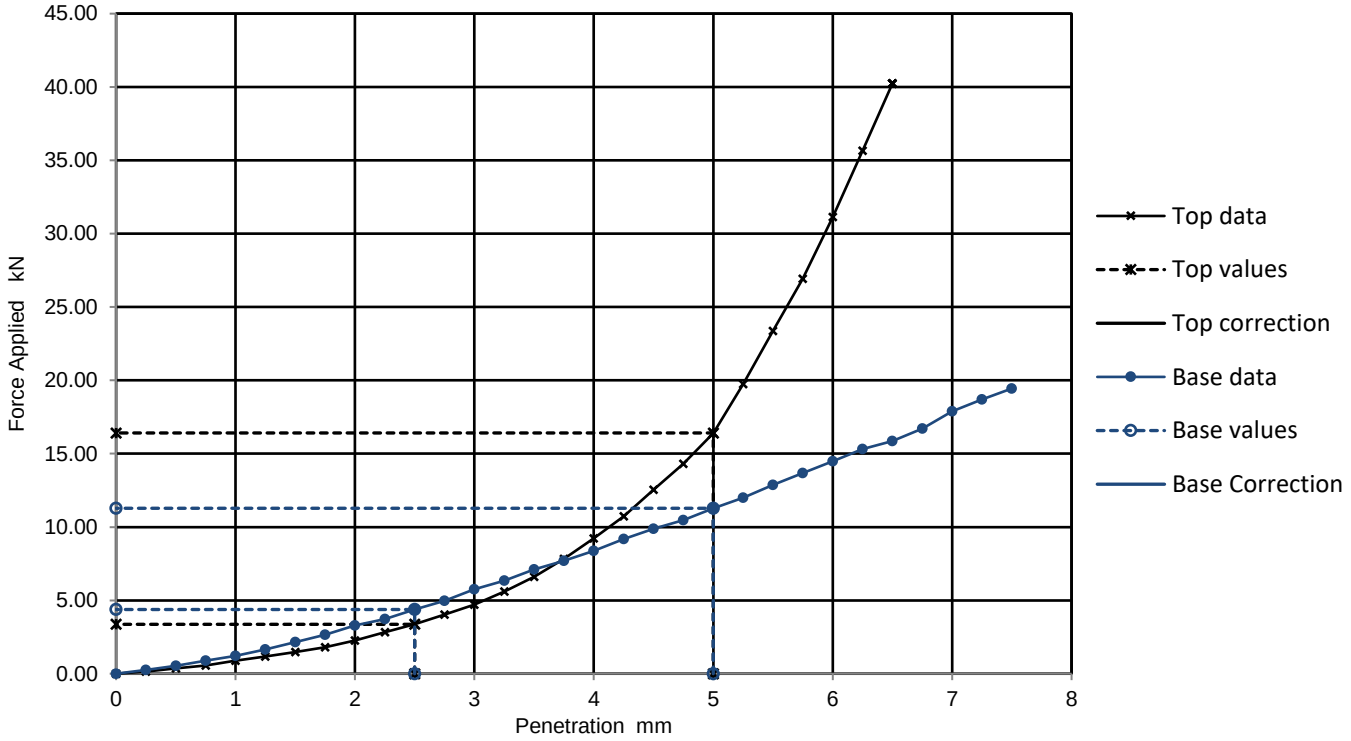
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP222
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202306224
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.18	Mg/m3	Surcharge applied	2	kg
	Dry density	1.92	Mg/m3		1	kPa
	Moisture content	13.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		26.0	82.0	82.0		
BASE		33.0	56.0	56.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	134

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

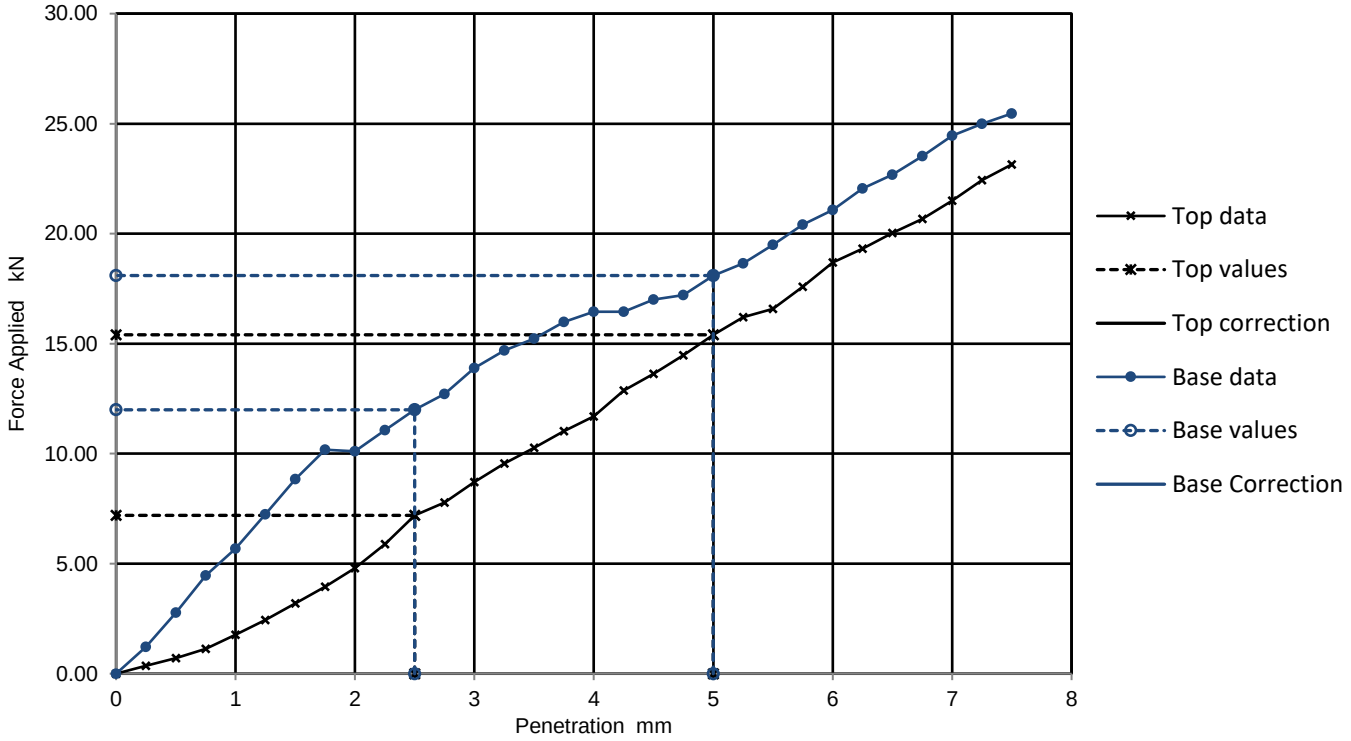
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TP224
Site Name	Derrygreenagh Power			Sample No.	2
Soil Description	Dark brown sandy very silty fine and medium GRAVEL.			Depth m	2.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202306228
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		19	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	2	kg
	Dry density	1.79	Mg/m3		1	kPa
	Moisture content	12.0	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		55.0	77.0	77.0	84.0	
BASE		91.0	90.0	91.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	135

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

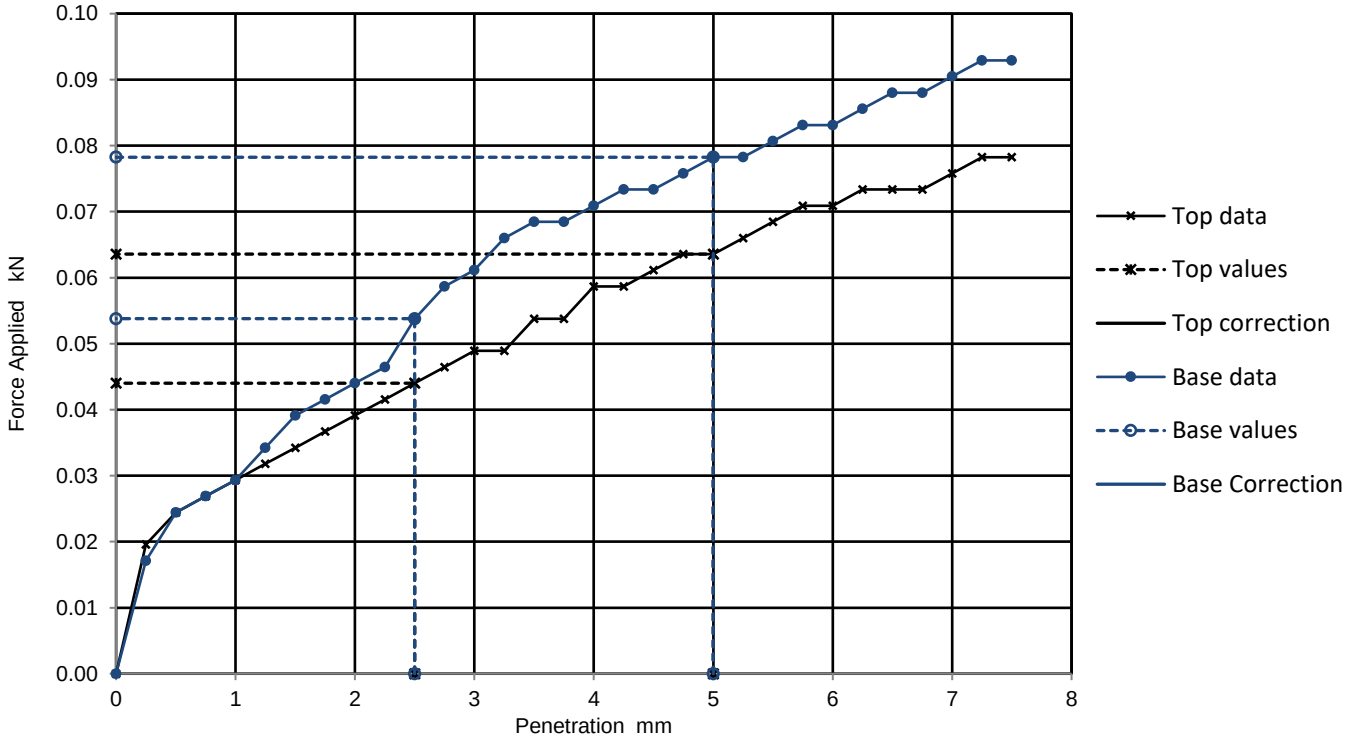
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPC09
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description	Bluish-grey slightly sandy gravelly SILT.			Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081625
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.23	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	12.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.3	0.3	0.3		
BASE		0.4	0.4	0.4		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	136

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

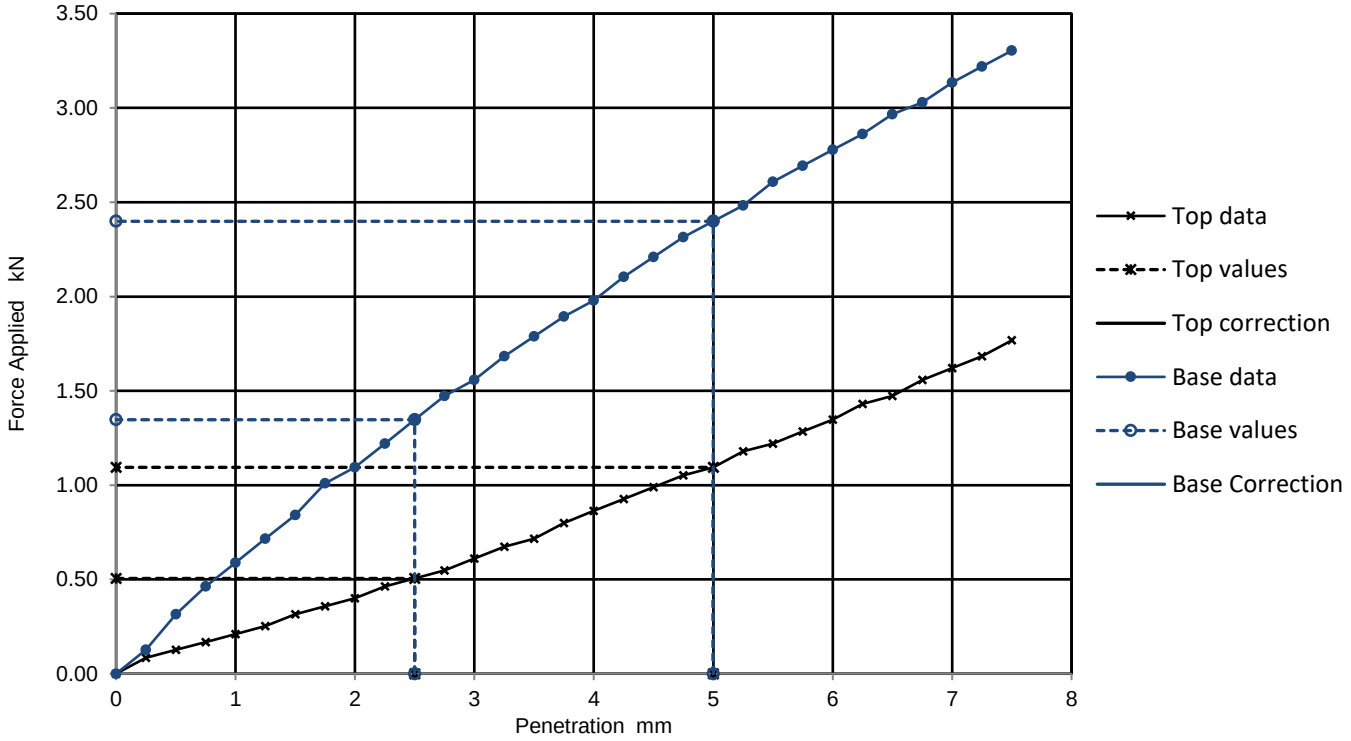
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPC09
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081625
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.26	Mg/m3	Surcharge applied	2	kg
	Dry density	2.07	Mg/m3		1	kPa
	Moisture content	9.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		3.8	5.5	5.5		
BASE		10.0	12.0	12.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	137

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

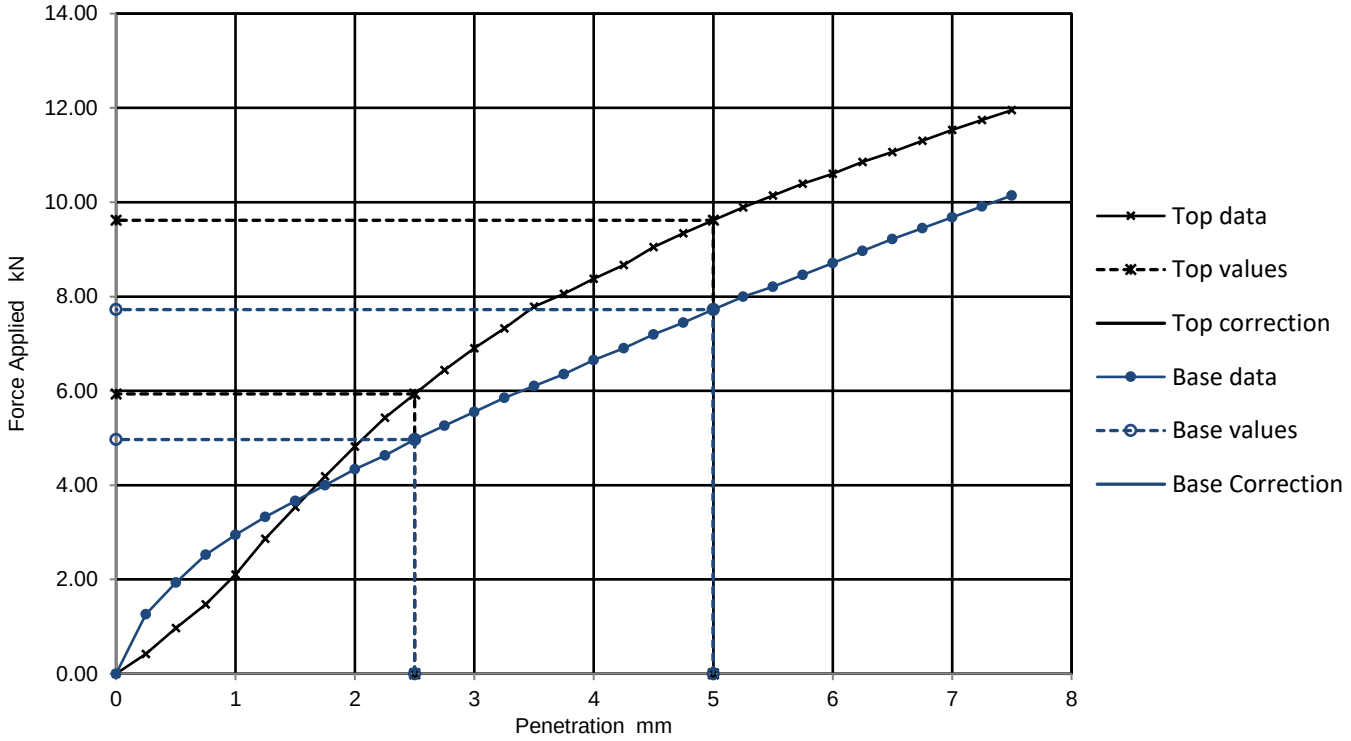
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPC09
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081625
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.11	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	6.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		45.0	48.0	48.0		
BASE		38.0	39.0	39.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	138

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

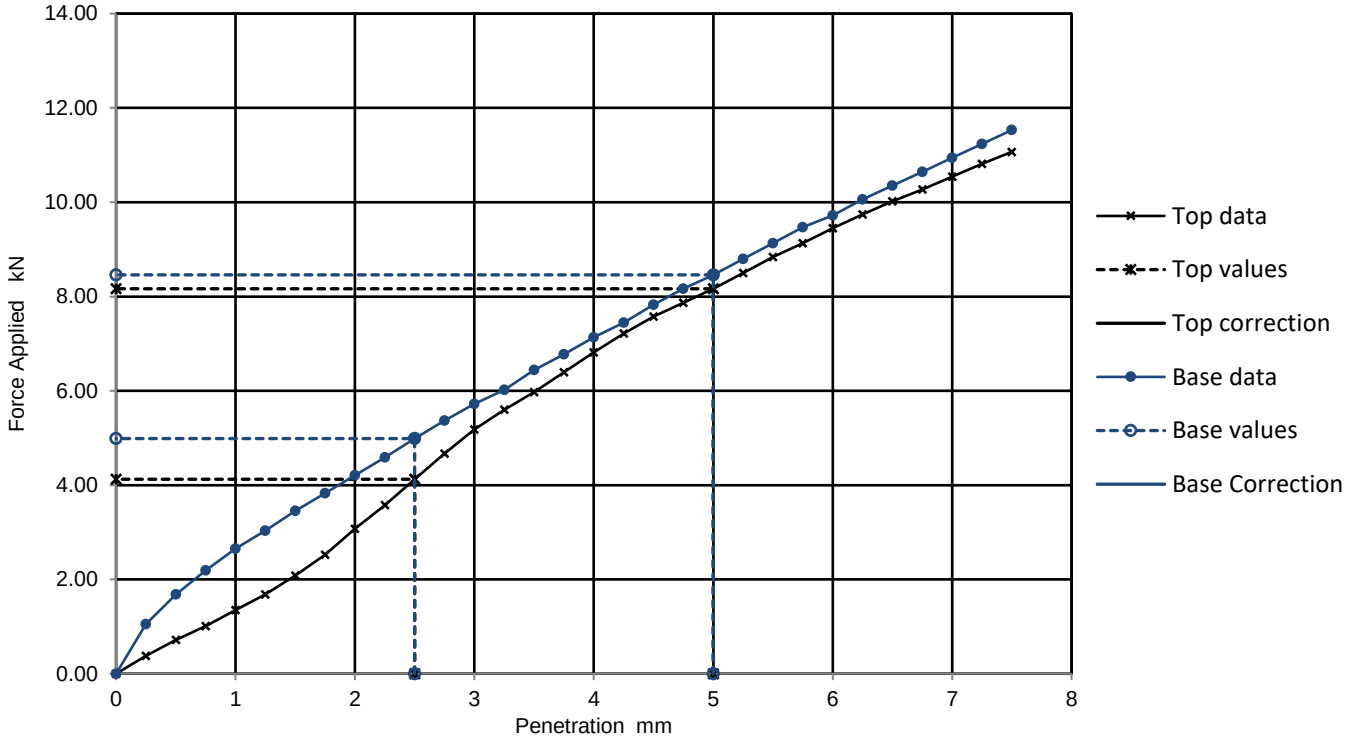
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPC09
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081625
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.20	Mg/m3	Surcharge applied	2	kg
	Dry density	2.07	Mg/m3		1	kPa
	Moisture content	6.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		31.0	41.0	41.0	42.0	
BASE		38.0	42.0	42.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	139

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

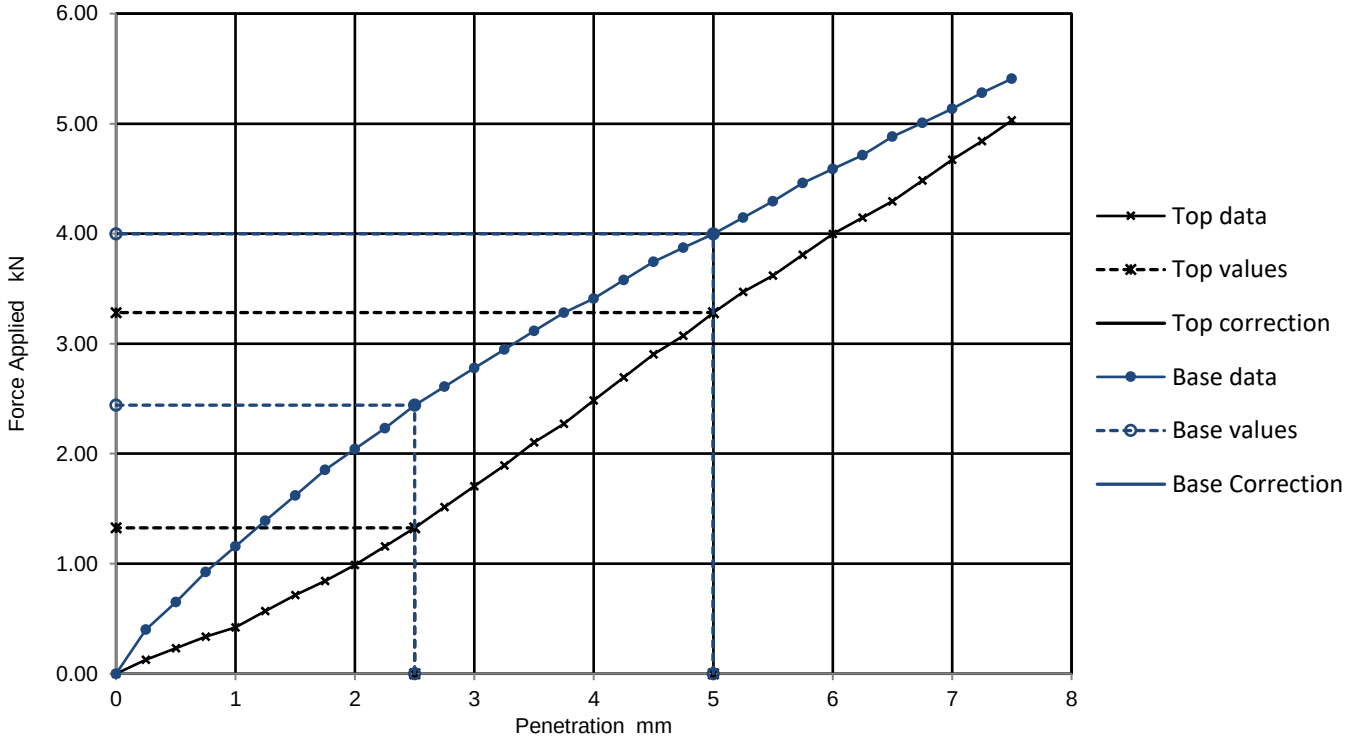
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPC09
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081625
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.26	Mg/m3	Surcharge applied	2	kg
	Dry density	2.07	Mg/m3		1	kPa
	Moisture content	9.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		10.0	16.0	16.0	18.0	
BASE		18.0	20.0	20.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	140

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

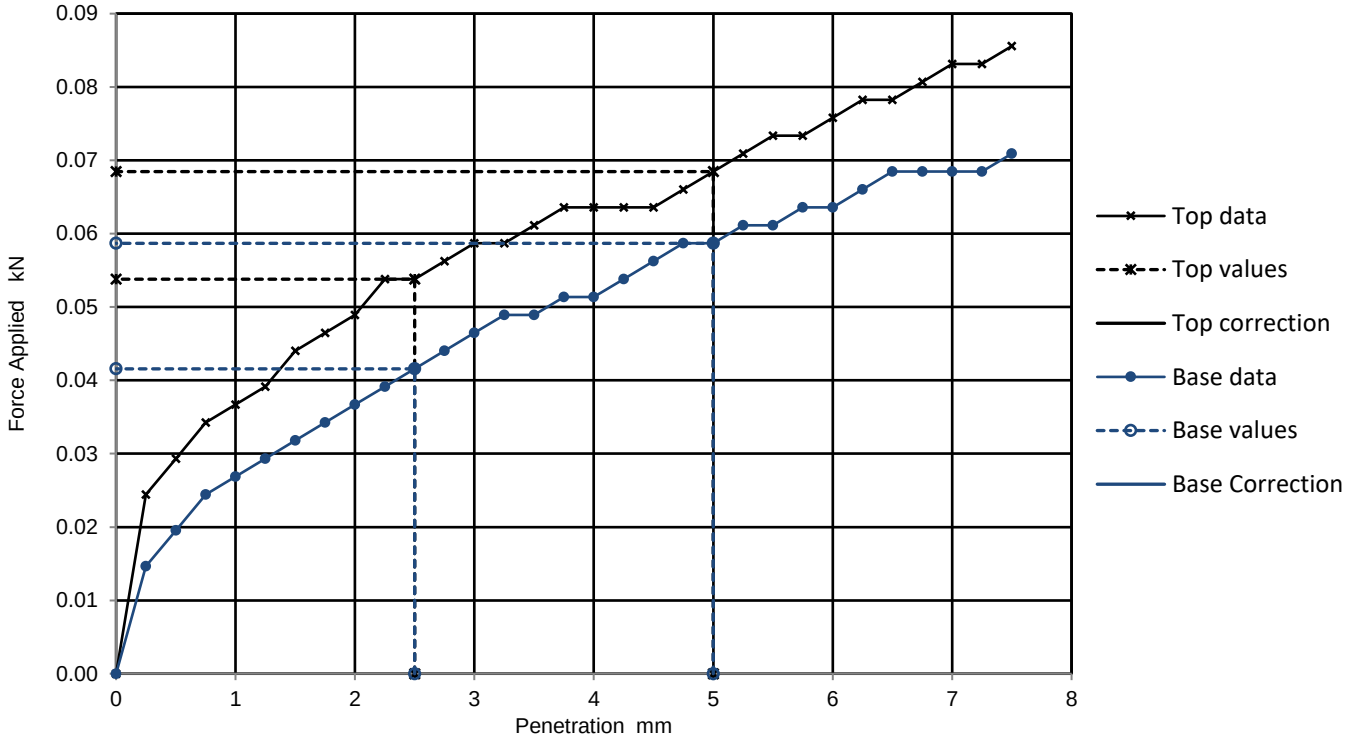
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description	Light grey very silty SAND and GRAVEL.			Depth m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081680
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.29	Mg/m3	Surcharge applied	2	kg
	Dry density	2.05	Mg/m3		1	kPa
	Moisture content	11.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.4	0.3	0.4		
BASE		0.3	0.3	0.3		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	141

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

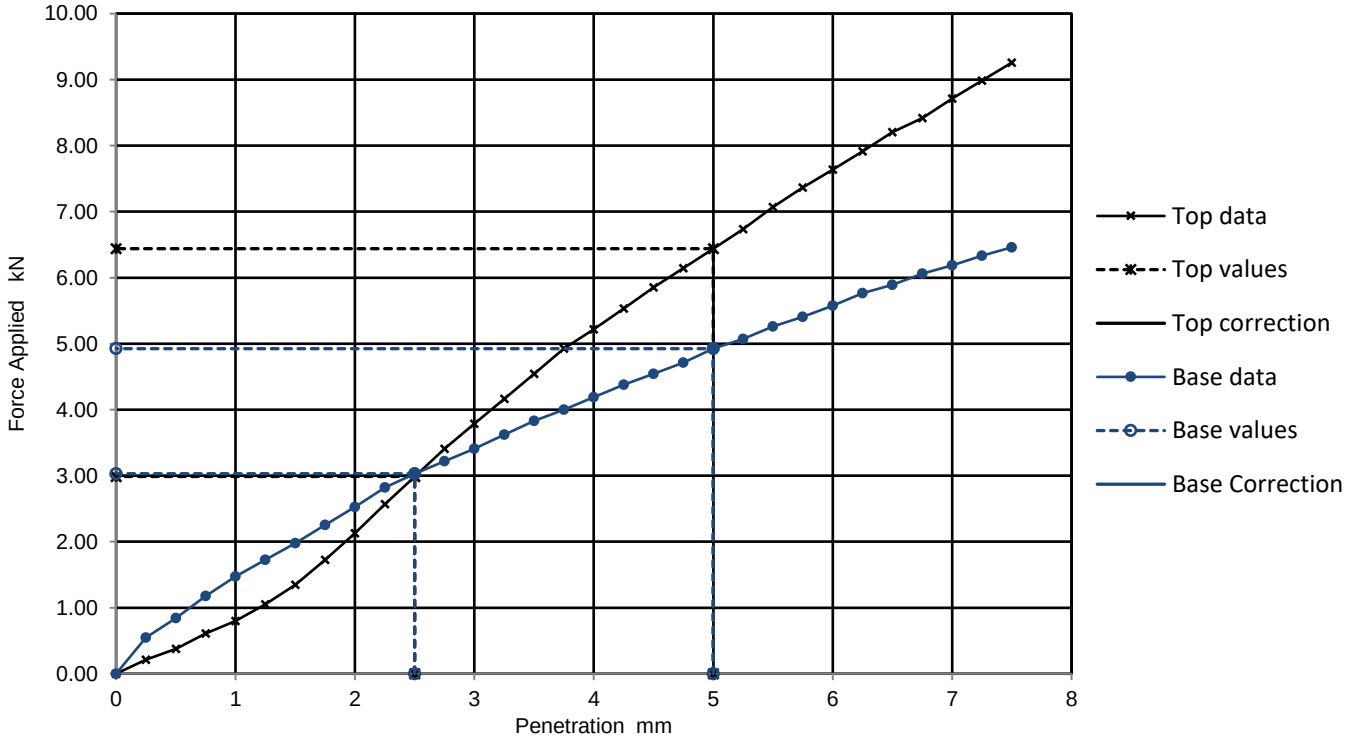
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081680
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.22	Mg/m3	Surcharge applied	2	kg
	Dry density	2.07	Mg/m3		1	kPa
	Moisture content	7.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		23.0	32.0	32.0		
BASE		23.0	25.0	25.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	142

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

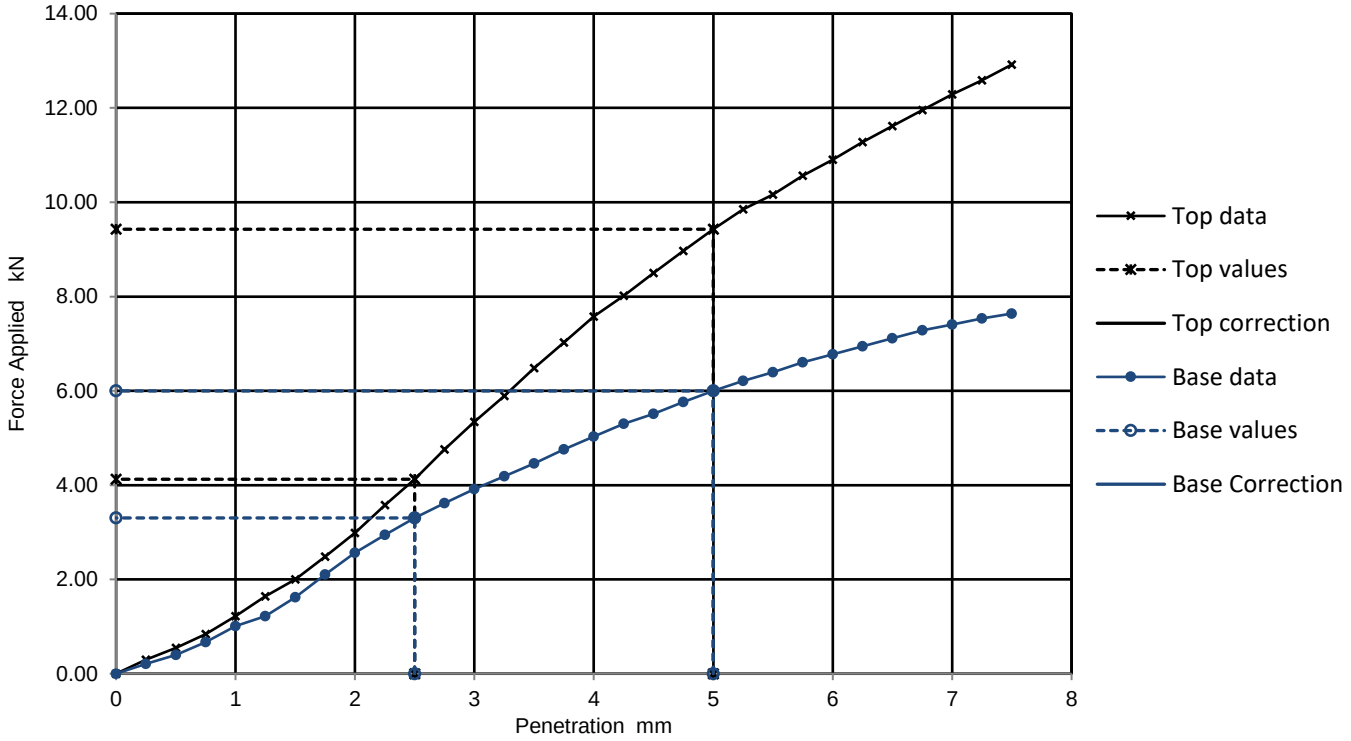
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081680
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.99	Mg/m3	Surcharge applied	kg
	Dry density	1.89	Mg/m3		kPa
	Moisture content	5.3	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		31.0	47.0	47.0		
BASE		25.0	30.0	30.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	143

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

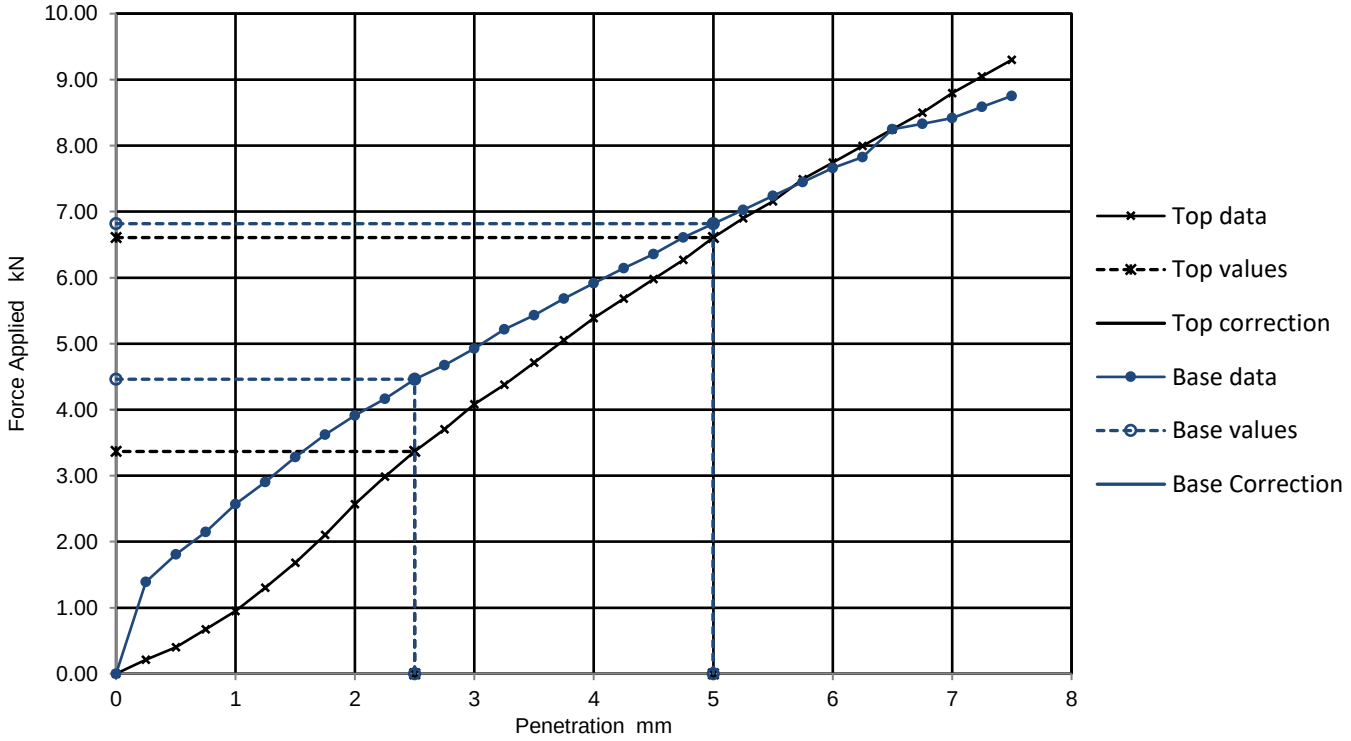
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081680
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.19	Mg/m3	Surcharge applied	2	kg
	Dry density	2.04	Mg/m3		1	kPa
	Moisture content	7.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		26.0	33.0	33.0	34.0	
BASE		34.0	34.0	34.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	144

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

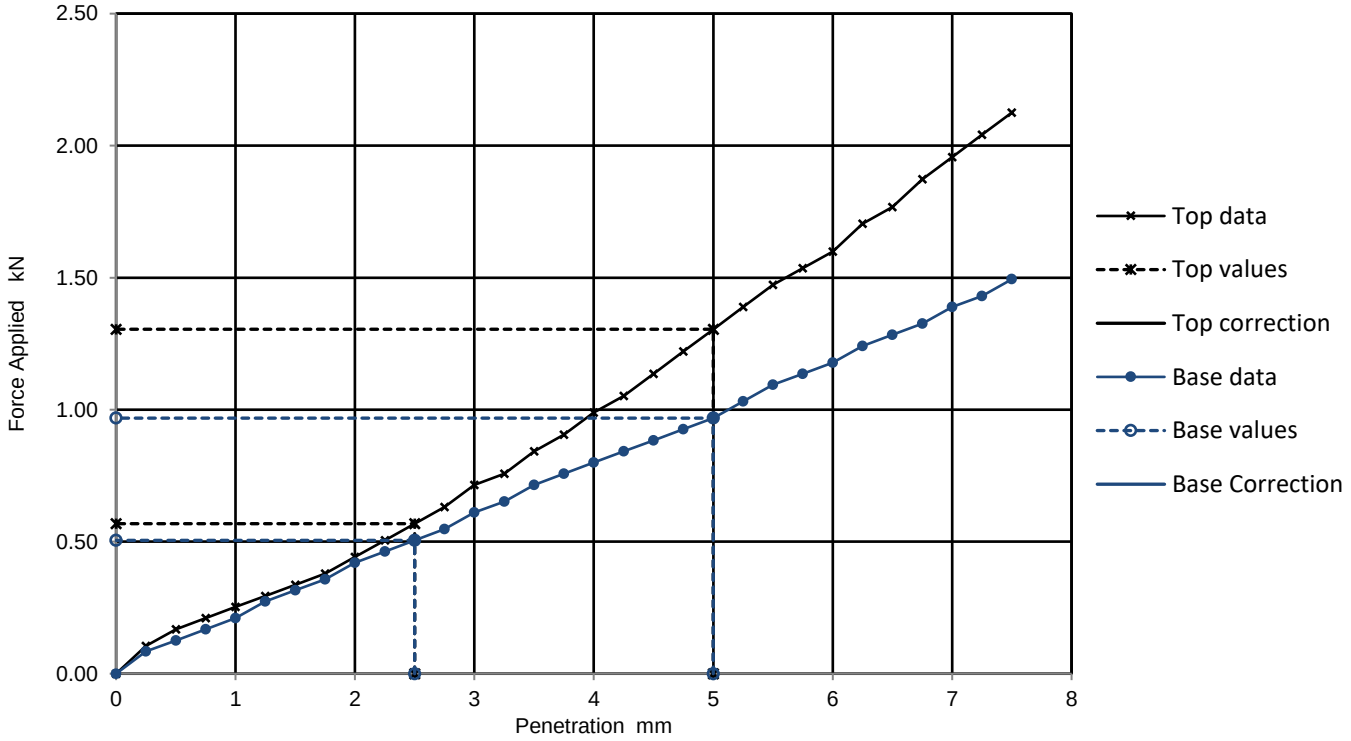
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPSS107
Site Name	Derrygreenagh Power			Sample No.	4
Soil Description				Depth m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023081680
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.30	Mg/m3	Surcharge applied	2	kg
	Dry density	2.11	Mg/m3		1	kPa
	Moisture content	9.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.3	6.5	6.5		
BASE		3.8	4.8	4.8		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	145

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

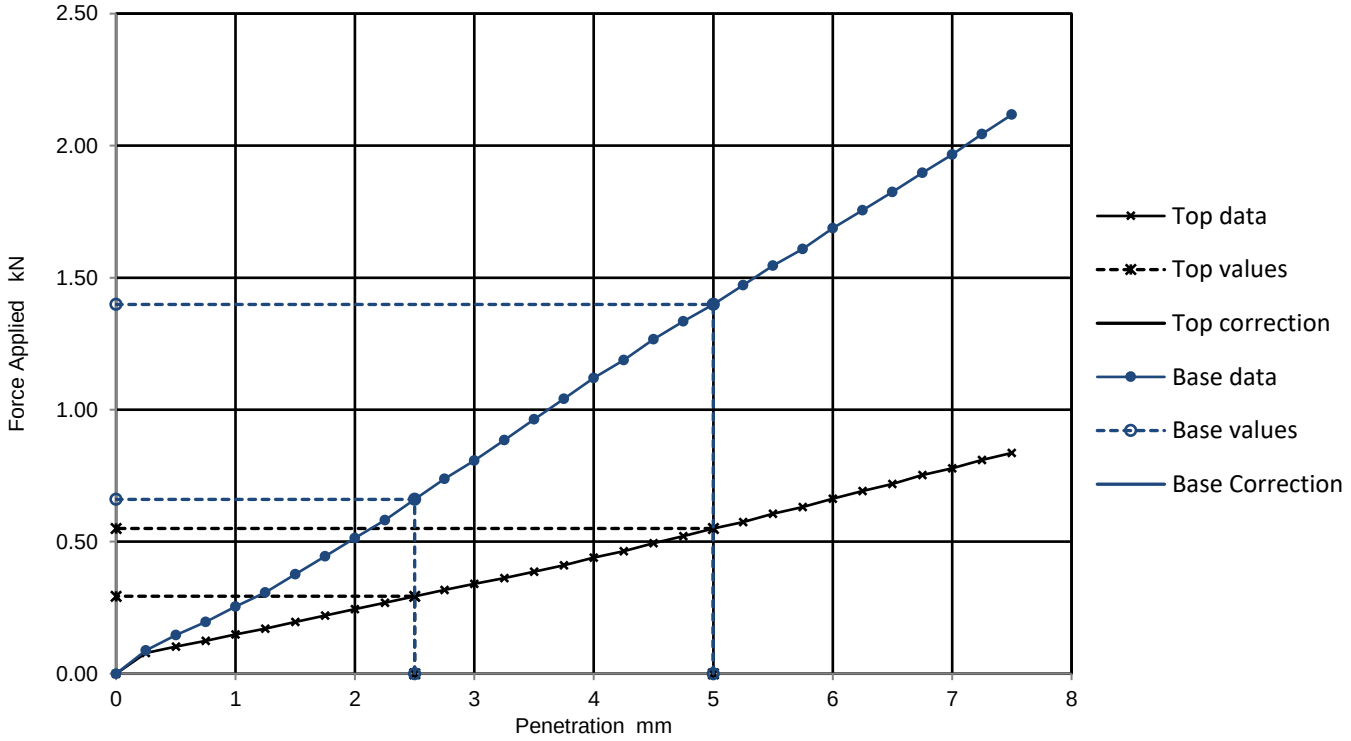
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT01
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description	Dark grey slightly silty very gravelly coarse SAND.			Depth m	3.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060983
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.17	Mg/m3	Surcharge applied	kg
	Dry density	1.91	Mg/m3		kPa
	Moisture content	13.6	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		2.2	2.8	2.8		
BASE		5.0	7.0	7.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	146

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

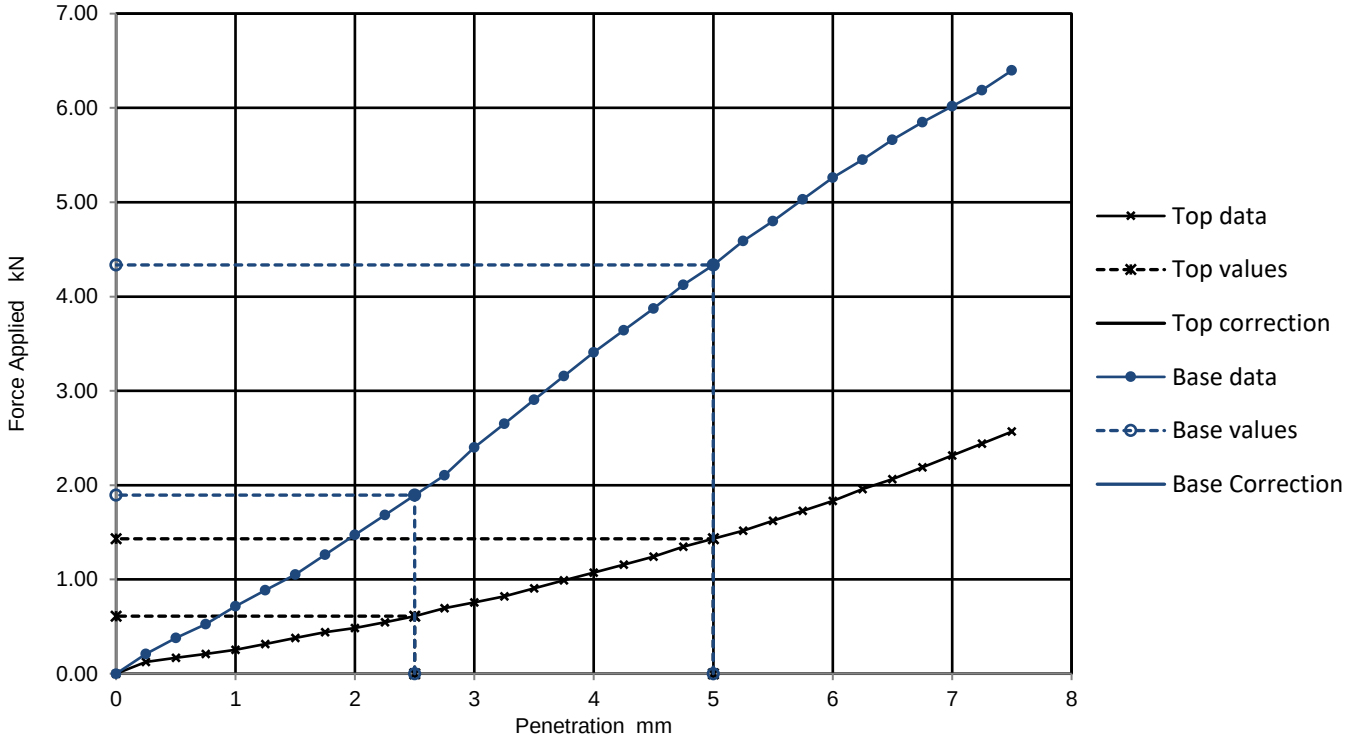
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT01
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	3.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060983
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.13	Mg/m3	Surcharge applied	2	kg
	Dry density	1.93	Mg/m3		1	kPa
	Moisture content	10.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.6	7.2	7.2		
BASE		14.0	22.0	22.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	147

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

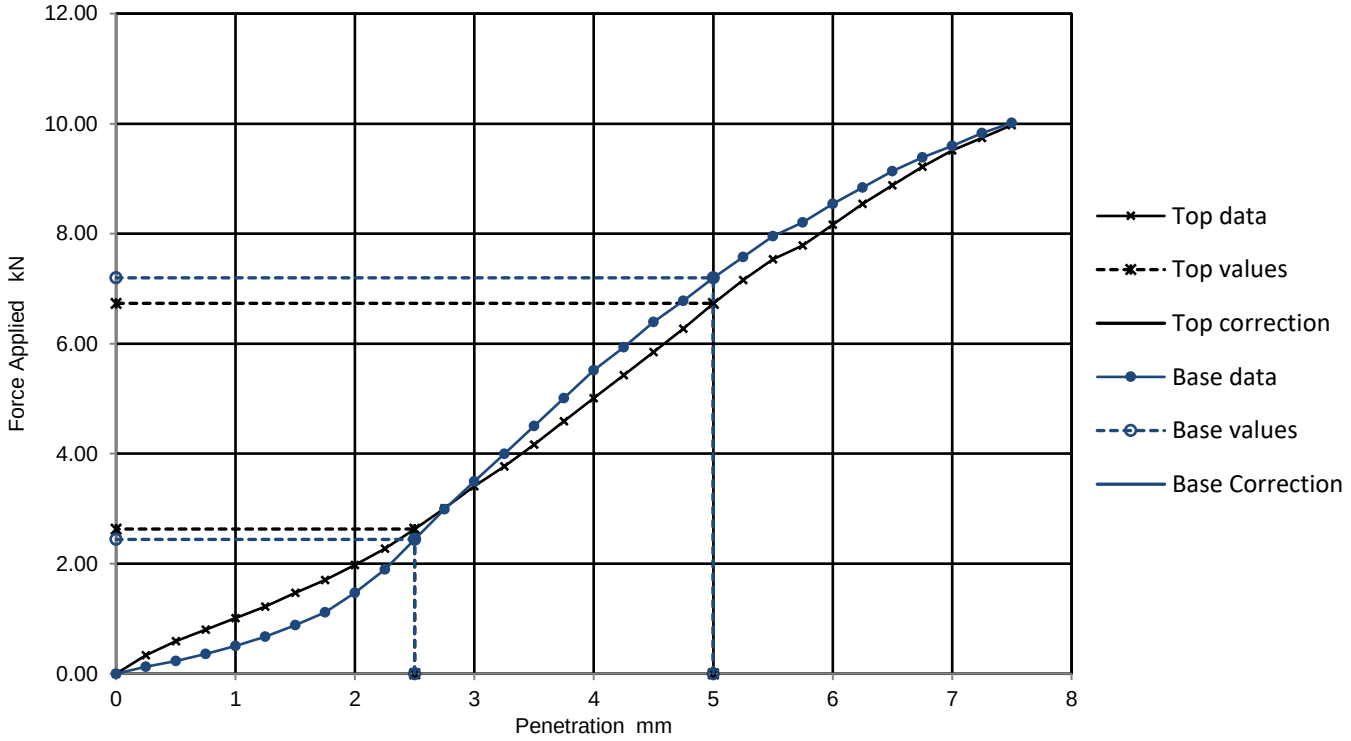
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT01
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	3.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060983
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.14	Mg/m3	Surcharge applied	2	kg
	Dry density	1.98	Mg/m3		1	kPa
	Moisture content	8.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		20.0	34.0	34.0	35.0	
BASE		18.0	36.0	36.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	148

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

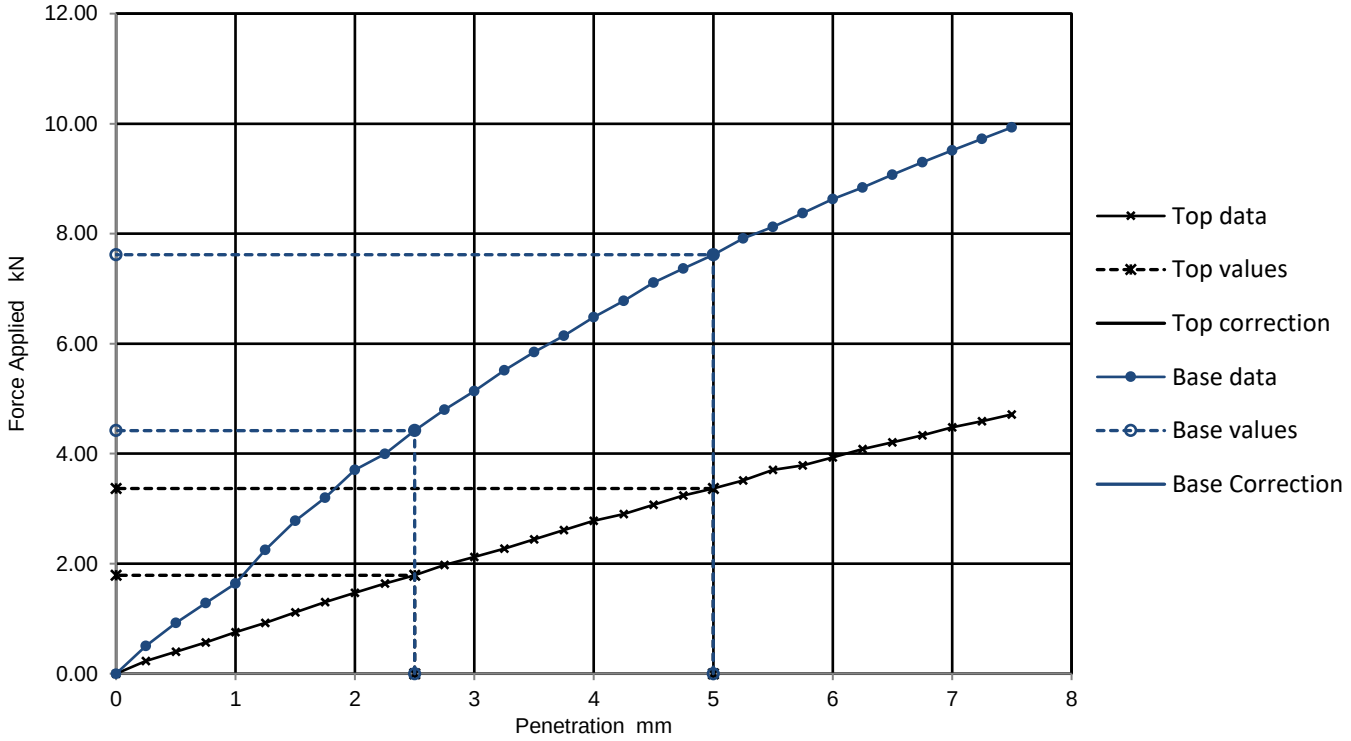
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT01
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	3.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060983
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.09	Mg/m3	Surcharge applied	2	kg
	Dry density	1.94	Mg/m3		1	kPa
	Moisture content	7.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		14.0	17.0	17.0		
BASE		33.0	38.0	38.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	149

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

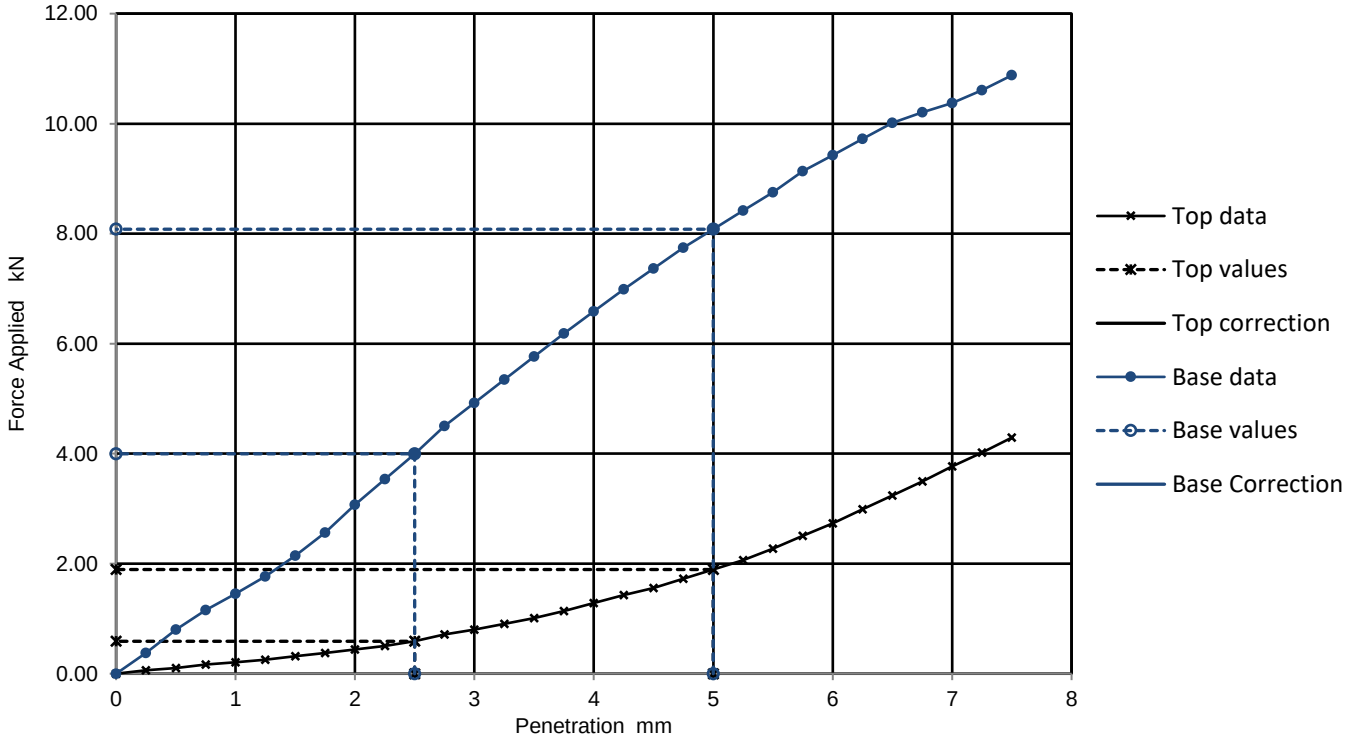
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT01
Site Name	Derrygreenagh Power			Sample No.	6
Soil Description				Depth m	3.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060983
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	2	kg
	Dry density	1.95	Mg/m3		1	kPa
	Moisture content	6.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		4.5	9.5	9.5		
BASE		30.0	40.0	40.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	150

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

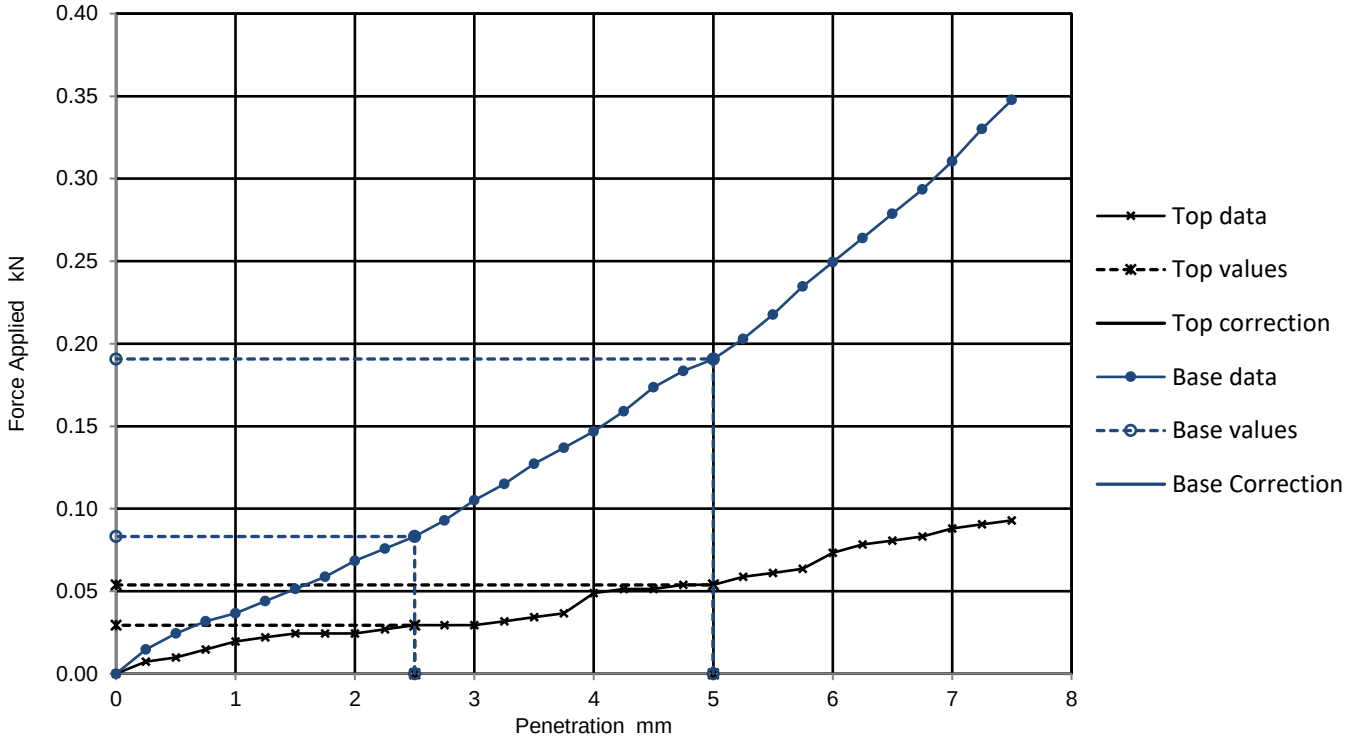
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT03
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description	Dark grey silty very gravelly medium SAND.			Depth m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060995
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.01	Mg/m3	Surcharge applied	2	kg
	Dry density	1.63	Mg/m3		1	kPa
	Moisture content	23.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		0.2	0.3	0.3		
BASE		0.6	1.0	1.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	151

Lab Sheet Reference : 01/11/2023

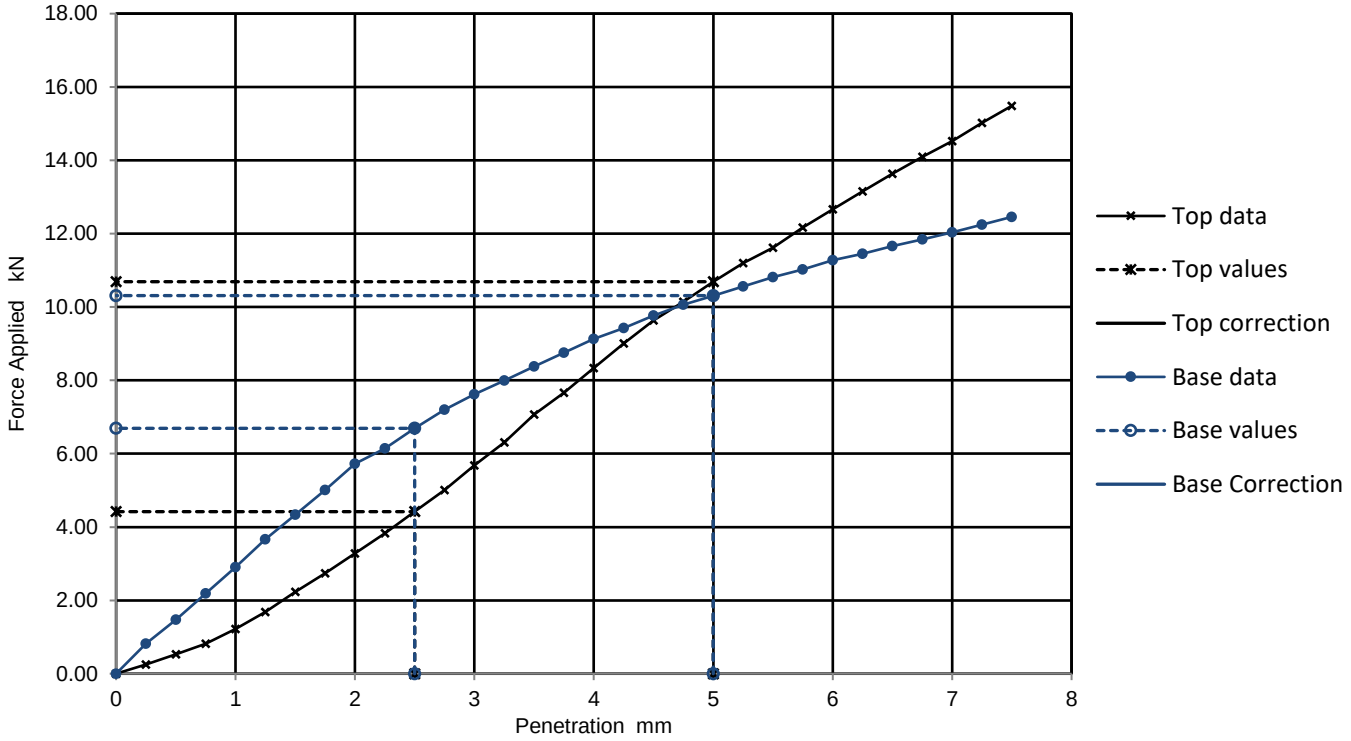
Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT03
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060995
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	2

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	days
				Time to surface	days
				Amount of swell recorded	mm
Material retained on 20mm sieve removed			%	Dry density after soaking	Mg/m3
Initial Specimen details	Bulk density	2.05	Mg/m3	Surcharge applied	2 kg
	Dry density	1.74	Mg/m3		1 kPa
	Moisture content	17.5	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		33.0	53.0	53.0	53.0	
BASE		51.0	52.0	52.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	152

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

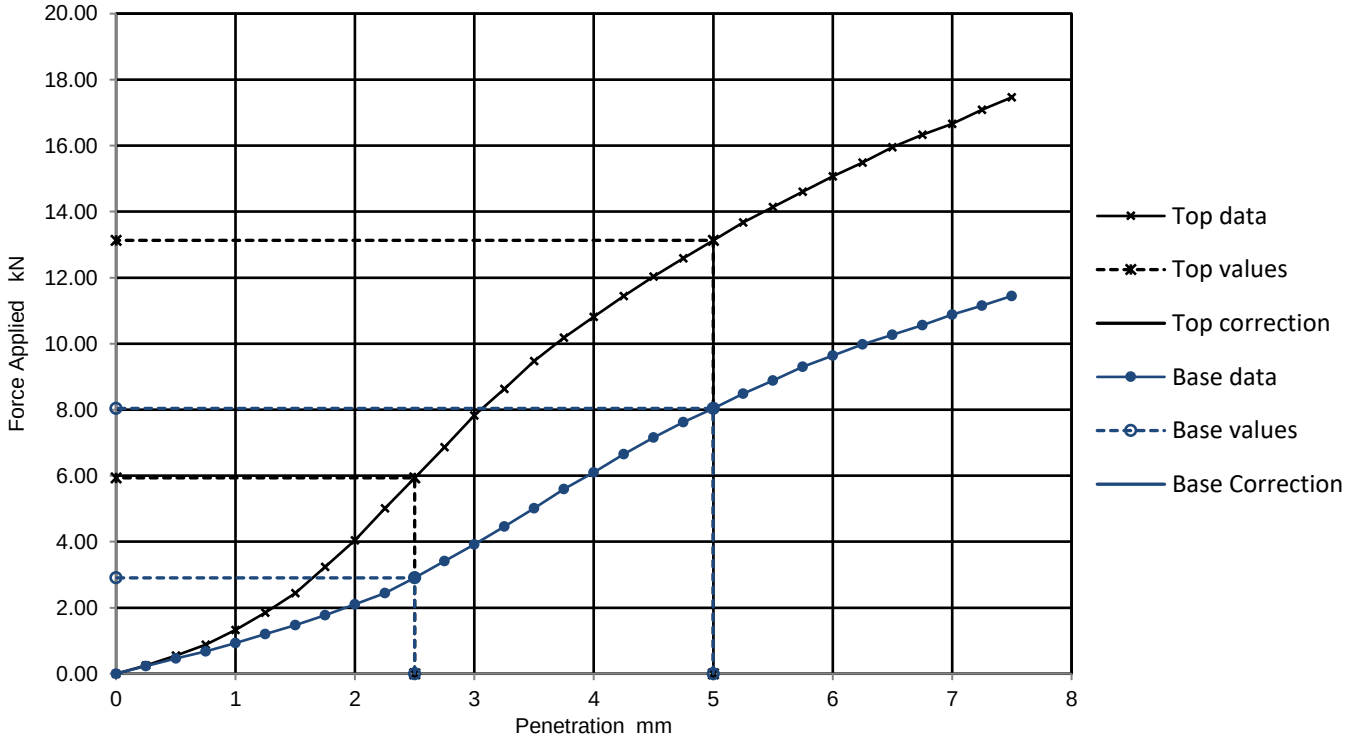
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT03
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060995
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	3

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	days
				Time to surface	days
				Amount of swell recorded	mm
Material retained on 20mm sieve removed			%	Dry density after soaking	Mg/m3
Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	2 kg
	Dry density	1.74	Mg/m3		1 kPa
	Moisture content	16.4	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		45.0	66.0	66.0		
BASE		22.0	40.0	40.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No. 1
QC From R9
Sheet No 153

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

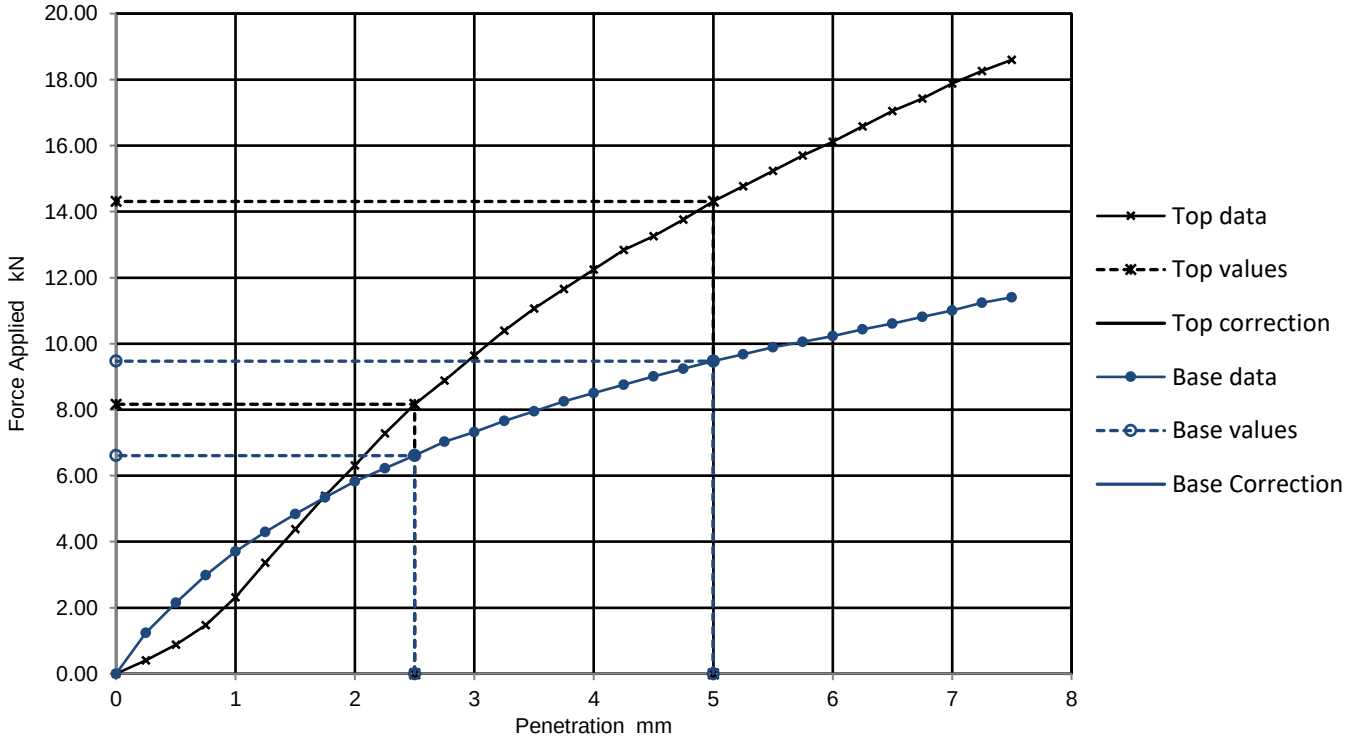
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT03
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060995
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	4

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.99	Mg/m3	Surcharge applied	2	kg
	Dry density	1.75	Mg/m3		1	kPa
	Moisture content	13.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		62.0	72.0	72.0		
BASE		50.0	47.0	50.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	154

Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

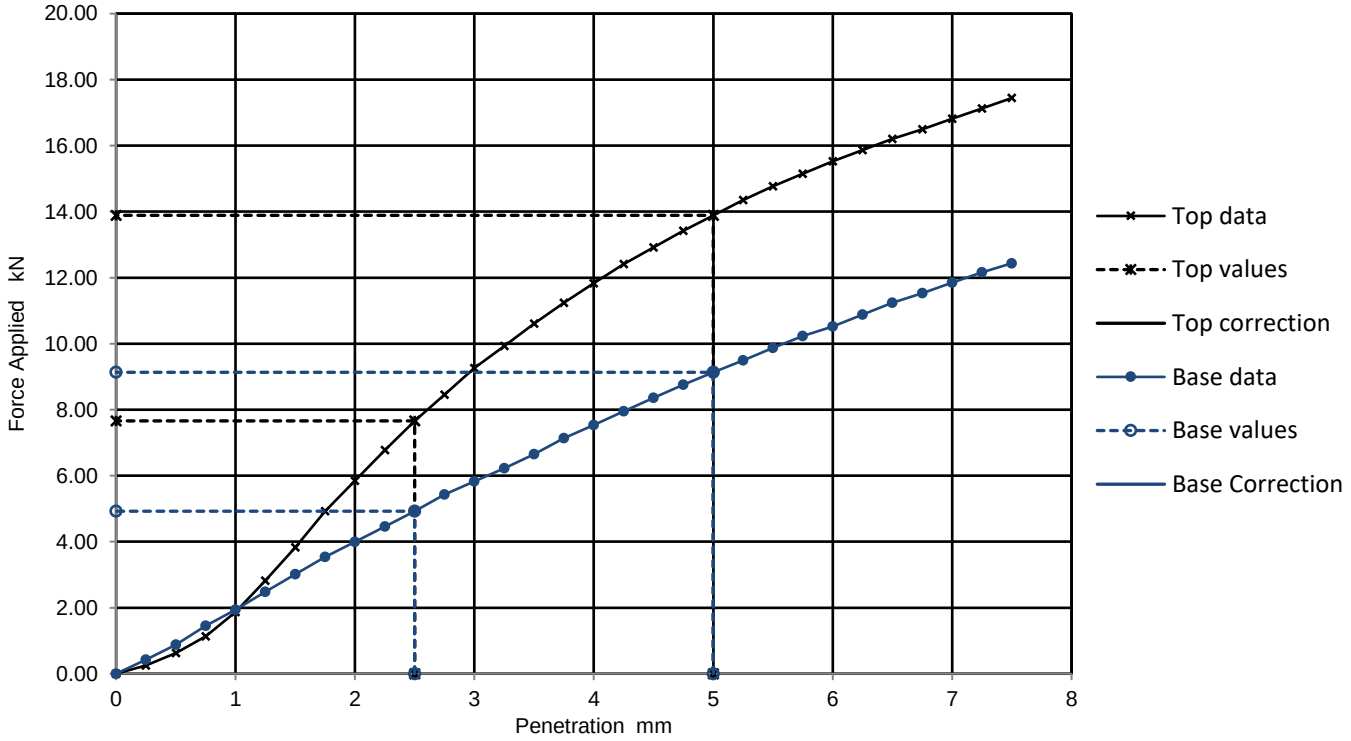
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT03
Site Name	Derrygreenagh Power			Sample No.	3
Soil Description				Depth m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12023060995
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	5

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.97	Mg/m3	Surcharge applied	2	kg
	Dry density	1.77	Mg/m3		1	kPa
	Moisture content	11.6	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		58.0	69.0	69.0		
BASE		37.0	46.0	46.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	155

Lab Sheet Reference : 01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

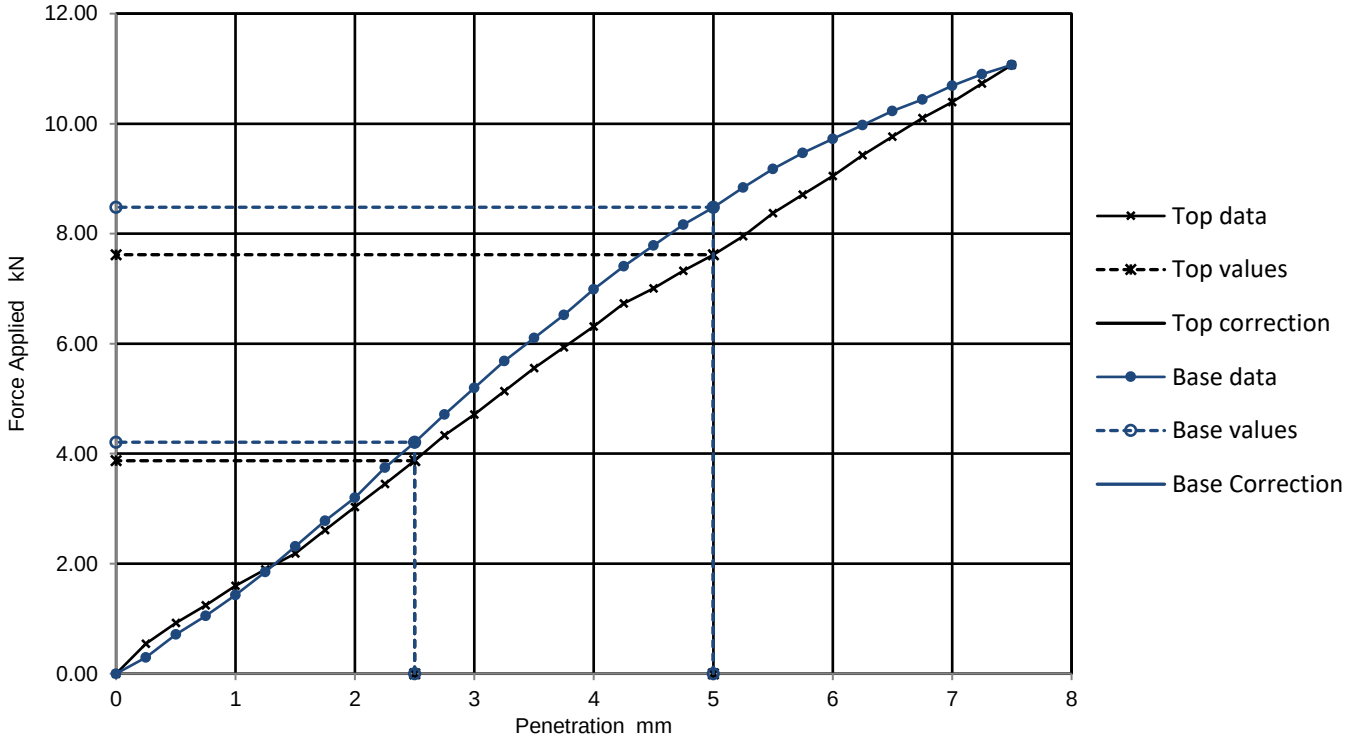
	California Bearing Ratio (CBR)			Job Ref	2023OY104
				Borehole/Pit No.	TPT04
Site Name	Derrygreenagh Power			Sample No.	5
Soil Description	Dark grey silty very gravelly medium SAND.			Depth m	2.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120230609103
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	%	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.24	Mg/m3	Surcharge applied	2	kg
	Dry density	2.06	Mg/m3		1	kPa
	Moisture content	8.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		29.0	38.0	38.0	40.0	
BASE		32.0	42.0	42.0		

General remarks	Test specific remarks	Approved
		DCD

Fig No.	1
QC From R9	
Sheet No	156

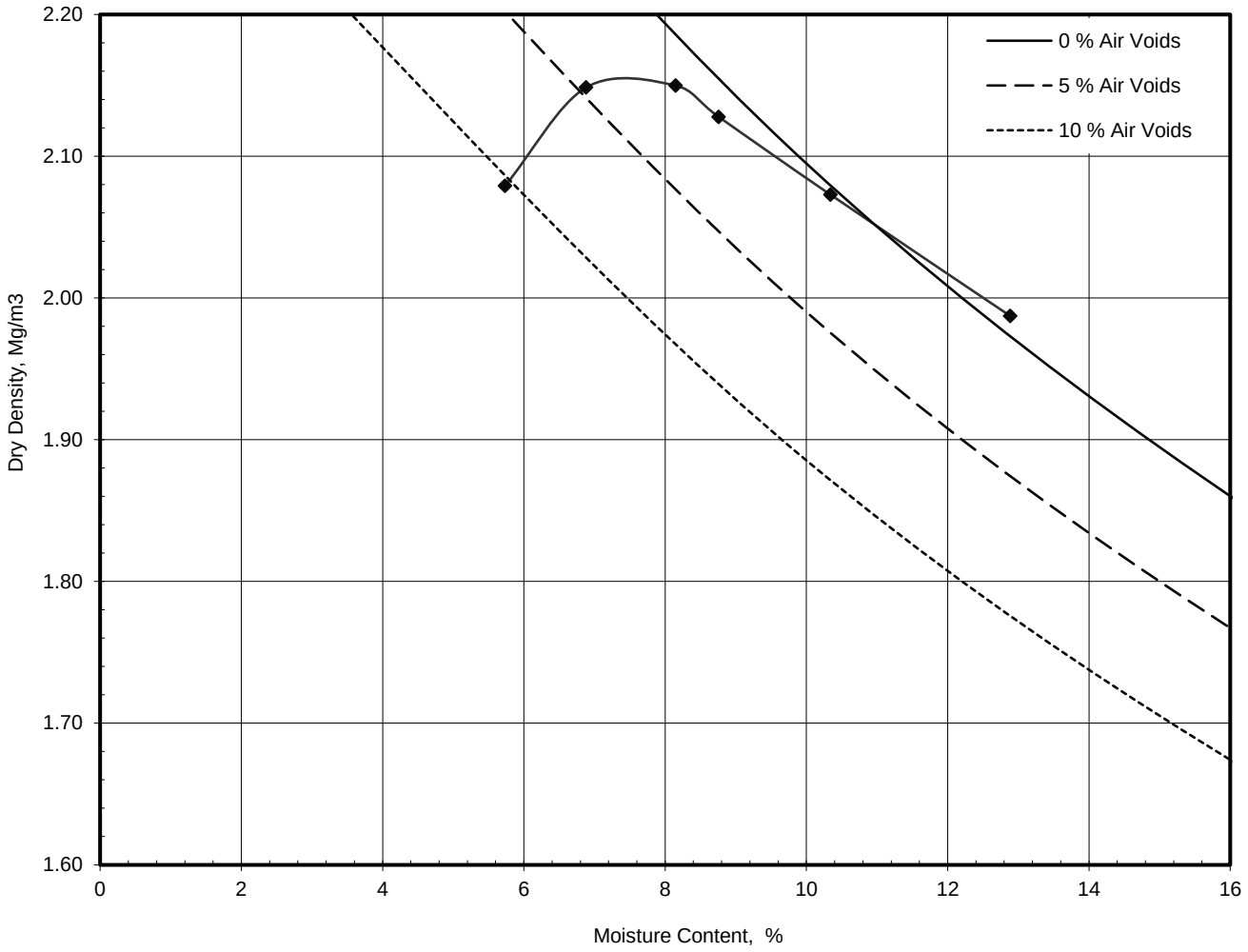
Lab Sheet Reference :

01/11/2023

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHSS01
Site Name	Derrygreenagh Power			Sample No	11
Soil Description	Grey and black slightly sandy gravelly SILT and PEAT.			Depth	4.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer			Keylab ID	IDL12023060710
				Compaction Test Reference/No.	



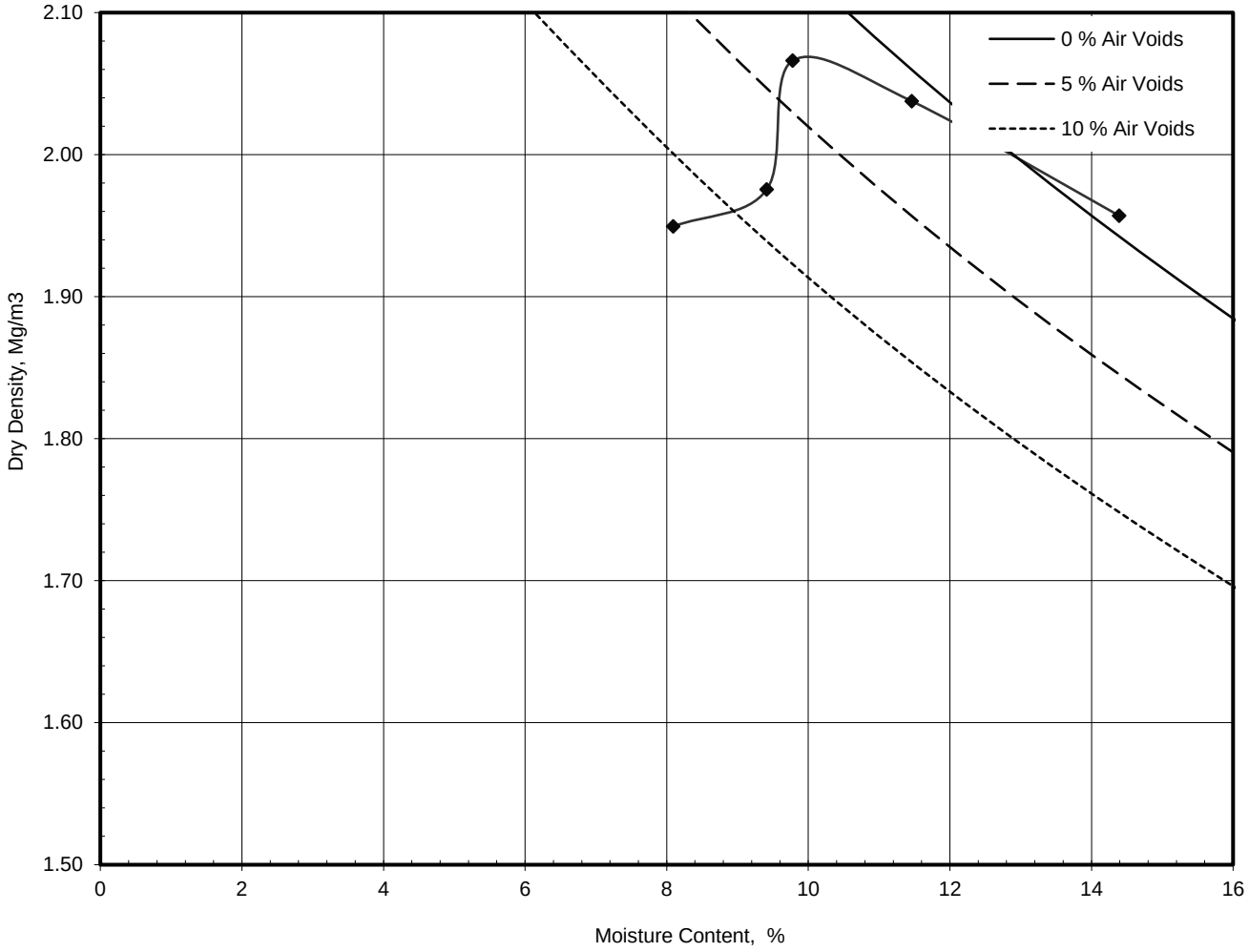
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	44
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.16**
Optimum Moisture Content	%	**7.5**

Operator	Checked	Approved	Remarks	
Administrator	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Dry Density / Moisture Content Relationship Heavy Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHSS02
Site Name	Derrygreenagh Power			Sample No	9
Soil Description	Light grey slightly gravelly sandy SILT.			Depth	3.00 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.6, 4.5kg rammer			Keylab ID	IDL1202305188
				Compaction Test Reference/No.	



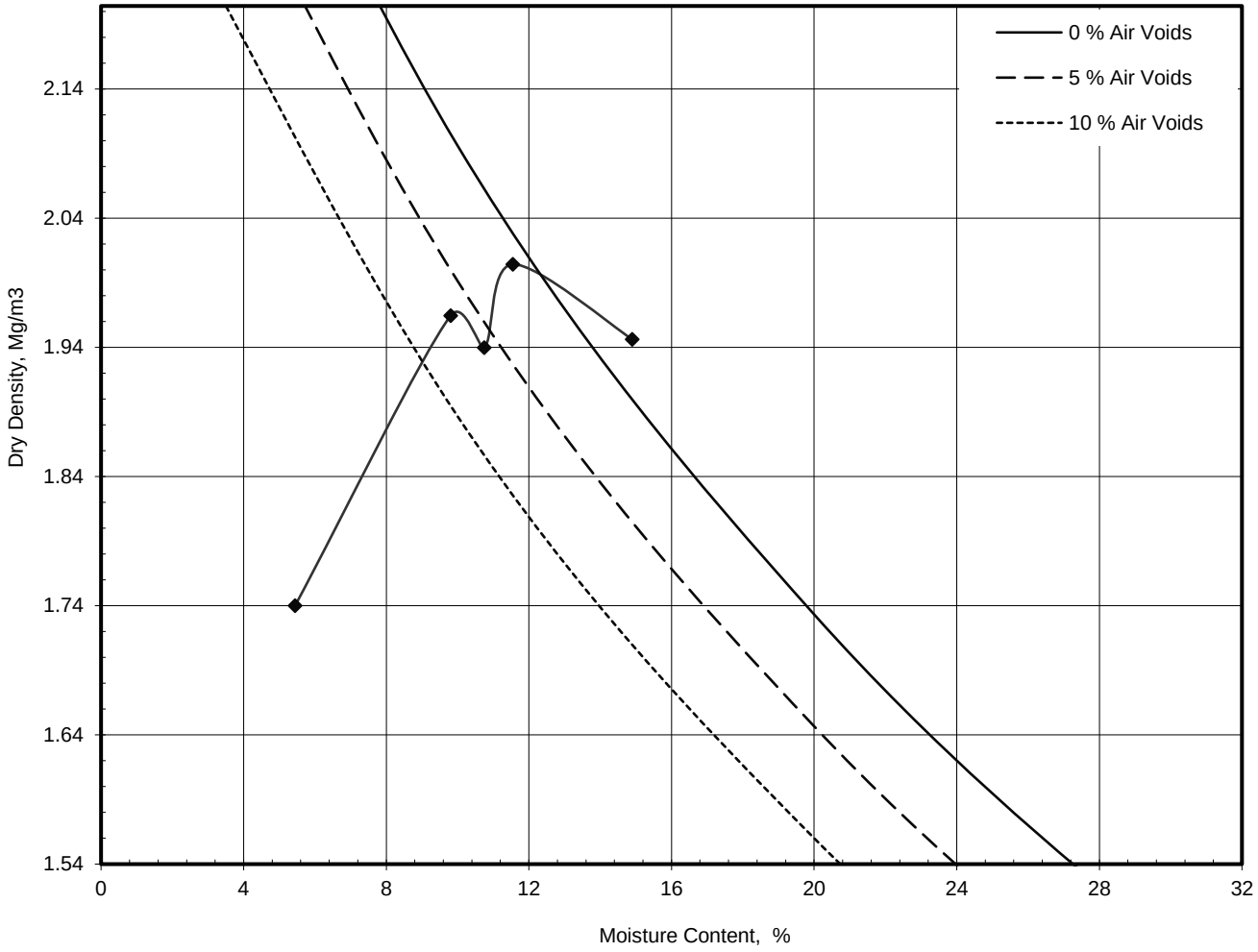
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	9
Particle Density - Assumed	Mg/m³	2.70

Maximum Dry Density	Mg/m³	**2.07**
Optimum Moisture Content	%	**9.8**

Operator	Checked	Approved	Remarks	
	BCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH102
Site Name	Derrygreenagh Power			Sample No	13
Soil Description	Brown very silty very sandy fine and medium GRAVEL.			Depth	4.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426195
				Compaction Test Reference/No.	



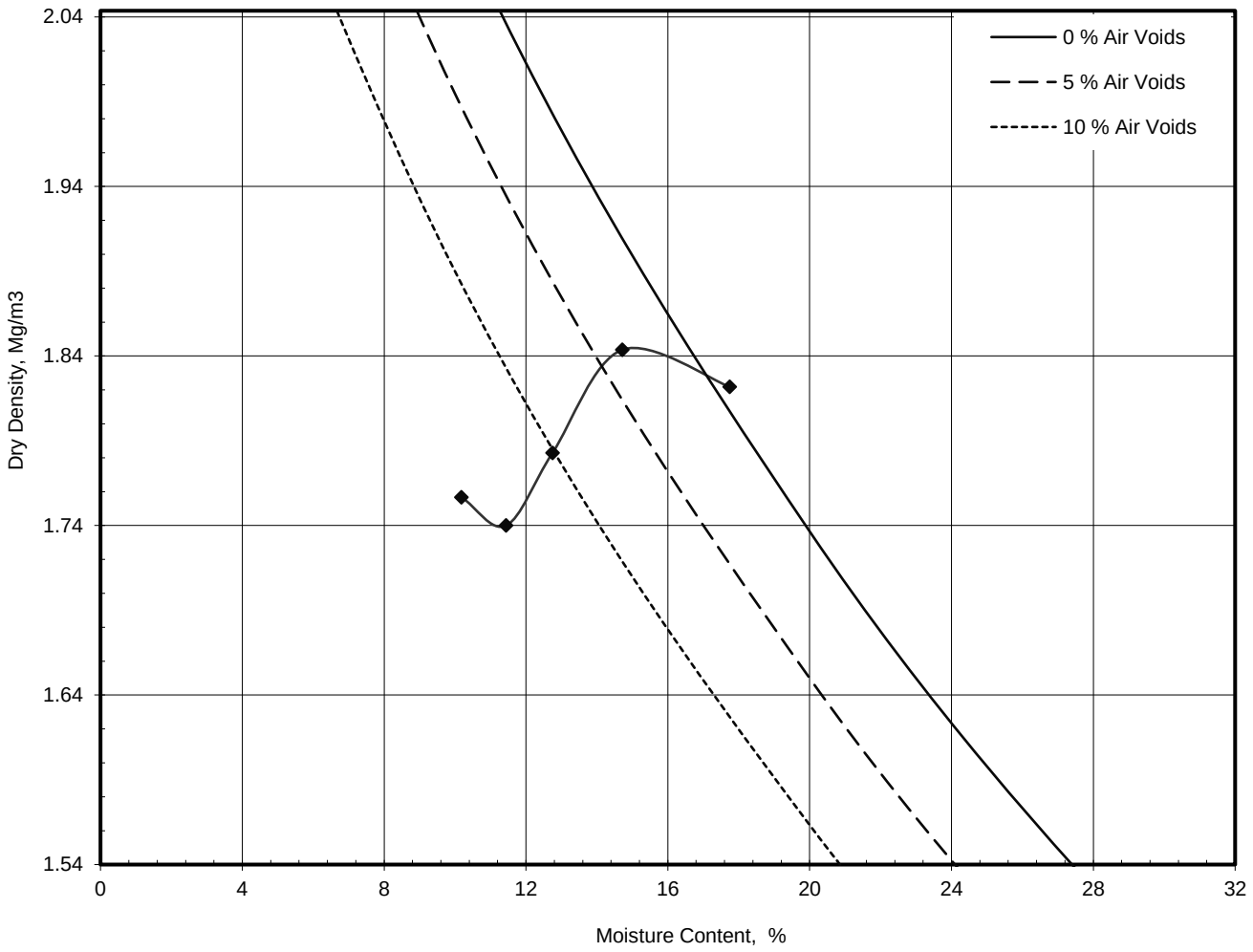
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	10
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.00**
Optimum Moisture Content	%	**12**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH103
Site Name	Derrygreenagh Power			Sample No	10
Soil Description	Greyish-brown slightly sandy gravelly SILT. Gravel is fine.			Depth	3.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426207
				Compaction Test Reference/No.	



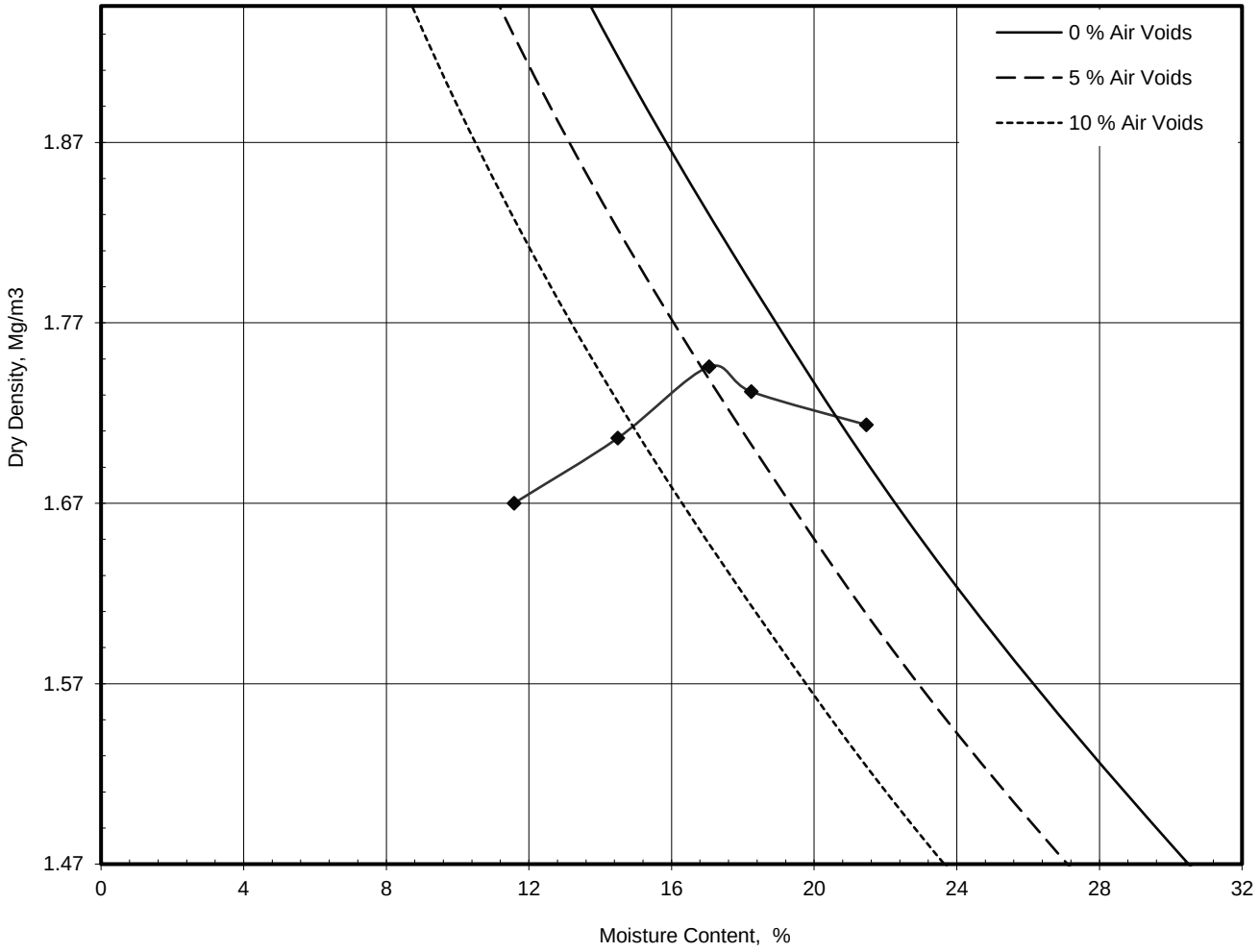
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	5
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.84**
Optimum Moisture Content	%	**15**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH104
Site Name	Derrygreenagh Power			Sample No	13
Soil Description	Yellowish-brown very sandy very gravelly SILT.			Depth	4.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426222
				Compaction Test Reference/No.	



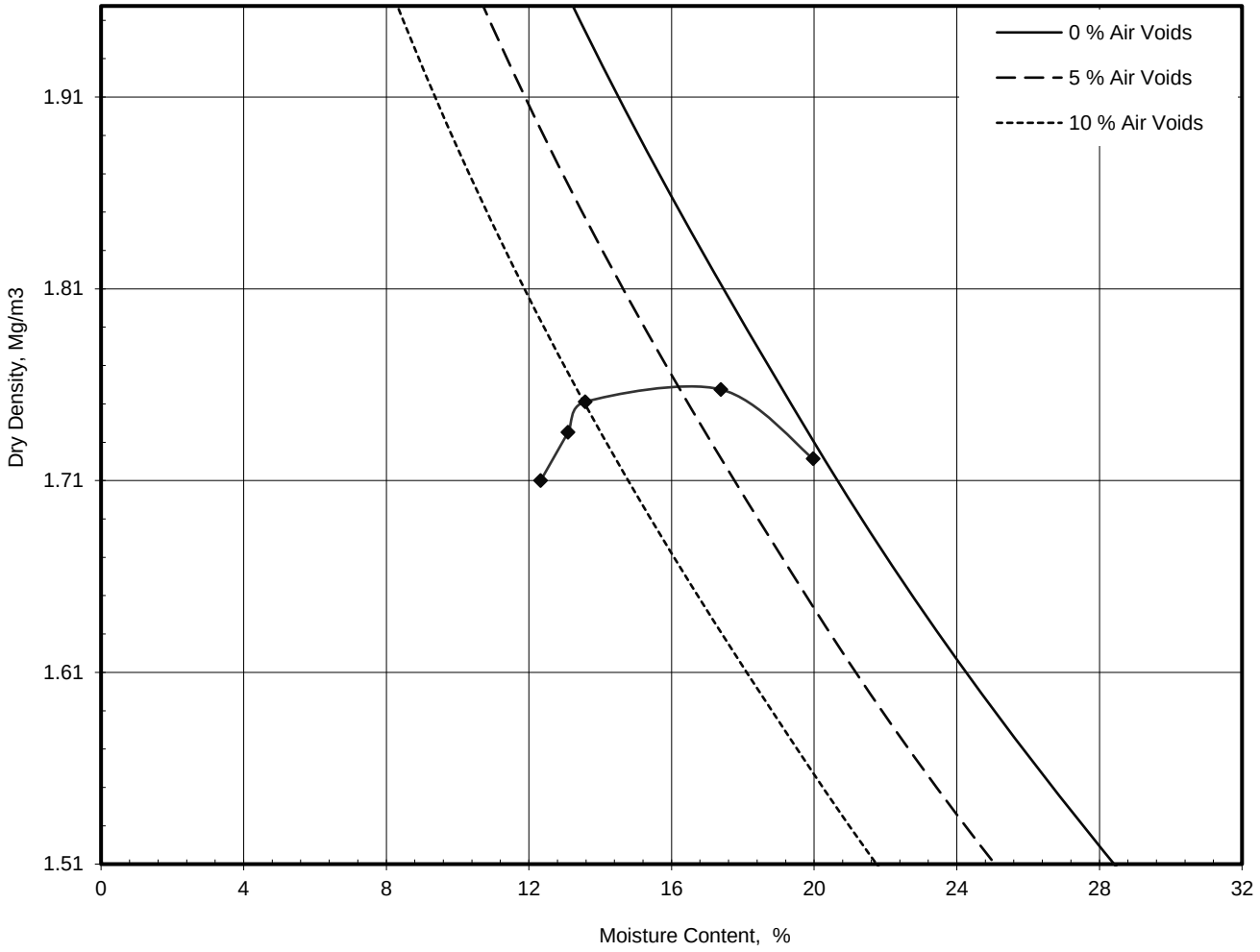
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	13
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.74**
Optimum Moisture Content	%	**17**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH105
Site Name	Derrygreenagh Power			Sample No	12
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth	4.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426245
				Compaction Test Reference/No.	



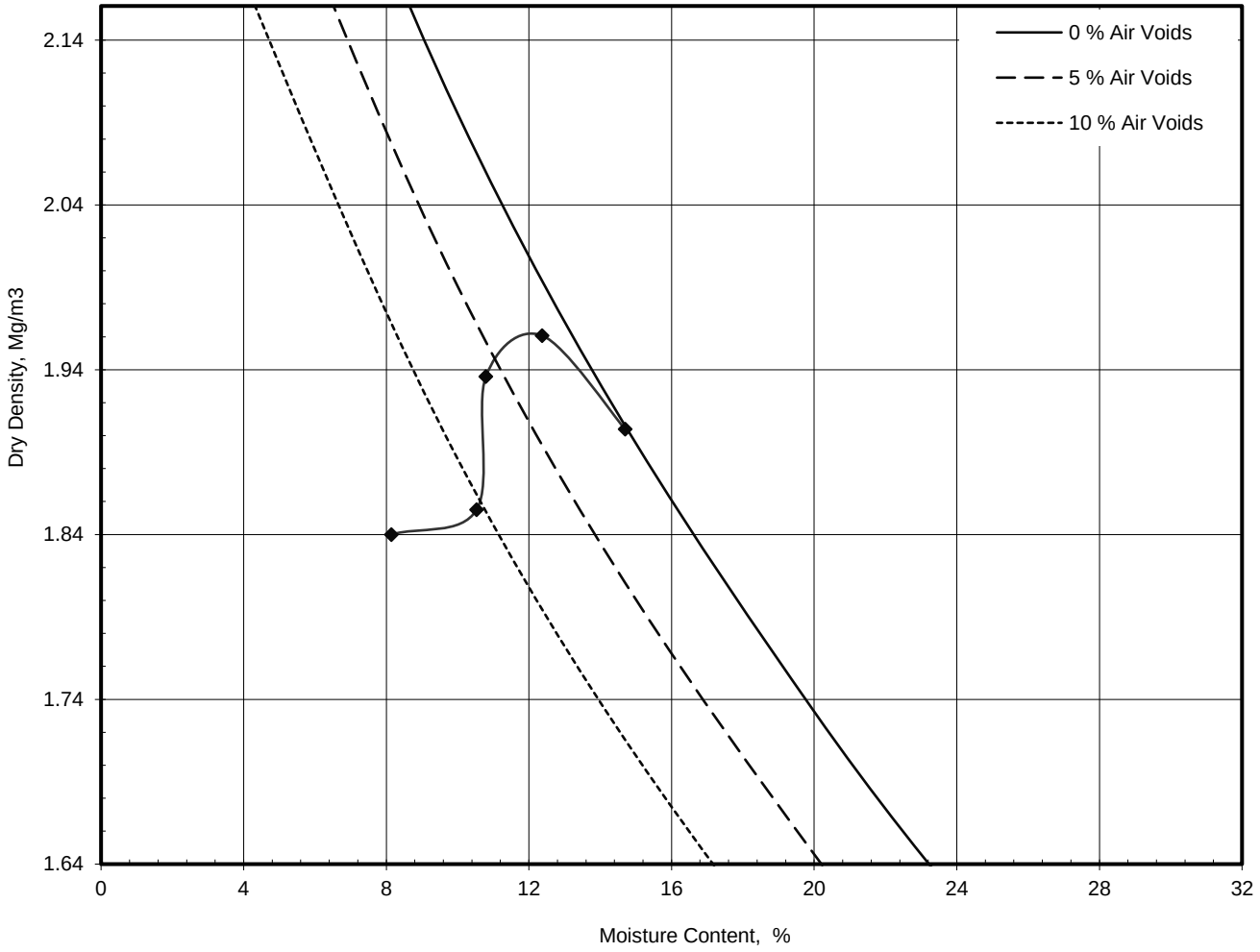
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	3
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.76**
Optimum Moisture Content	%	**16**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH106
Site Name	Derrygreenagh Power			Sample No	7
Soil Description	Greyish-brown slightly sandy slightly gravelly SILT.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426266
				Compaction Test Reference/No.	



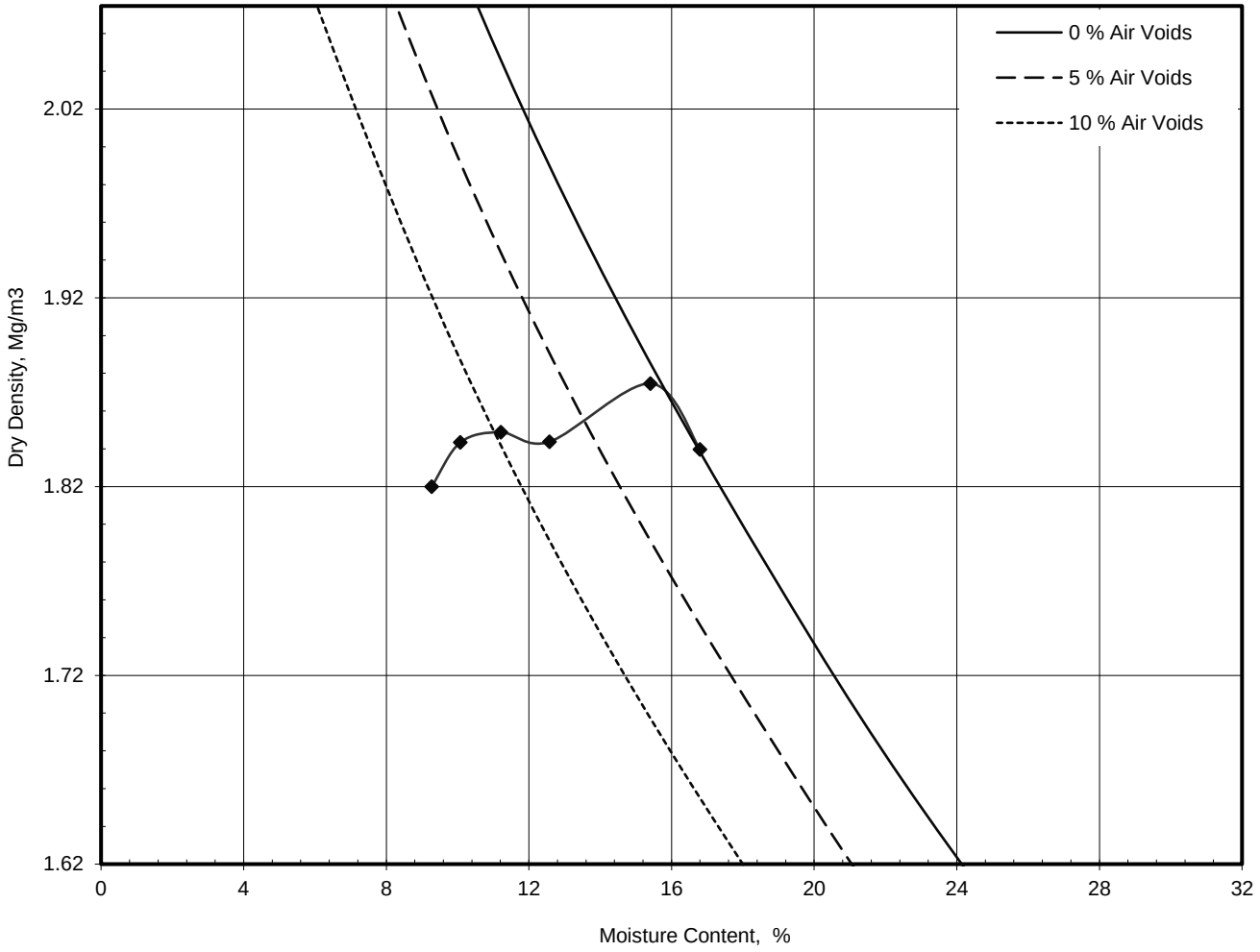
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	15
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.96**
Optimum Moisture Content	%	**12**

Operator	Checked	Approved	Remarks / Report Date:	
	BCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH107
Site Name	Derrygreenagh Power			Sample No	7
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL1202305057
				Compaction Test Reference/No.	



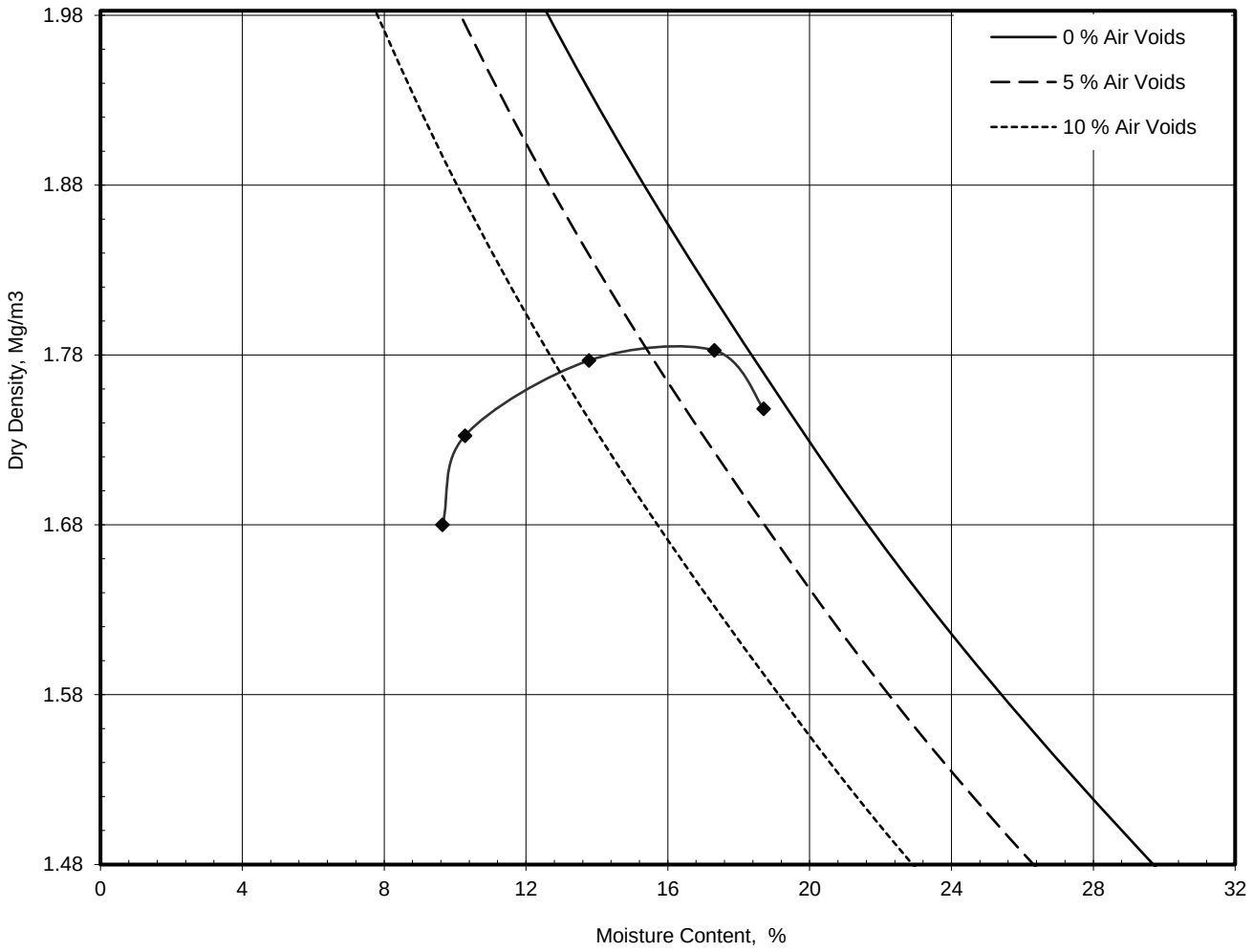
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	9
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.87**
Optimum Moisture Content	%	**15**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	BCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH109
Site Name	Derrygreenagh Power			Sample No	19
Soil Description	Creamy-brown slightly sandy gravelly SILT.			Depth	6.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426297
				Compaction Test Reference/No.	



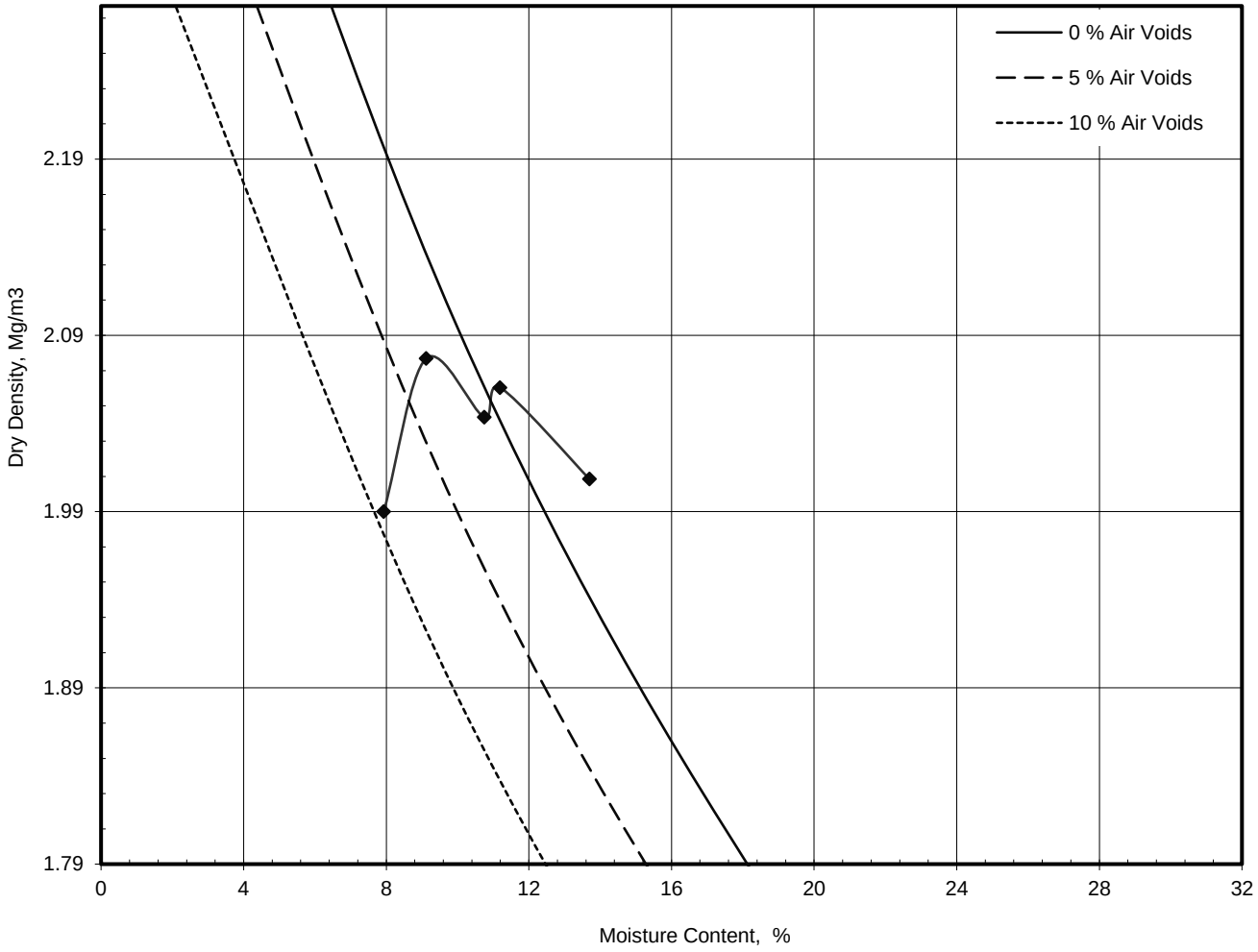
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	12
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.79**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	
	BCS	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH110
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Light greyish-brown slightly sandy gravelly SILT. Gravel is coarse.			Depth	1.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023050539
				Compaction Test Reference/No.	



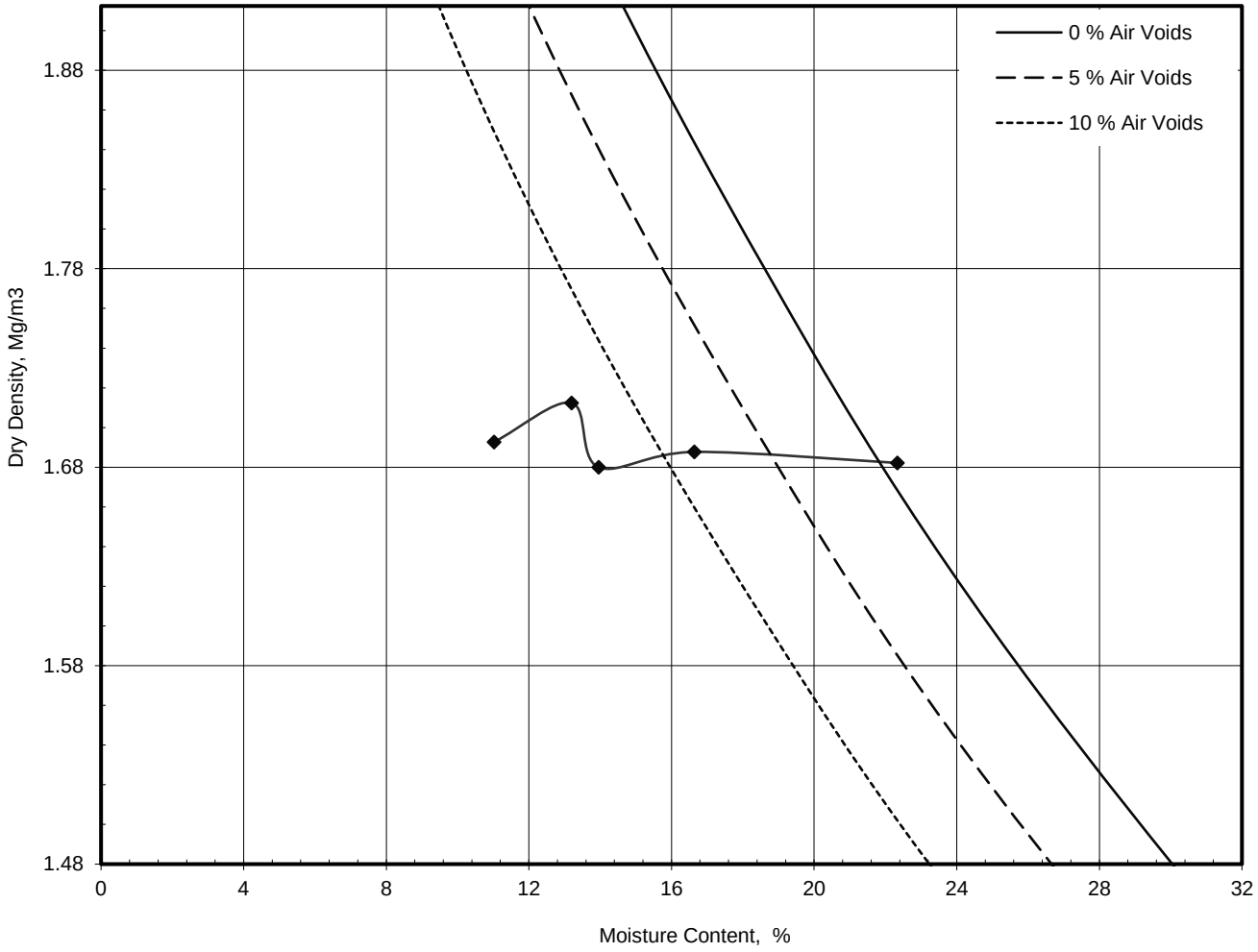
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	19
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.08**
Optimum Moisture Content	%	**8.8**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH110
Site Name	Derrygreenagh Power			Sample No	10
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth	3.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL12023050545
				Compaction Test Reference/No.	



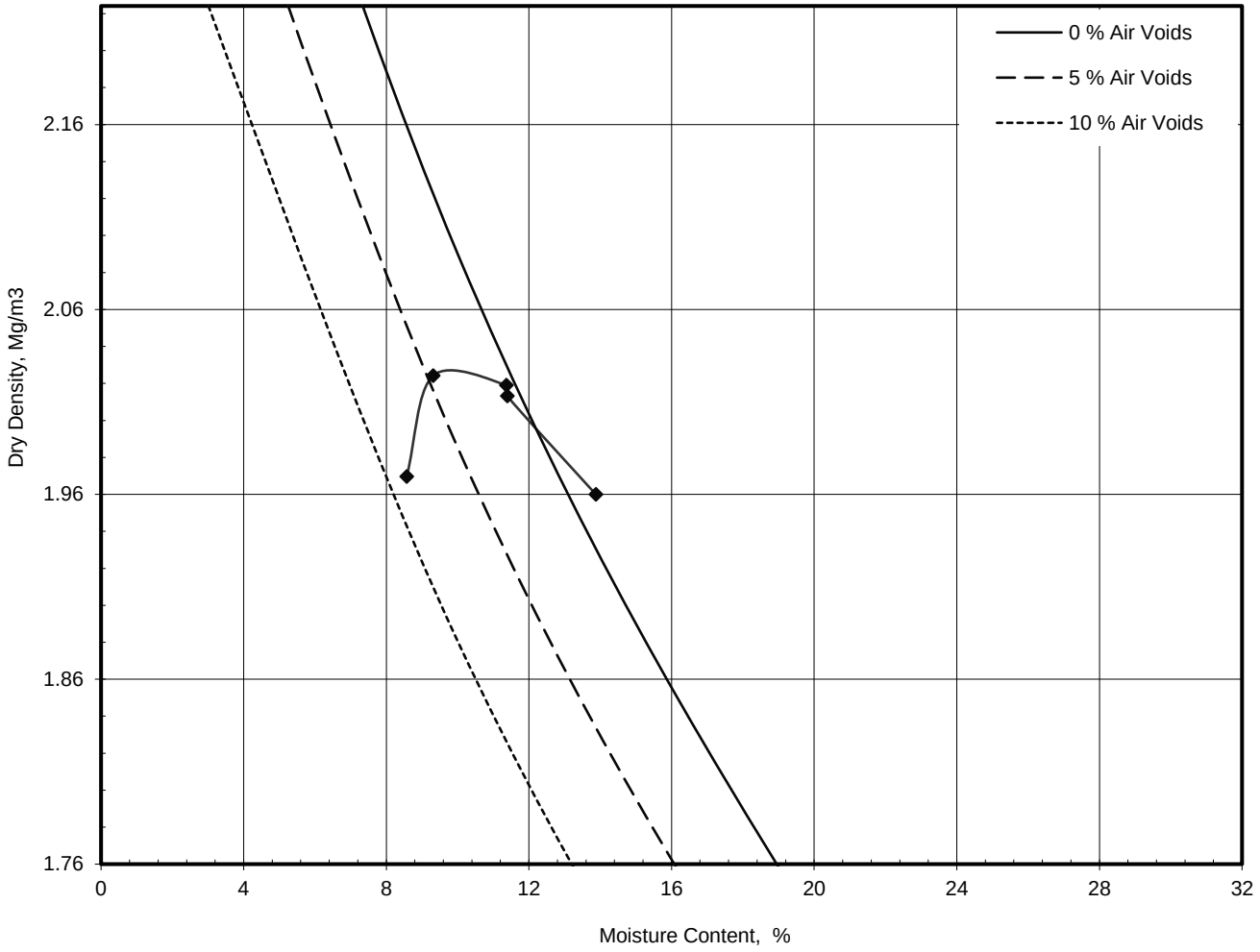
Preparation		-2146826273
Mould Type		One Litre
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.71**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH111
Site Name	**Derrygreenagh Power**			Sample No	13
Soil Description	Greyish-brown slightly gravelly sandy SILT.			Depth	4.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023050570
				Compaction Test Reference/No.	



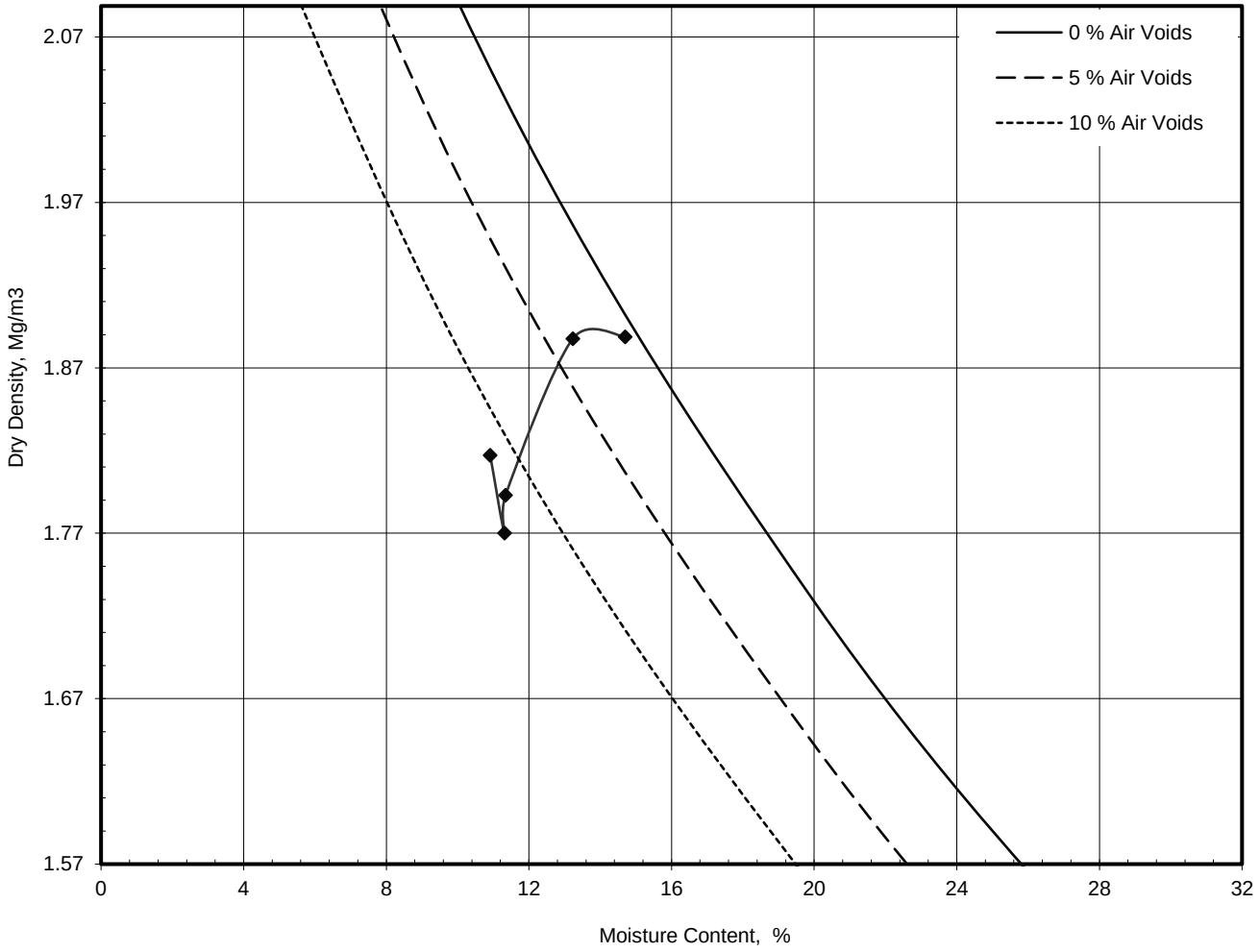
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	3
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.03**
Optimum Moisture Content	%	**10**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH112
Site Name	Derrygreenagh Power			Sample No	10
Soil Description	Brown slightly sandy slightly gravelly SILT.			Depth	3.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230426177
				Compaction Test Reference/No.	



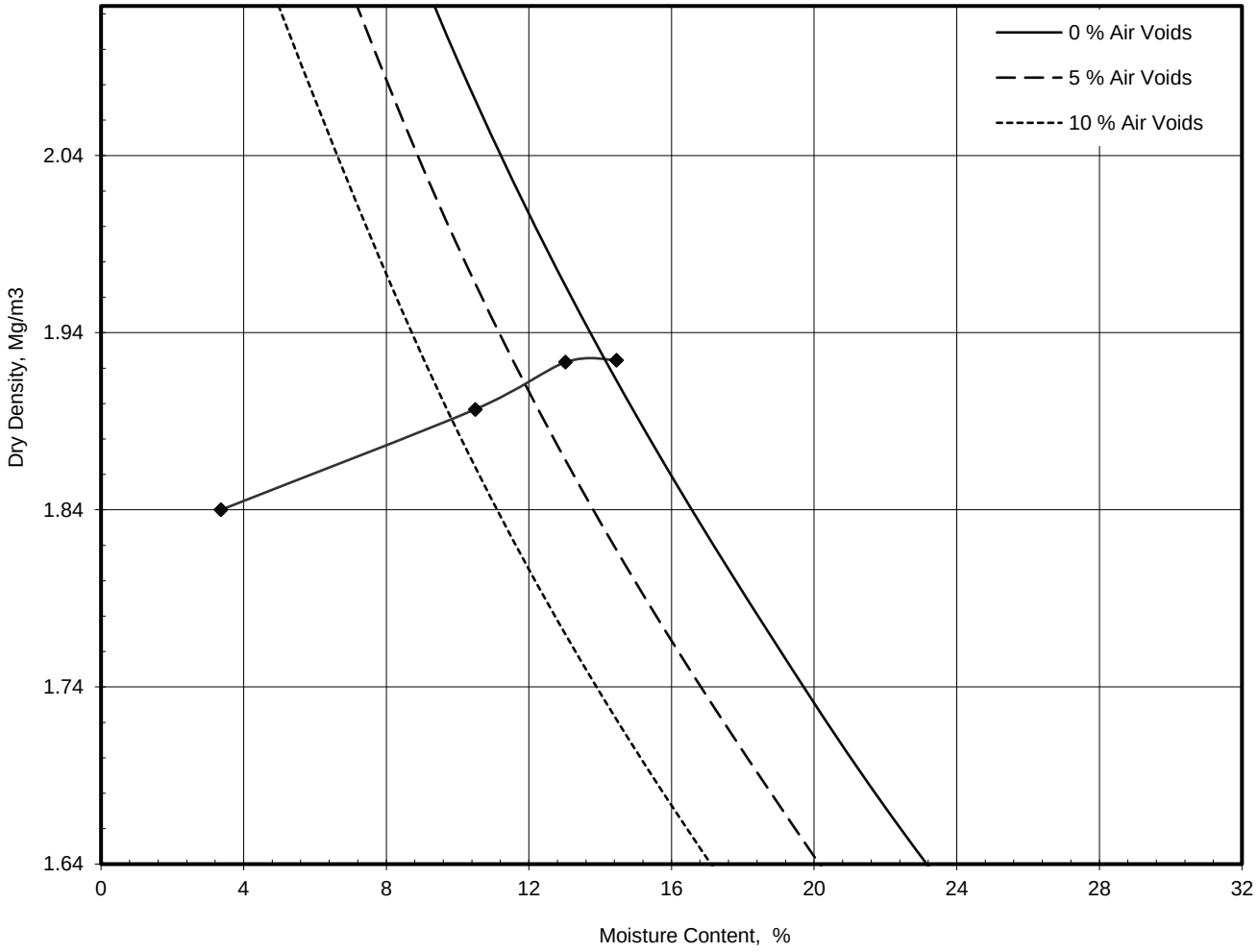
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	4
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.89**
Optimum Moisture Content	%	**13**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH113
Site Name	Derrygreenagh Power			Sample No	13
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth	4.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL12023050588
				Compaction Test Reference/No.	



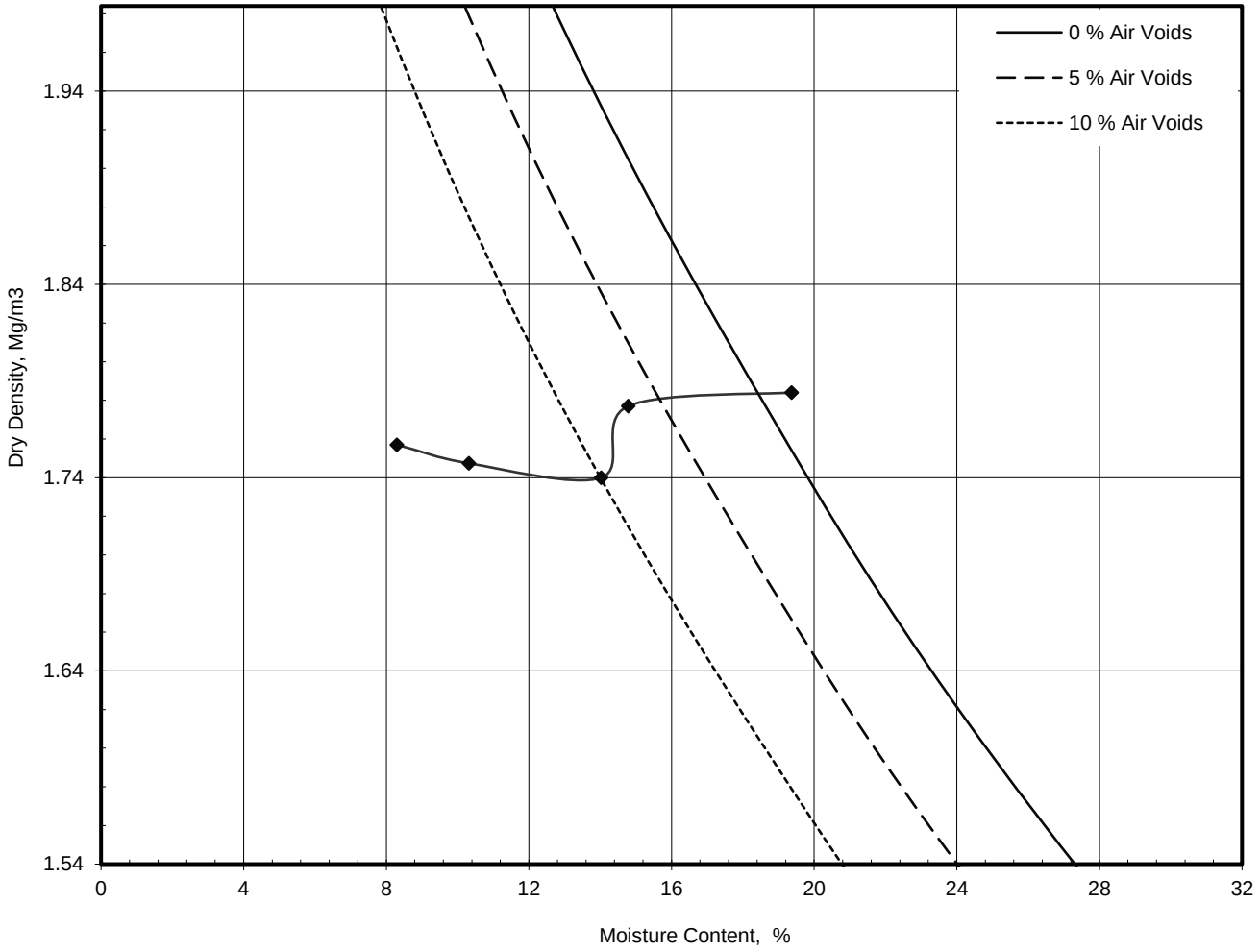
Preparation		-2146826273
Mould Type		One Litre
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	56
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.93**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	
	BCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH114
Site Name	Derrygreenagh Power			Sample No	7
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL1202305087
				Compaction Test Reference/No.	



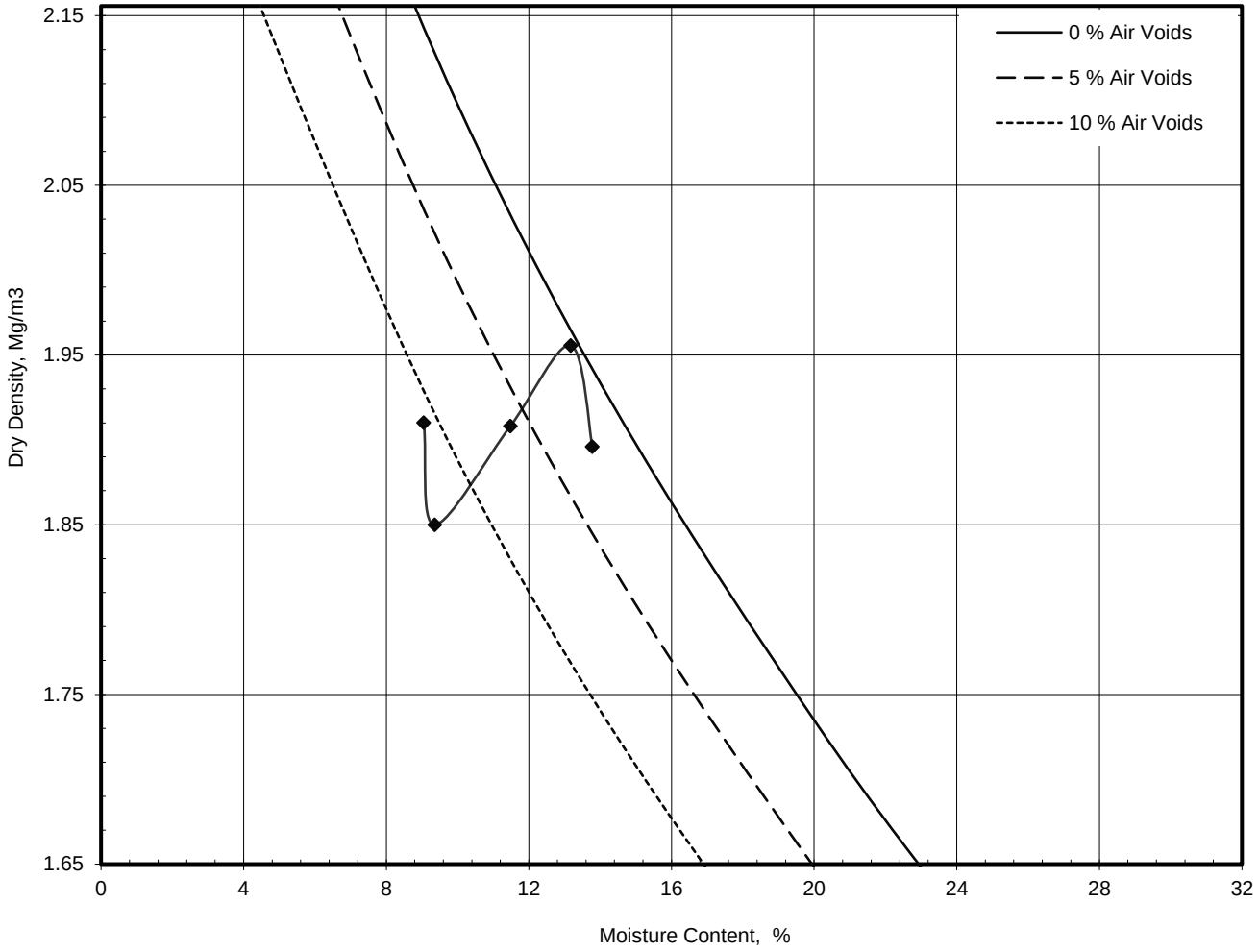
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	6
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.78**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH115
Site Name	Derrygreenagh Power			Sample No	10
Soil Description	Light brown slightly sandy gravelly SILT.			Depth	3.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL120230426314
				Compaction Test Reference/No.	



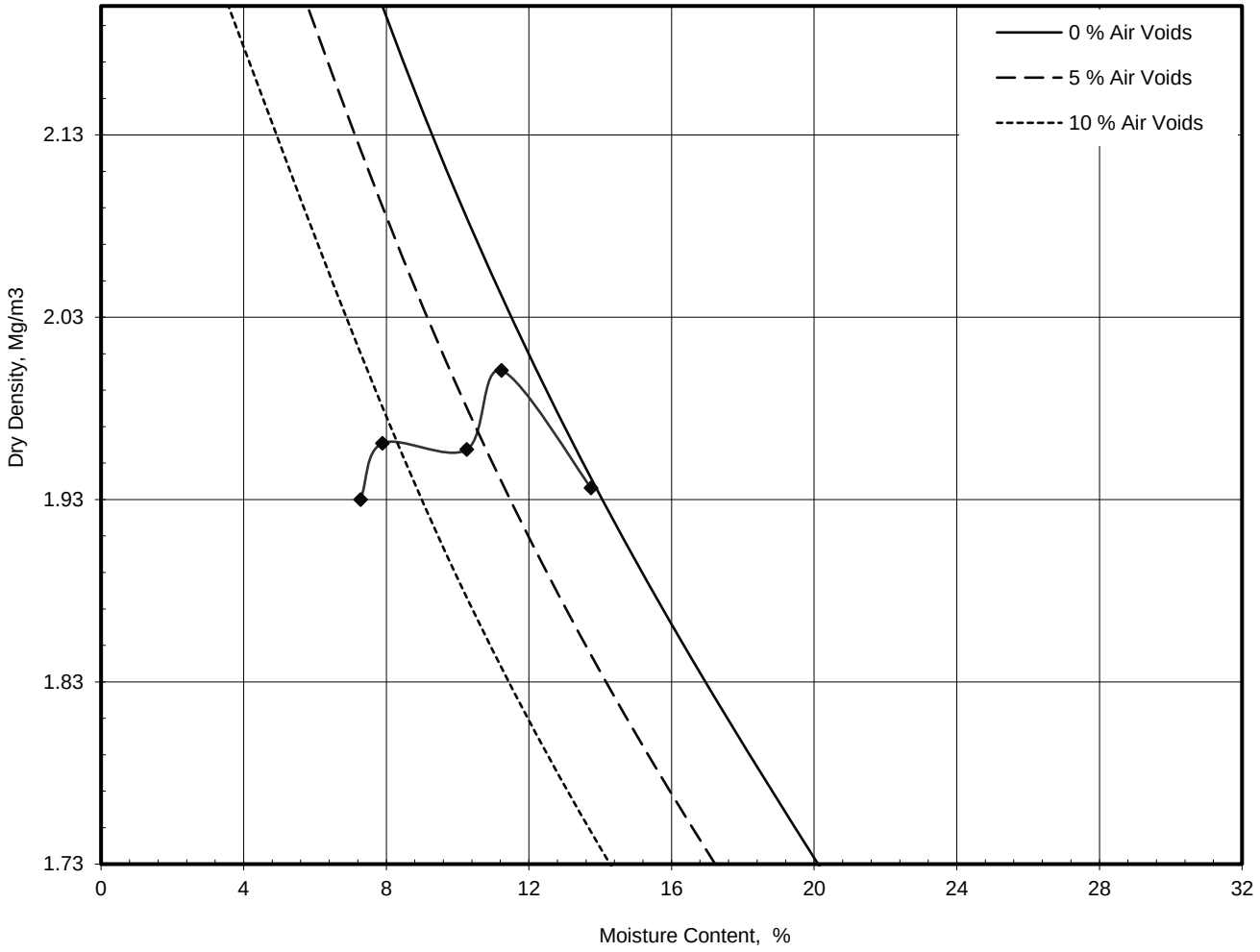
Preparation		Material used was natural and air dried
Mould Type		One Litre
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	16
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.95**
Optimum Moisture Content	%	**13**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BH117
Site Name	Derrygreenagh Power			Sample No	6
Soil Description	Brownish-grey slightly gravelly sandy SILT.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023052381
				Compaction Test Reference/No.	



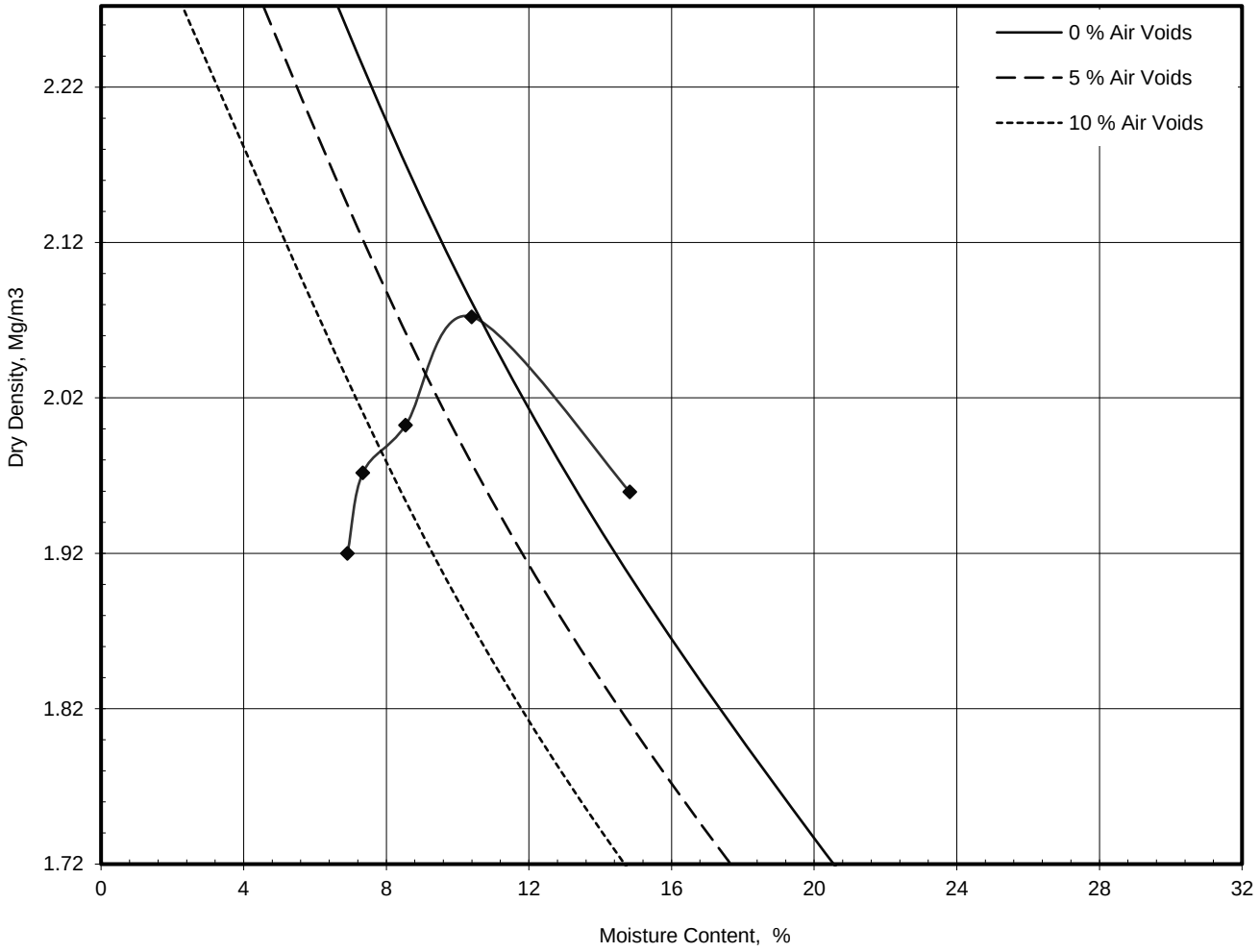
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	11
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.00**
Optimum Moisture Content	%	**11**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHSS101
Site Name	**Derrygreenagh Power**			Sample No	10
Soil Description	Grey gravelly SILT.			Depth	3.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023081444
				Compaction Test Reference/No.	



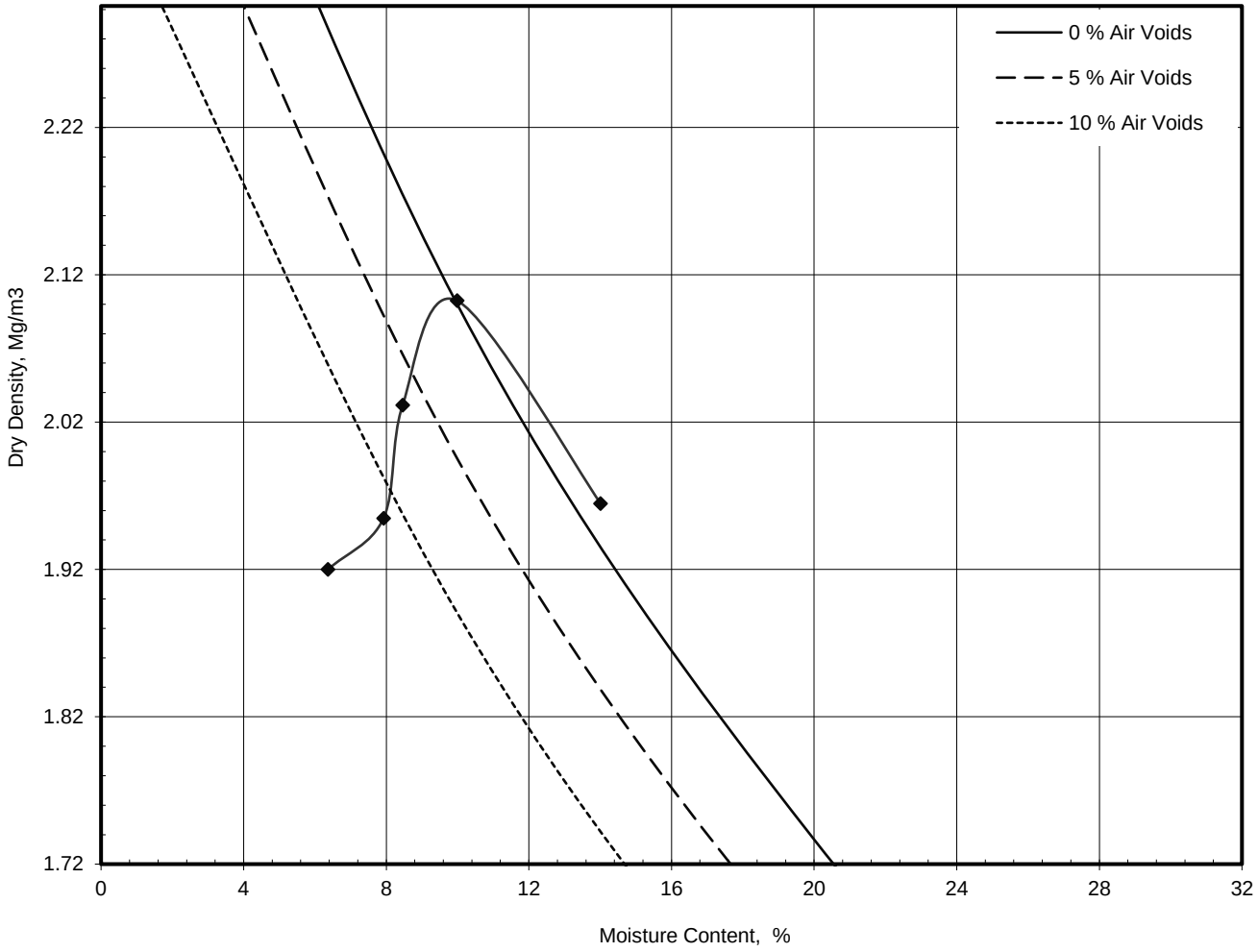
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	18
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.07**
Optimum Moisture Content	%	**11**

Operator	Checked	Approved	Remarks / Report Date:	
	BCS	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHSS103
Site Name	Derrygreenagh Power			Sample No	7
Soil Description	Light greyish-brown slightly gravelly slightly sandy SILT.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023081471
				Compaction Test Reference/No.	



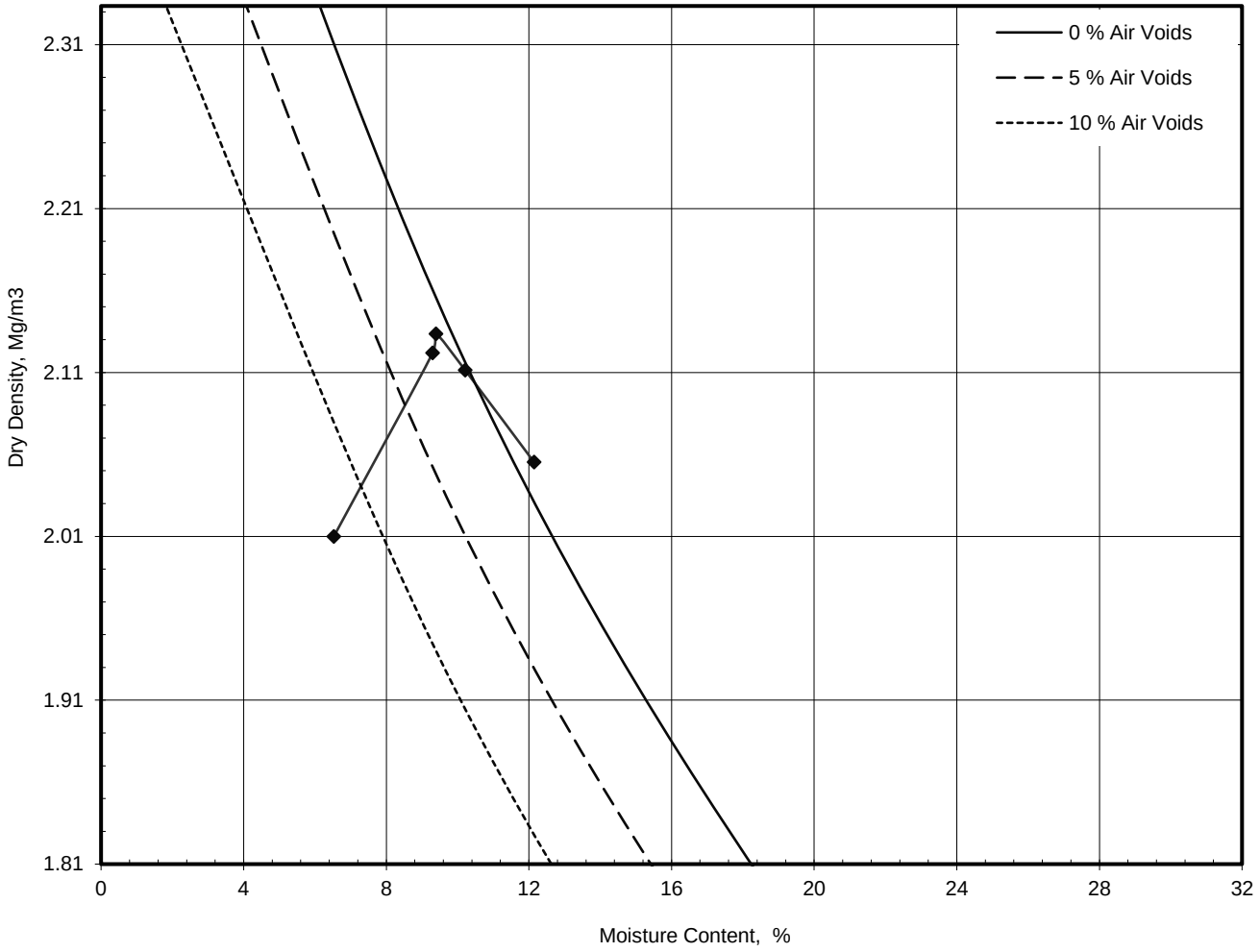
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	15
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.10**
Optimum Moisture Content	%	**10**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHSS106
Site Name	**Derrygreenagh Power**			Sample No	7
Soil Description	Greenish-grey slightly gravelly sandy SILT.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230814108
				Compaction Test Reference/No.	



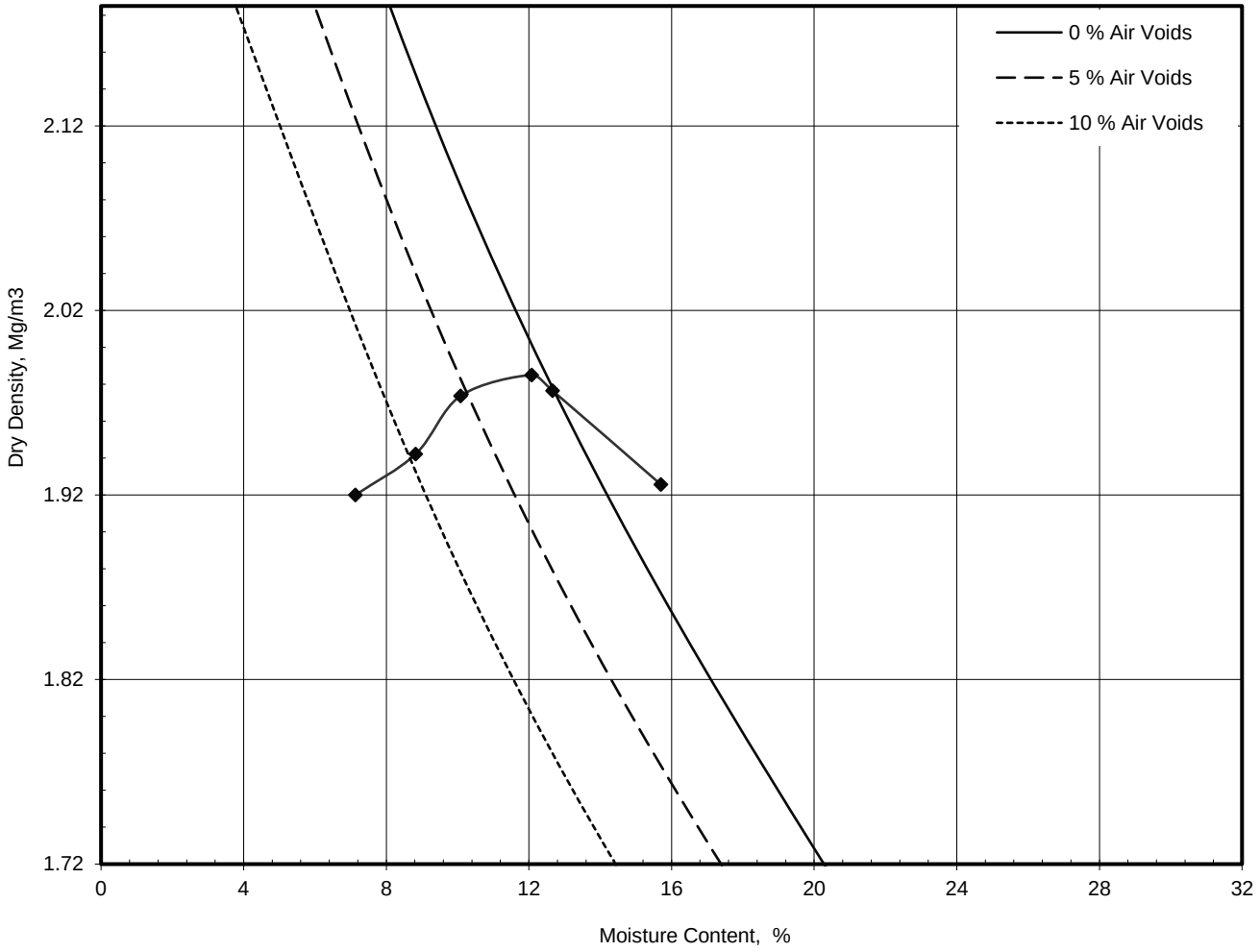
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	27
Particle Density - Assumed	Mg/m³	2.70

Maximum Dry Density	Mg/m³	**2.13**
Optimum Moisture Content	%	**9.4**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHT04
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Brownish-grey silty very gravelly medium and coarse SAND.			Depth	1.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023062235
				Compaction Test Reference/No.	



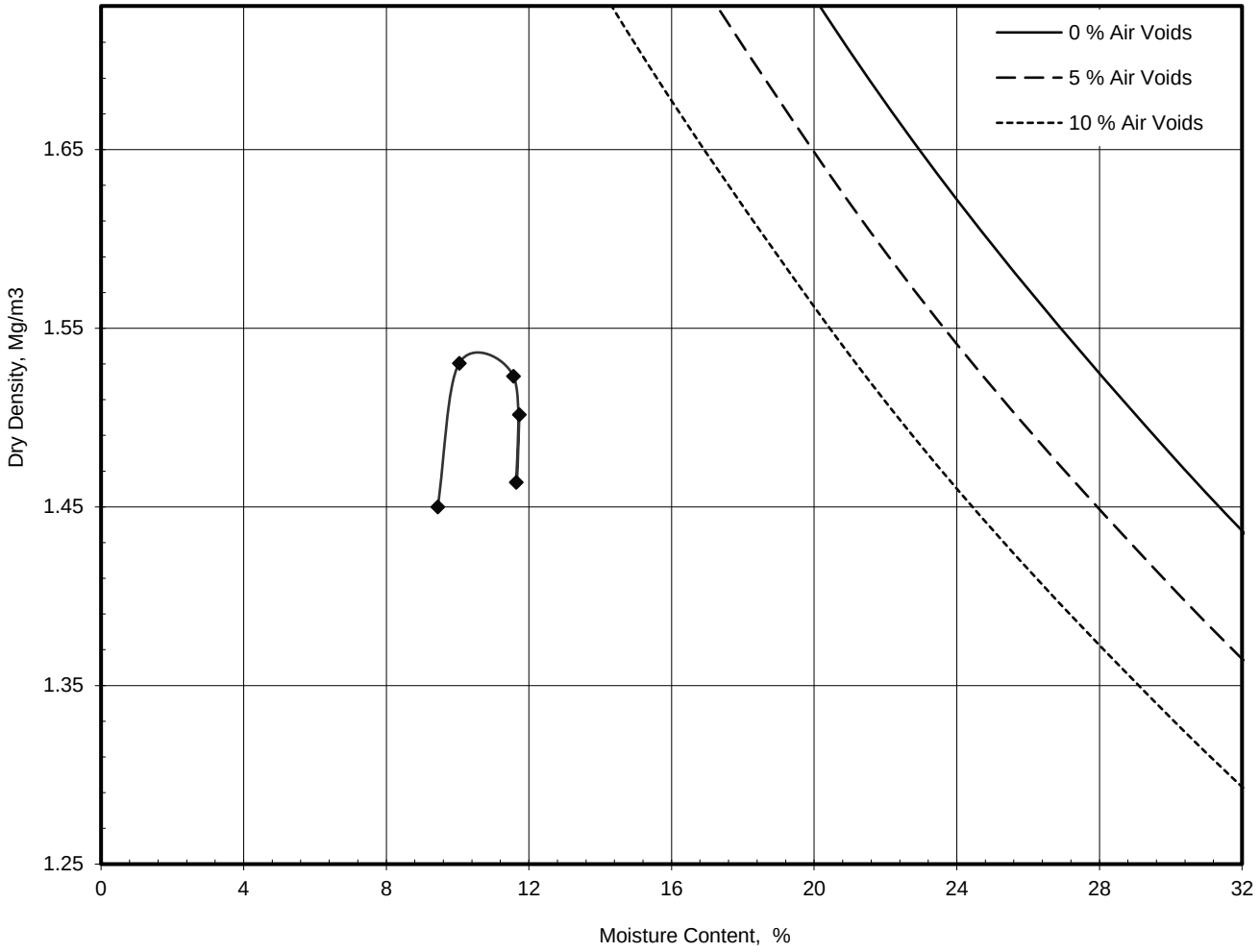
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	9
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.99**
Optimum Moisture Content	%	**11**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHT05
Site Name	Derrygreenagh Power			Sample No	6
Soil Description	Greyish-brown slightly gravelly sandy SILT. SAND is fine.			Depth	2.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230607171
				Compaction Test Reference/No.	



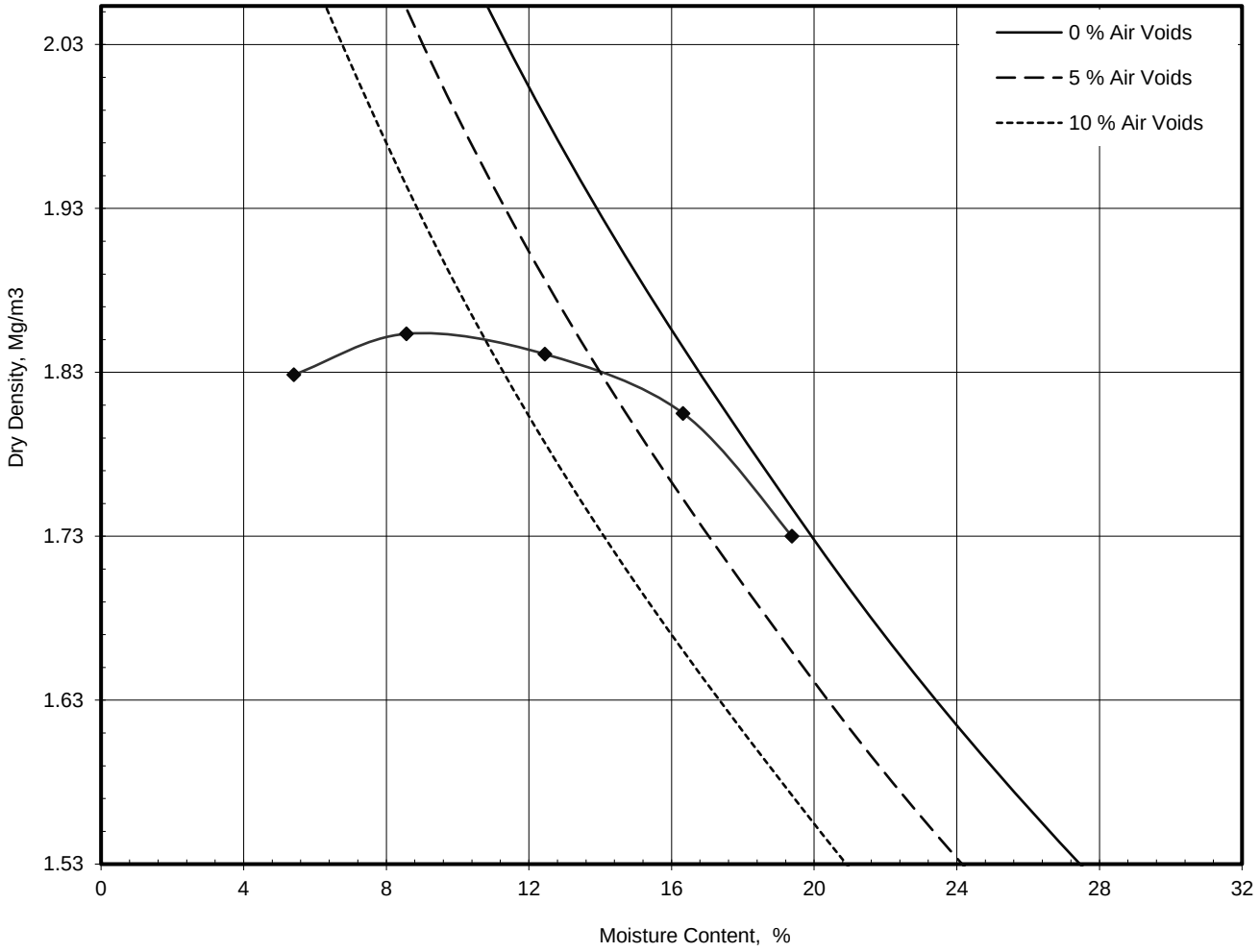
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	3
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.53**
Optimum Moisture Content	%	**12**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHT06
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Blackish-grey very silty coarse SAND and fine GRAVEL.			Depth	1.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023062251
				Compaction Test Reference/No.	



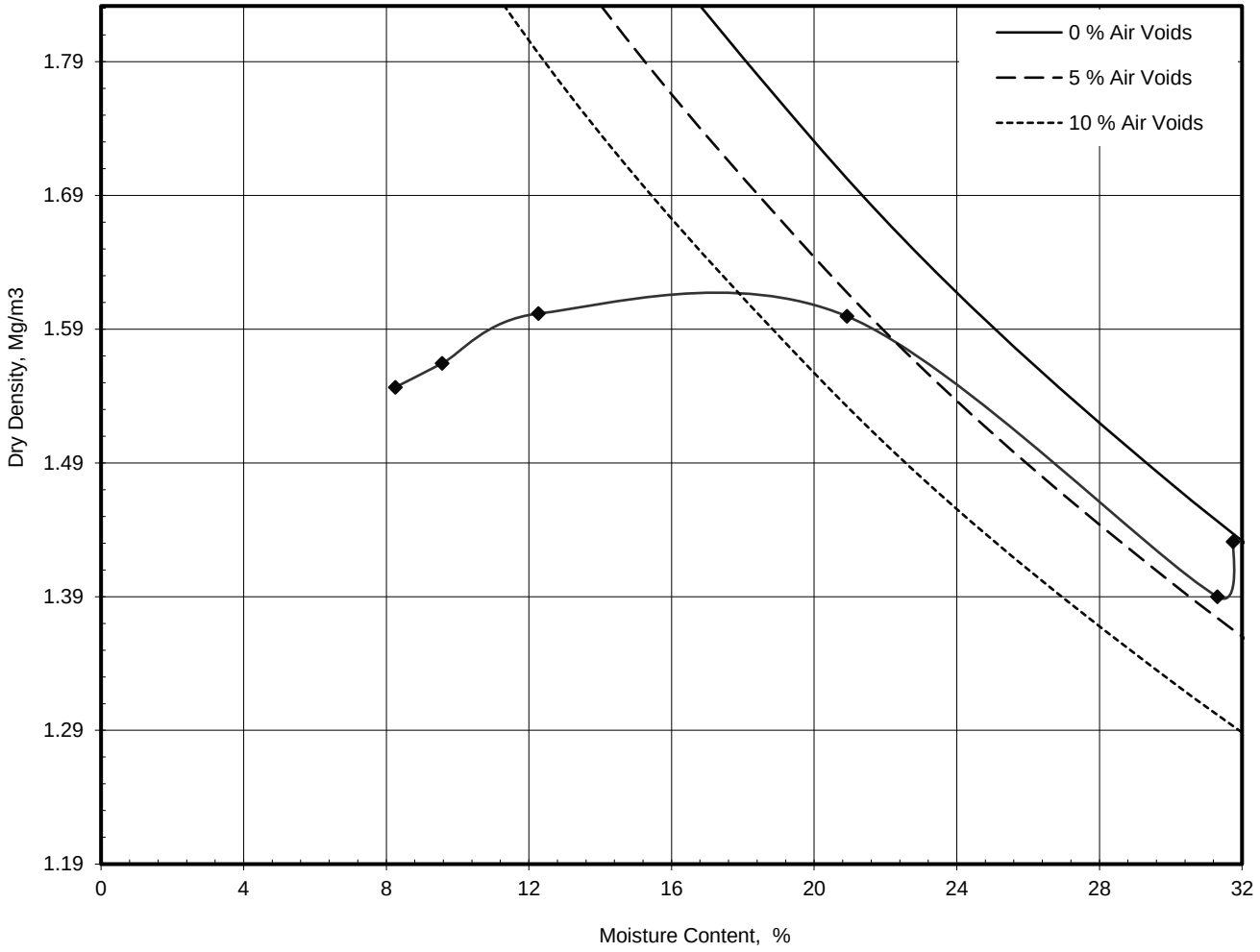
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	8
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.86**
Optimum Moisture Content	%	**9.4**

Operator	Checked	Approved	Remarks / Report Date:	
	BCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHT07
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Black and grey silty SAND and GRAVEL.			Depth	1.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120230607190
				Compaction Test Reference/No.	



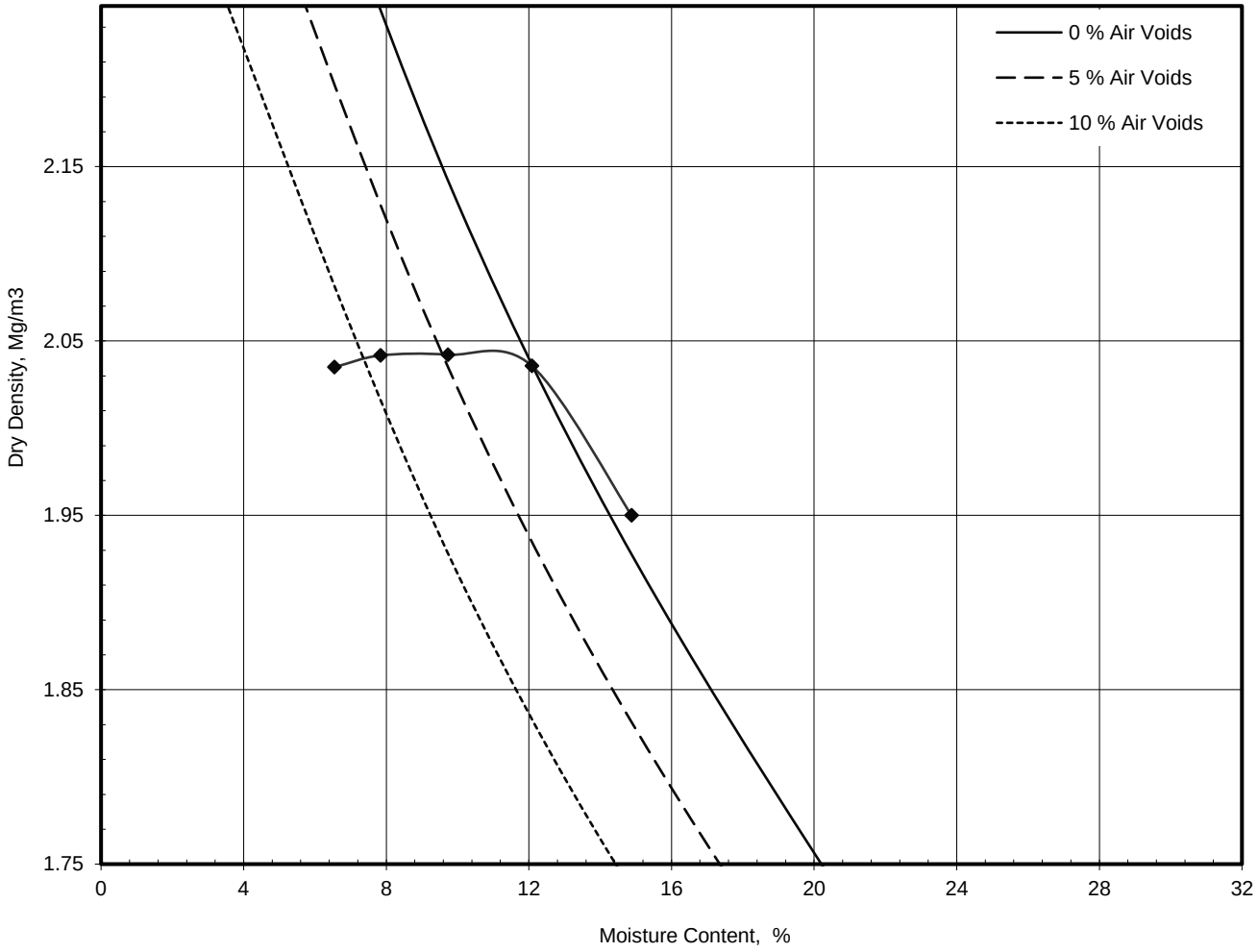
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	11
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.63**
Optimum Moisture Content	%	**17**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	BCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	BHT17A
Site Name	**Derrygreenagh Power**			Sample No	13
Soil Description	Brownish-grey slightly gravelly sandy SILT.			Depth	4.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023080820
				Compaction Test Reference/No.	



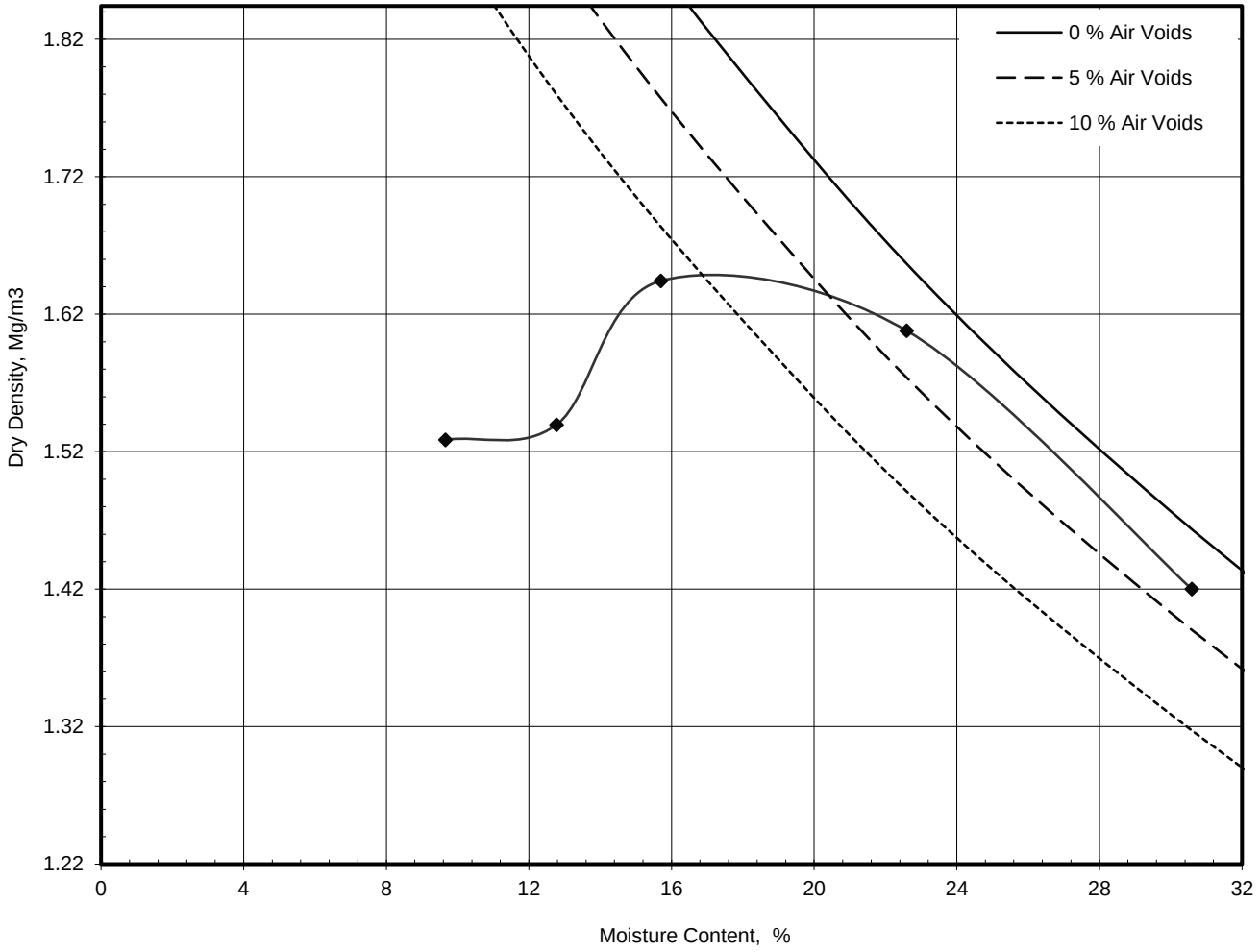
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	14
Particle Density - Assumed	Mg/m³	2.70

Maximum Dry Density	Mg/m³	**2.04**
Optimum Moisture Content	%	**9.7**

Operator	Checked	Approved	Remarks / Report Date:	
	BCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP204
Site Name	Derrygreenagh Power			Sample No	5
Soil Description	Greenish-grey slightly gravelly slightly sandy SILT.			Depth	2.50 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL120230505129
				Compaction Test Reference/No.	



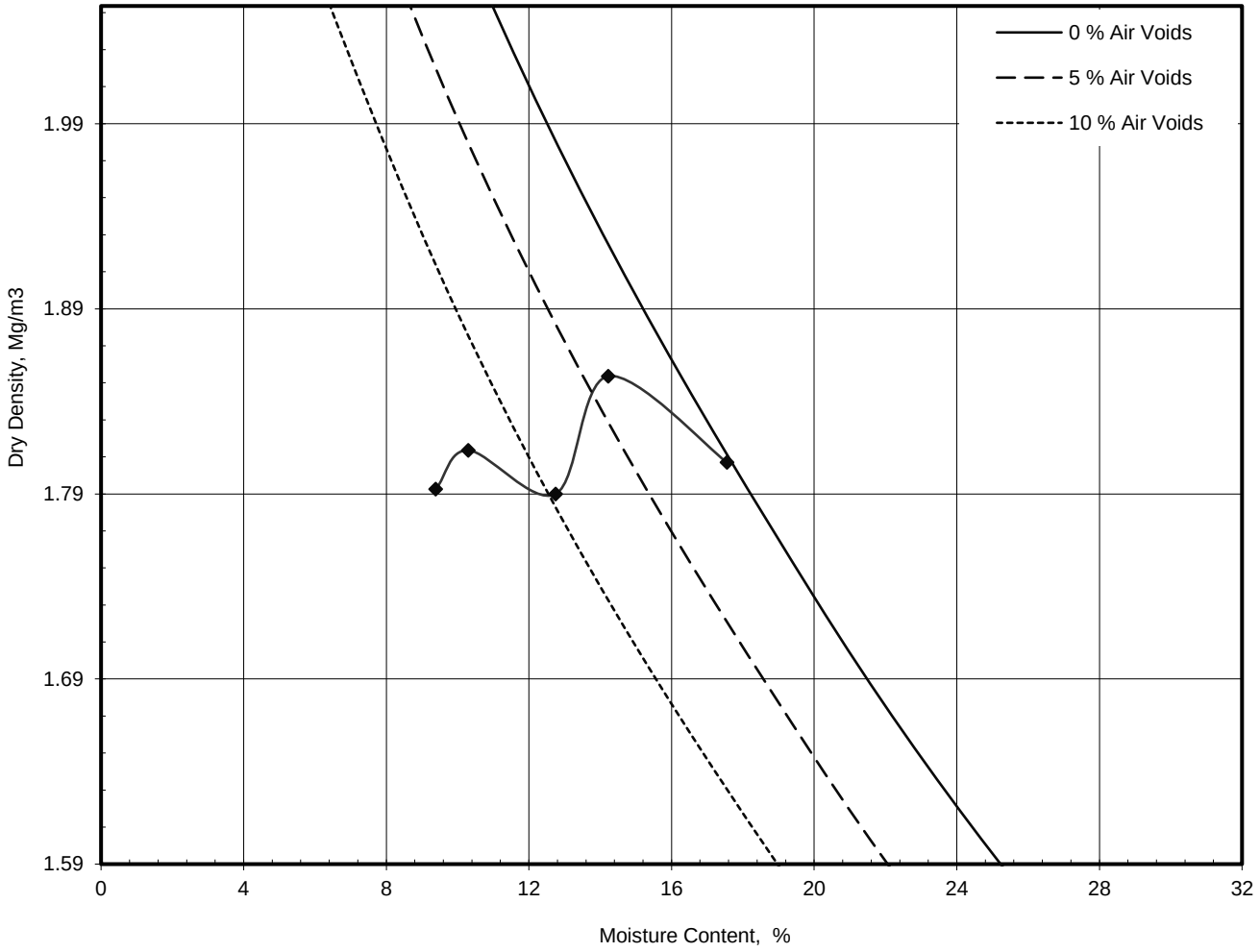
Preparation		Material used was natural and air dried
Mould Type		One Litre
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	7
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.64**
Optimum Moisture Content	%	**16**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP206A
Site Name	Derrygreenagh Power			Sample No	1
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth	0.50 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL1202305170
				Compaction Test Reference/No.	



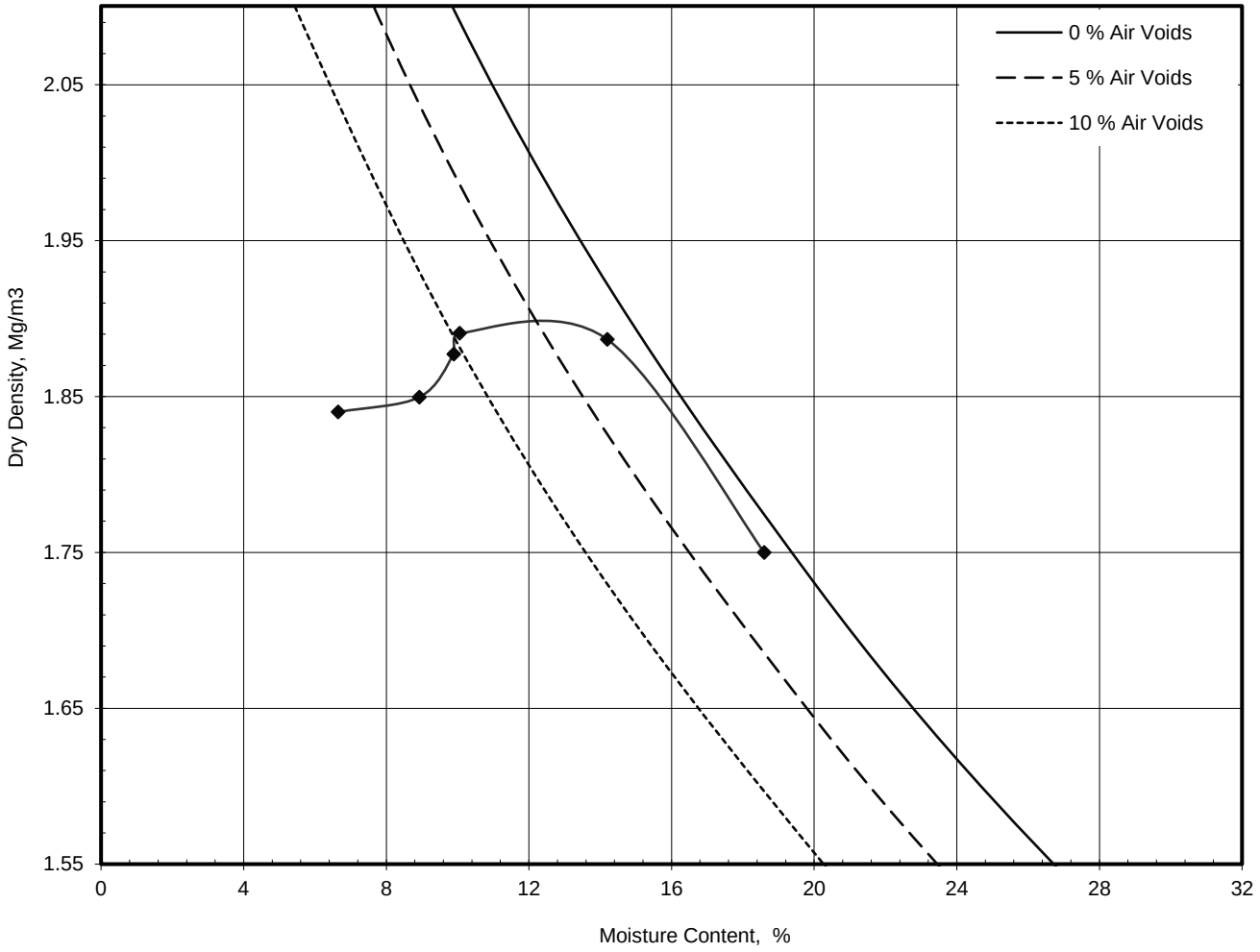
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	8
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.85**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP208
Site Name	Derrygreenagh Power			Sample No	6
Soil Description	Light brown slightly gravelly slightly sandy SILT.			Depth	2.50 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL1202308165
				Compaction Test Reference/No.	



Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	21
Particle Density - Assumed	Mg/m³	2.65

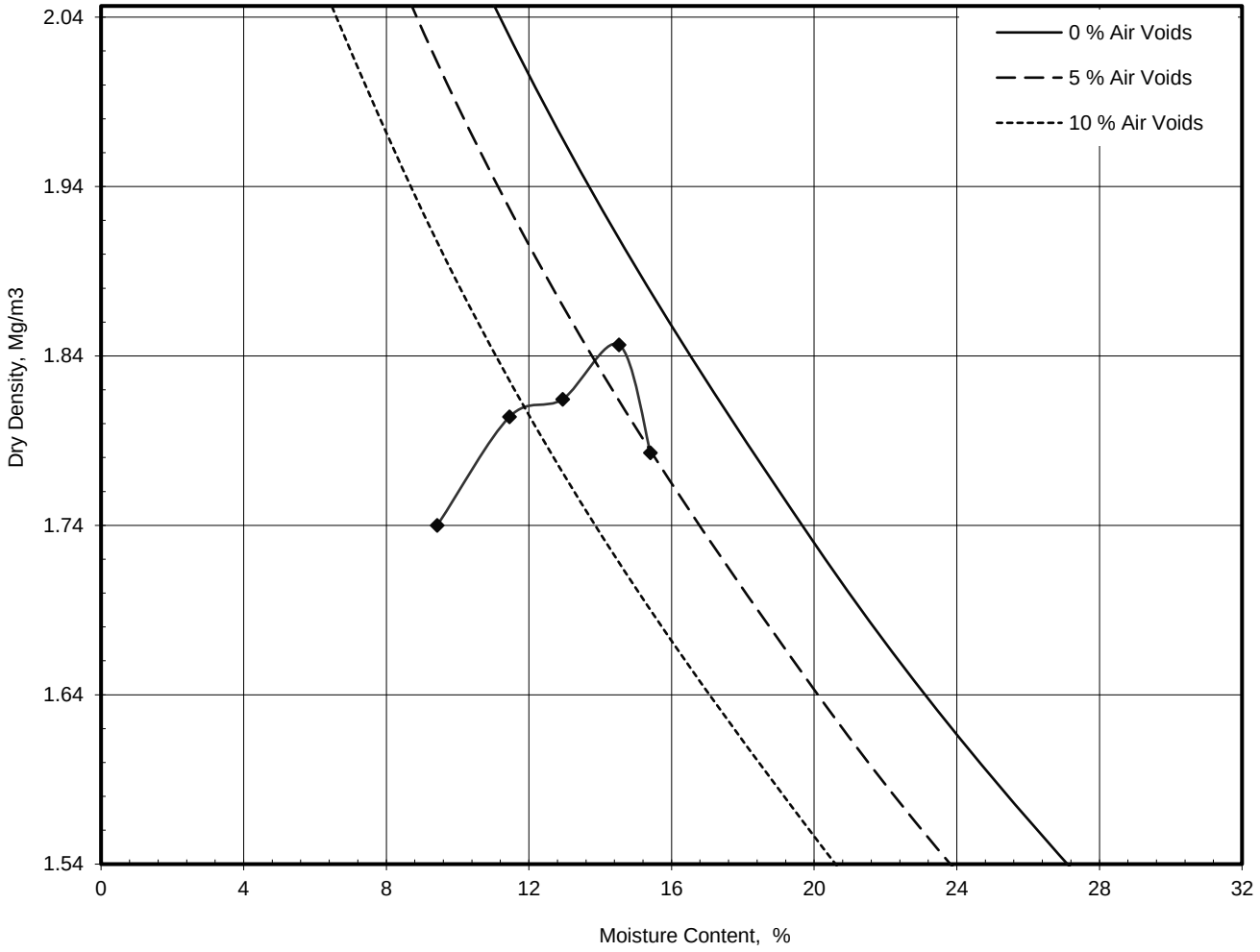
Maximum Dry Density	Mg/m³	**1.90**

Optimum Moisture Content	%	**12**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	BCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP209
Site Name	Derrygreenagh Power			Sample No	2
Soil Description	Yellowish-brown slightly sandy slightly gravelly SILT.			Depth	1.30 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051711
				Compaction Test Reference/No.	



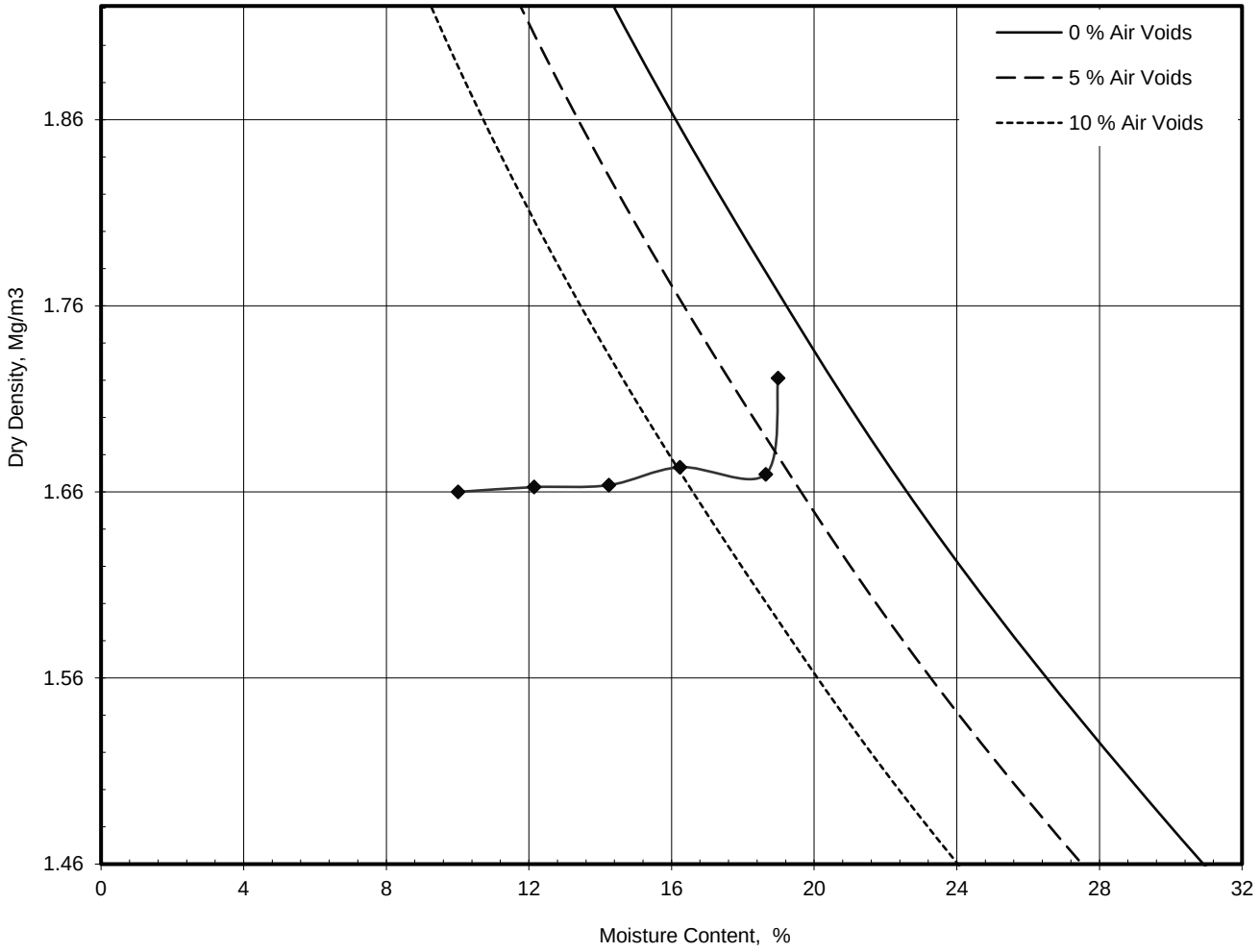
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	3
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.85**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP210
Site Name	Derrygreenagh Power			Sample No	1
Soil Description	Light brown slightly sandy slightly gravelly SILT.			Depth	0.50 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051715
				Compaction Test Reference/No.	



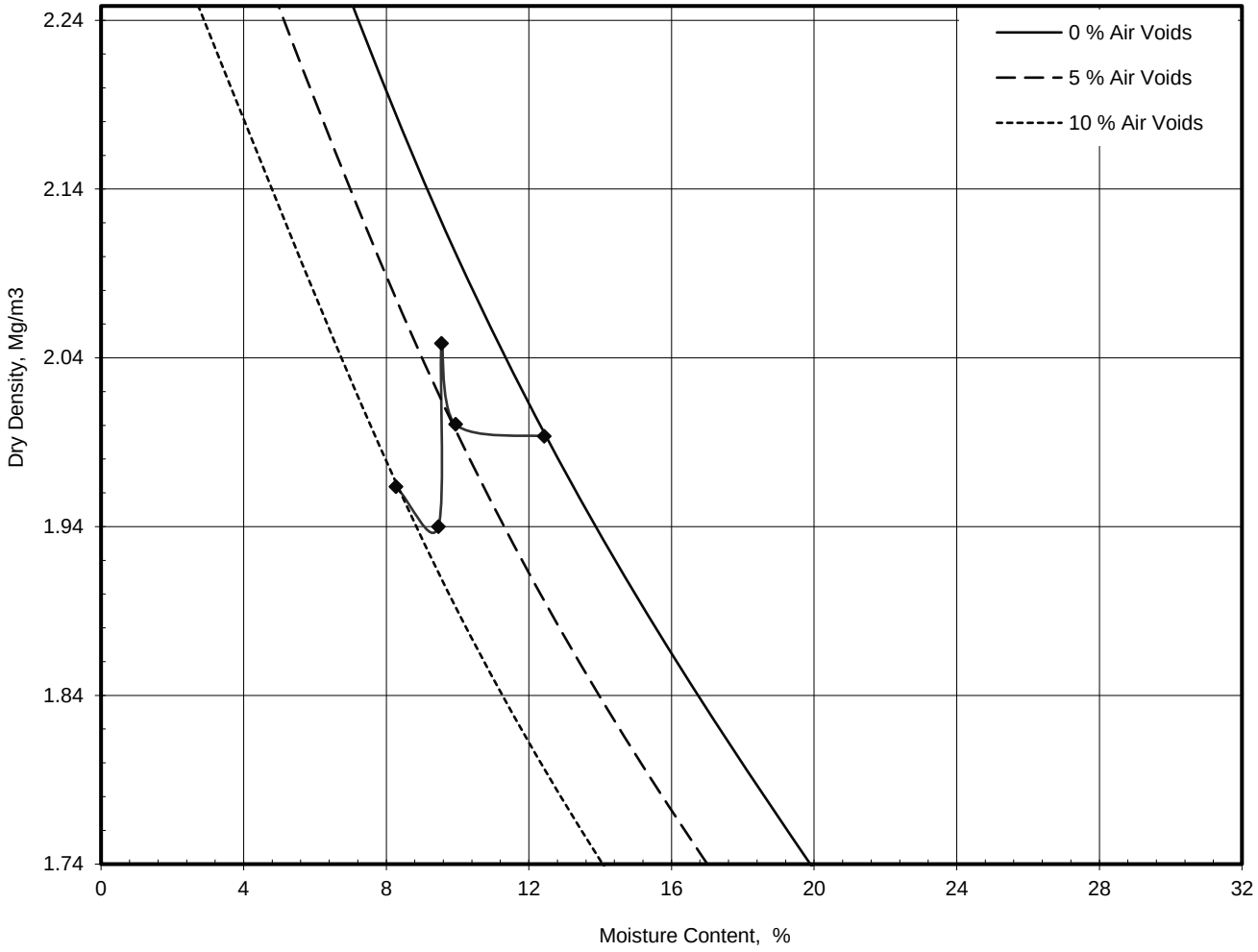
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	7
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.72**
Optimum Moisture Content	%	**19**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP211
Site Name	**Derrygreenagh Power**			Sample No	3
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth	1.00 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051723
				Compaction Test Reference/No.	



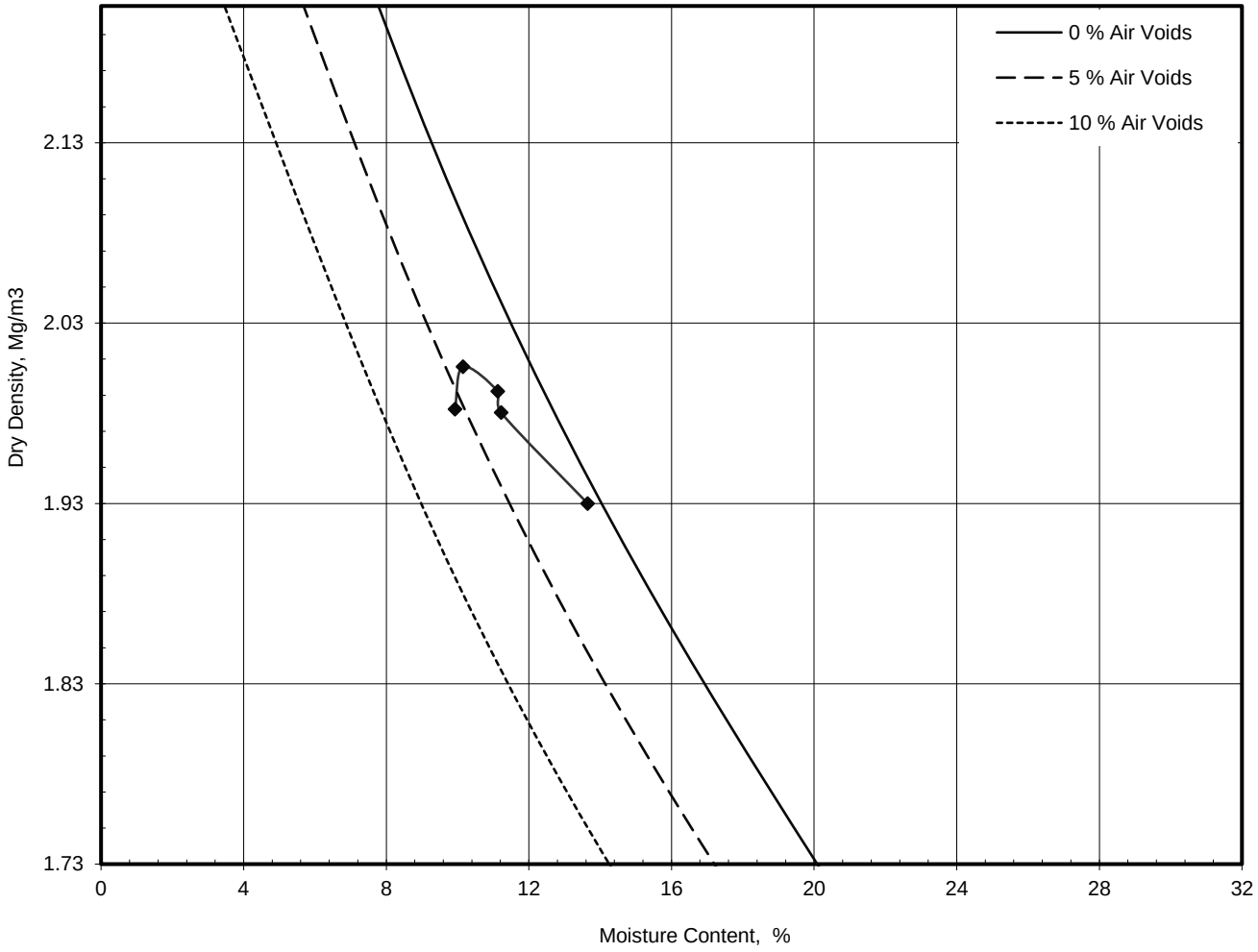
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	12
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.04**
Optimum Moisture Content	%	**9.6**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP212
Site Name	Derrygreenagh Power			Sample No	3
Soil Description	Brown slightly gravelly sandy SILT. Sand is fine.			Depth	1.10 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051732
				Compaction Test Reference/No.	



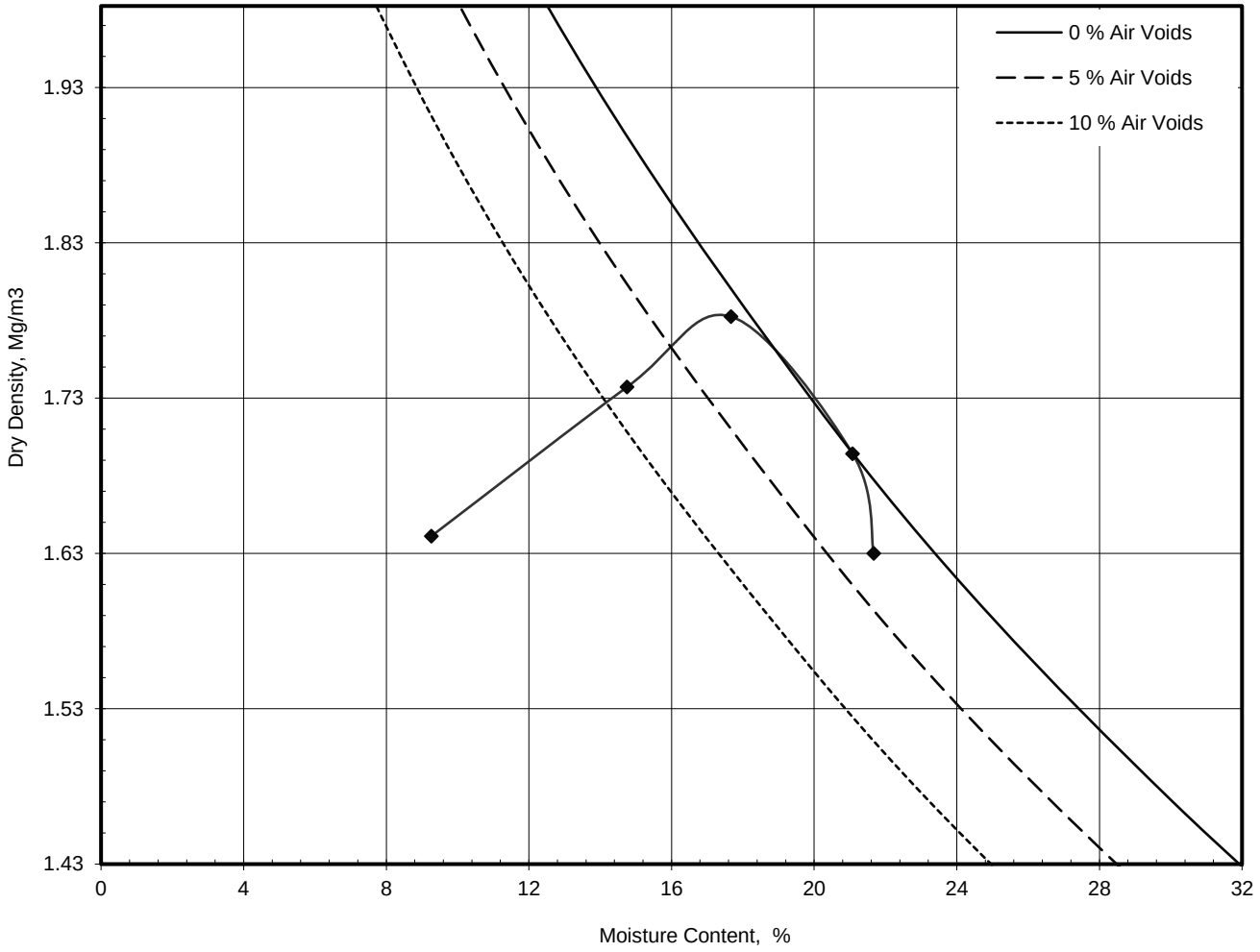
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	6
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.01**
Optimum Moisture Content	%	**10**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP216
Site Name	**Derrygreenagh Power**			Sample No	1
Soil Description	Brown slightly gravelly sandy SILT.			Depth	0.50 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051738
				Compaction Test Reference/No.	



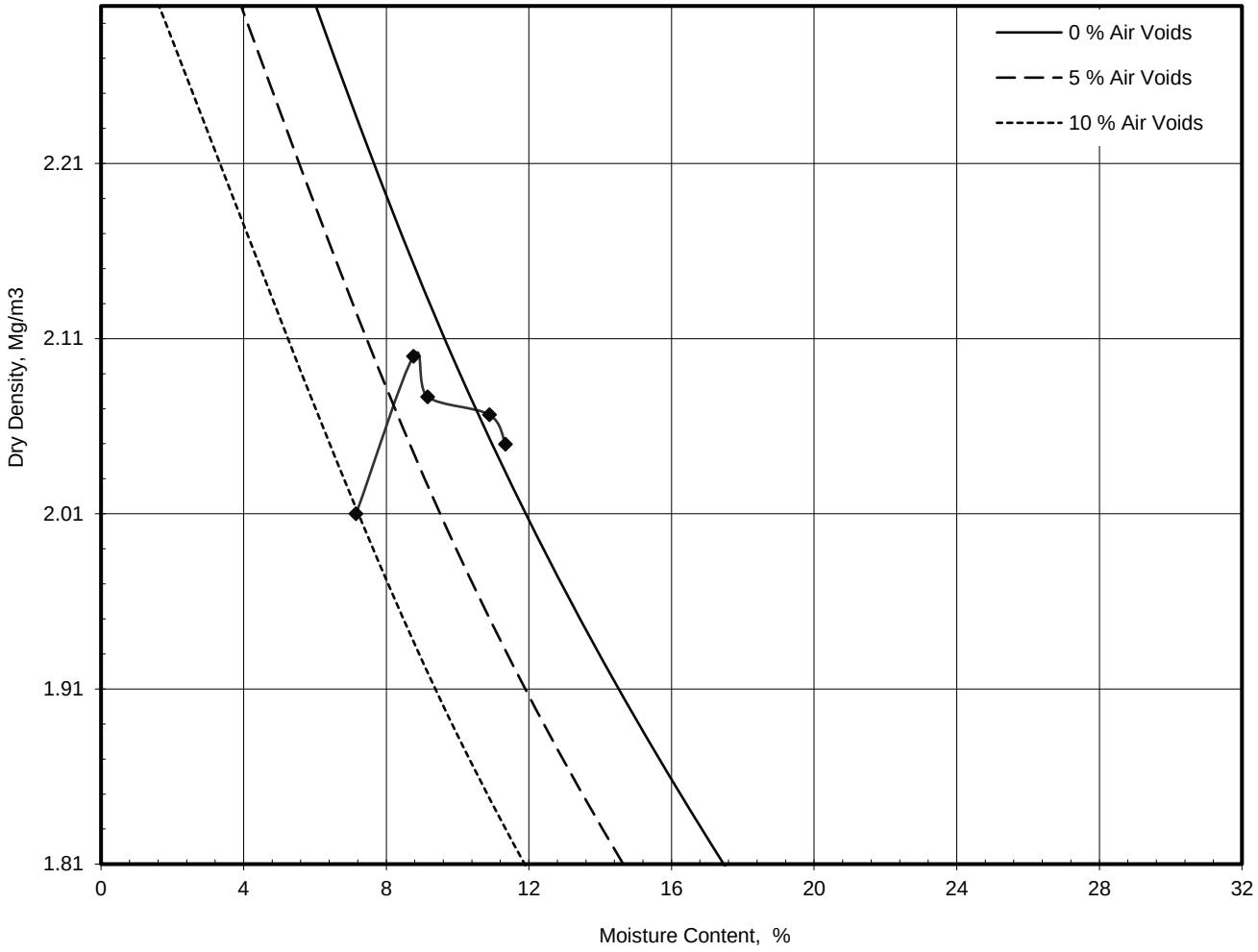
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	7
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.79**
Optimum Moisture Content	%	**18**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP217
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Greyish-brown slightly gravelly sandy SILT.			Depth	1.60 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051747
				Compaction Test Reference/No.	



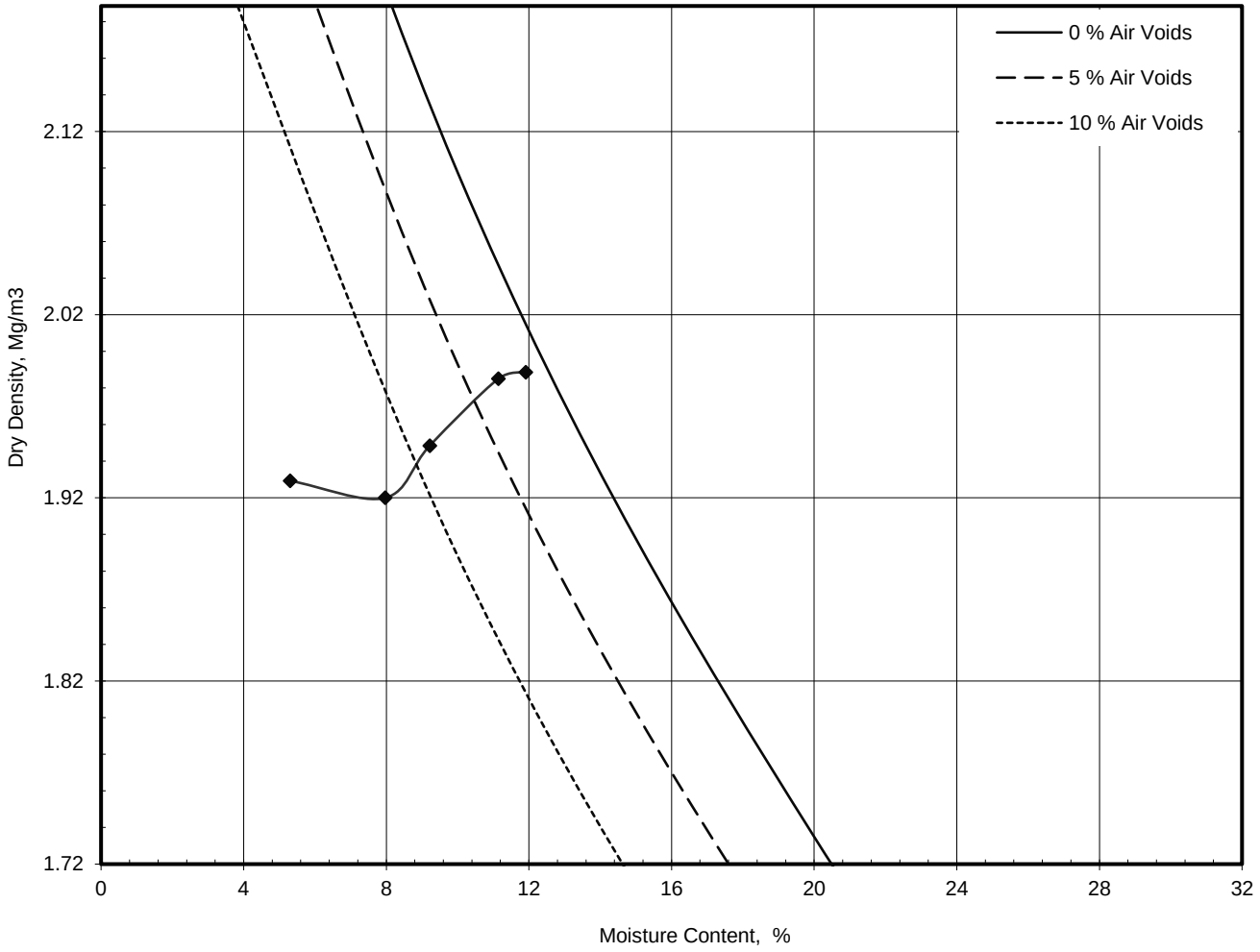
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	15
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.10**
Optimum Moisture Content	%	**9.2**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP218
Site Name	**Derrygreenagh Power**			Sample No	1
Soil Description	Brown slightly sandy slightly gravelly SILT.			Depth	0.60 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051753
				Compaction Test Reference/No.	



Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	16
Particle Density - Assumed	Mg/m³	2.65

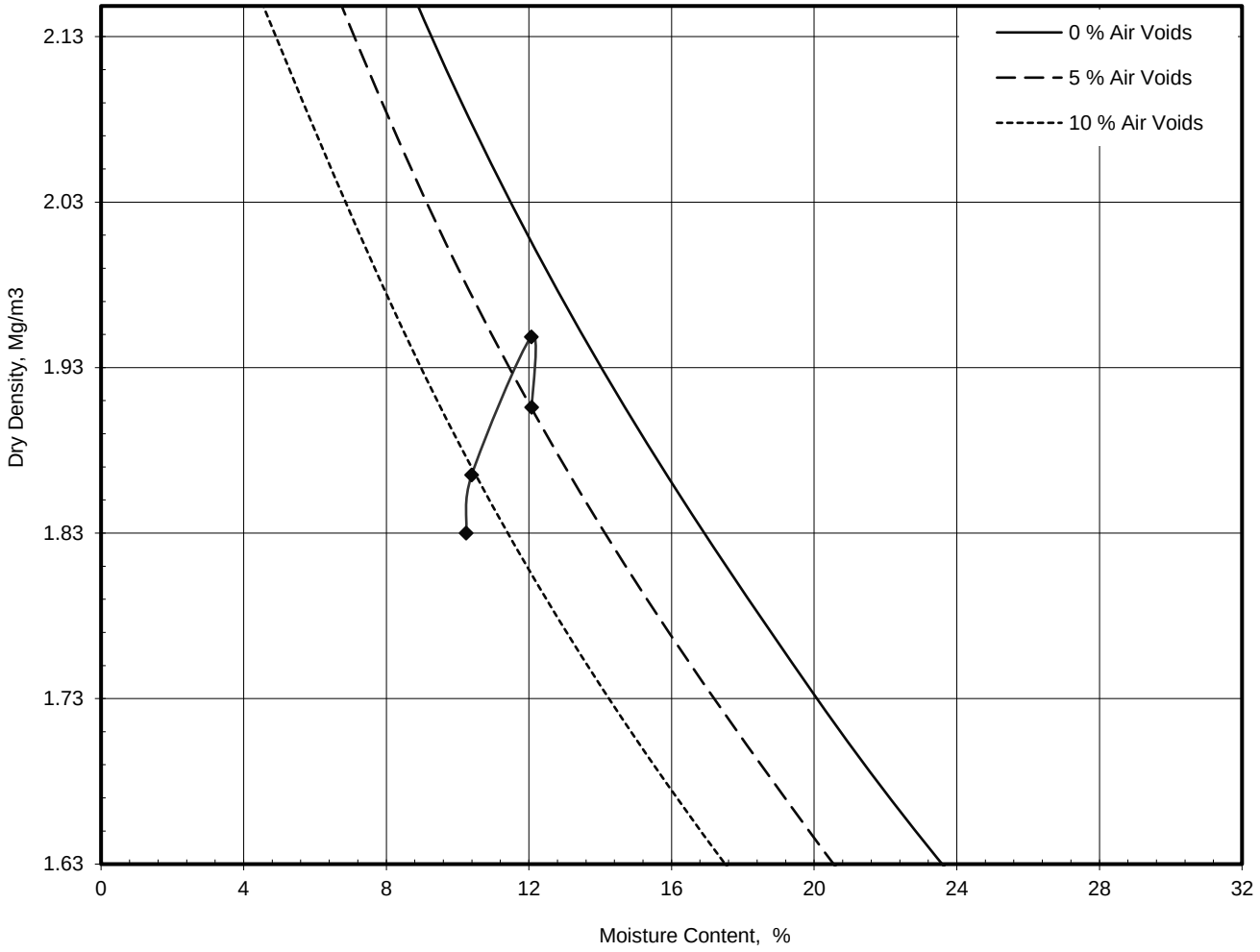
Maximum Dry Density	Mg/m³	**1.99**

Optimum Moisture Content	%	**11**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP220
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Greyish-brown very silty SAND and GRAVEL.			Depth	2.40 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023051771
				Compaction Test Reference/No.	



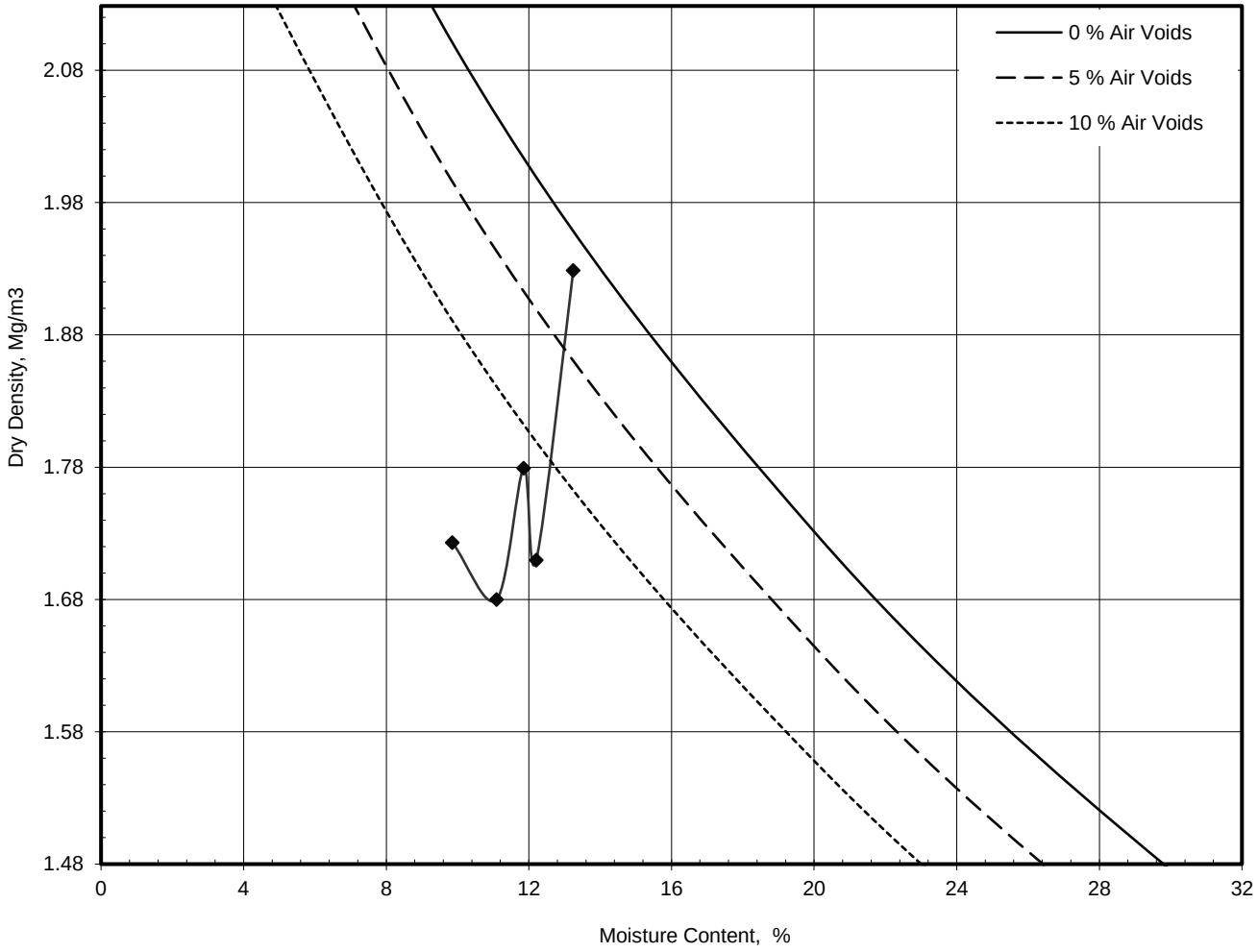
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	5
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.95**
Optimum Moisture Content	%	**12**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TP222
Site Name	**Derrygreenagh Power**			Sample No	2
Soil Description	Greyish-black very silty very sandy fine GRAVEL.			Depth	2.70 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL1202306224
				Compaction Test Reference/No.	



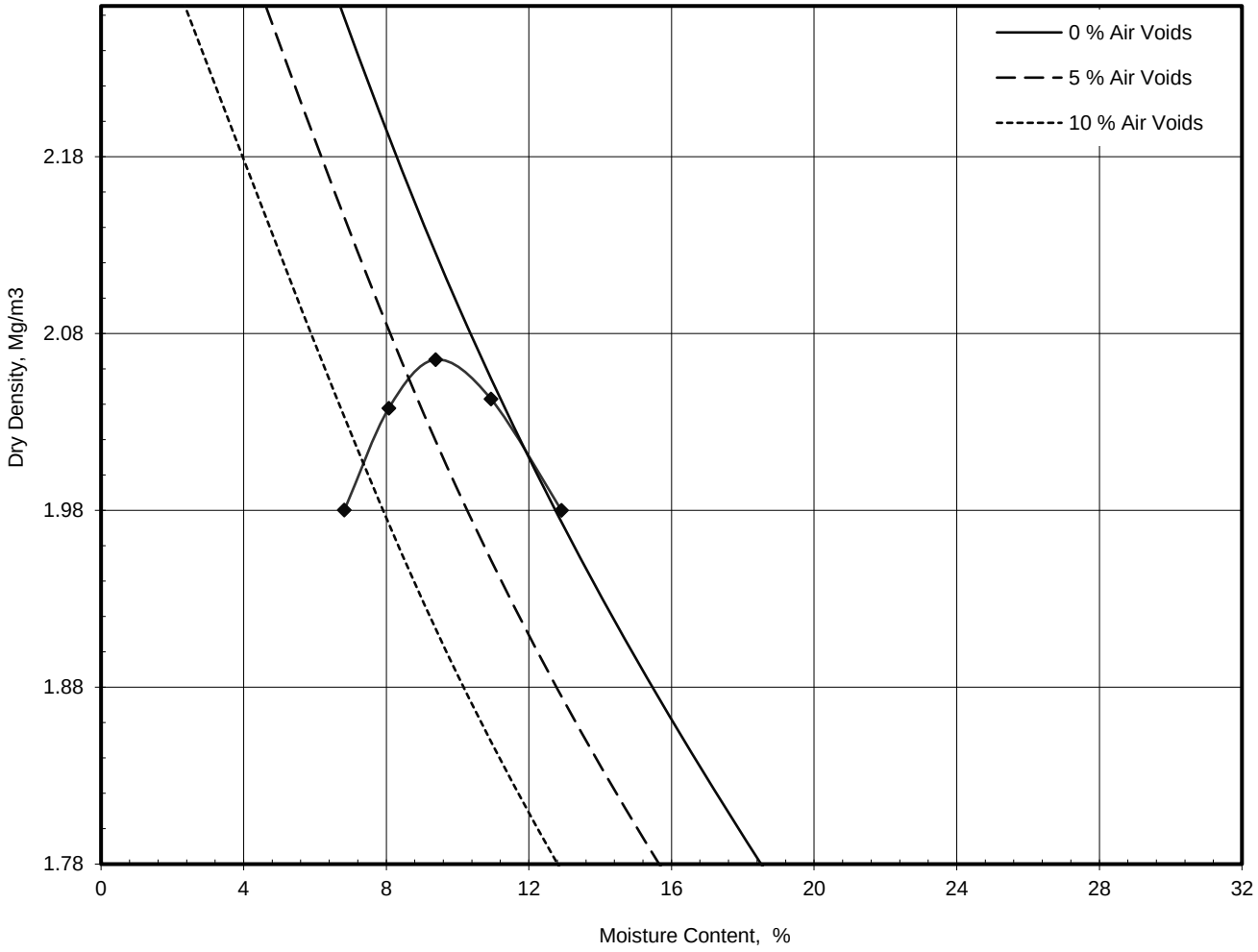
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	4
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.93**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	
	DCD	(01.11.23)		**QC Form R4** Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TPC09
Site Name	Derrygreenagh Power			Sample No	6
Soil Description	Bluish-grey slightly sandy gravelly SILT.			Depth	2.70 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023081625
				Compaction Test Reference/No.	



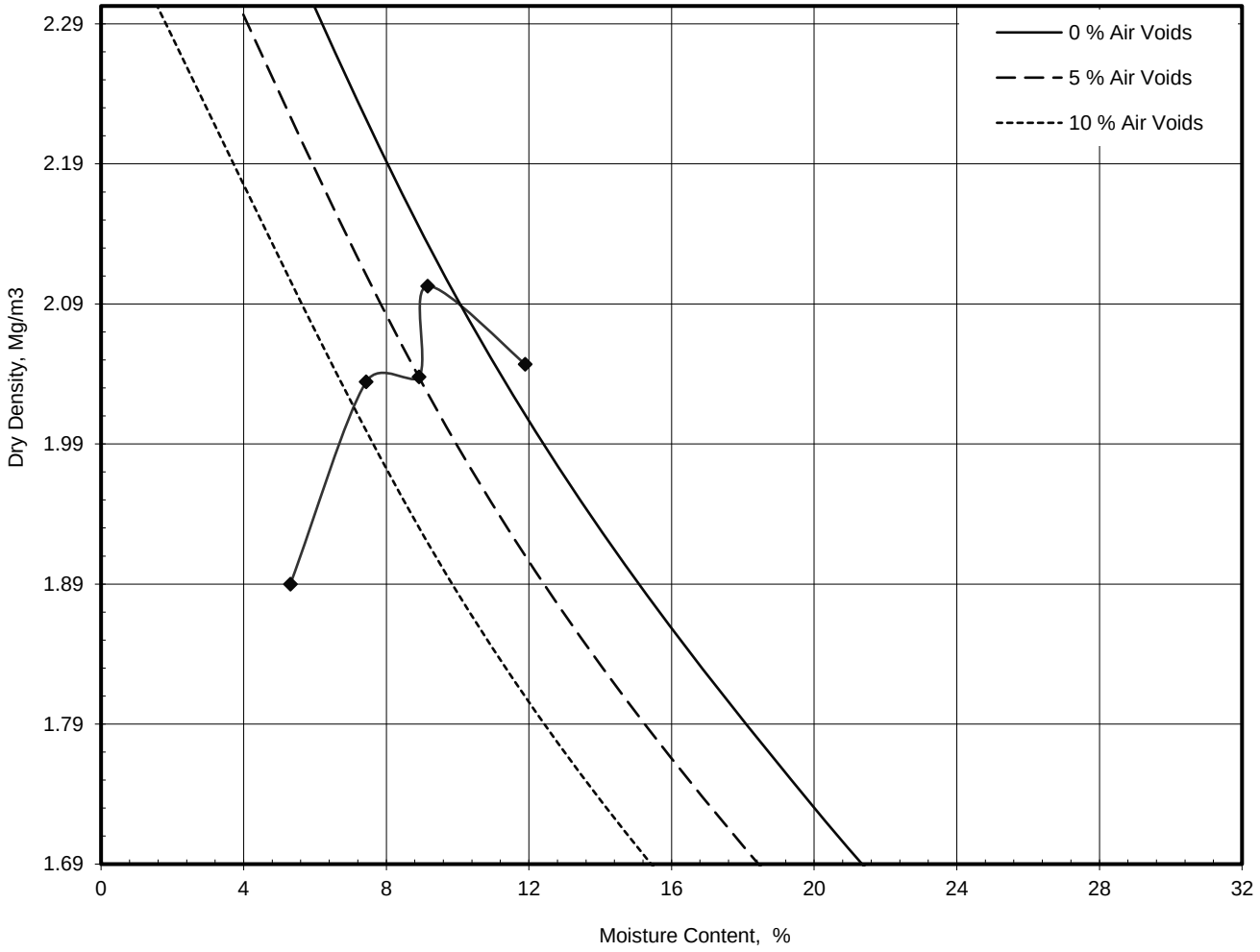
Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	9
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.06**
Optimum Moisture Content	%	**9.4**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TPSS107
Site Name	Derrygreenagh Power			Sample No	4
Soil Description	Light grey very silty SAND and GRAVEL.			Depth	1.80 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023081680
				Compaction Test Reference/No.	



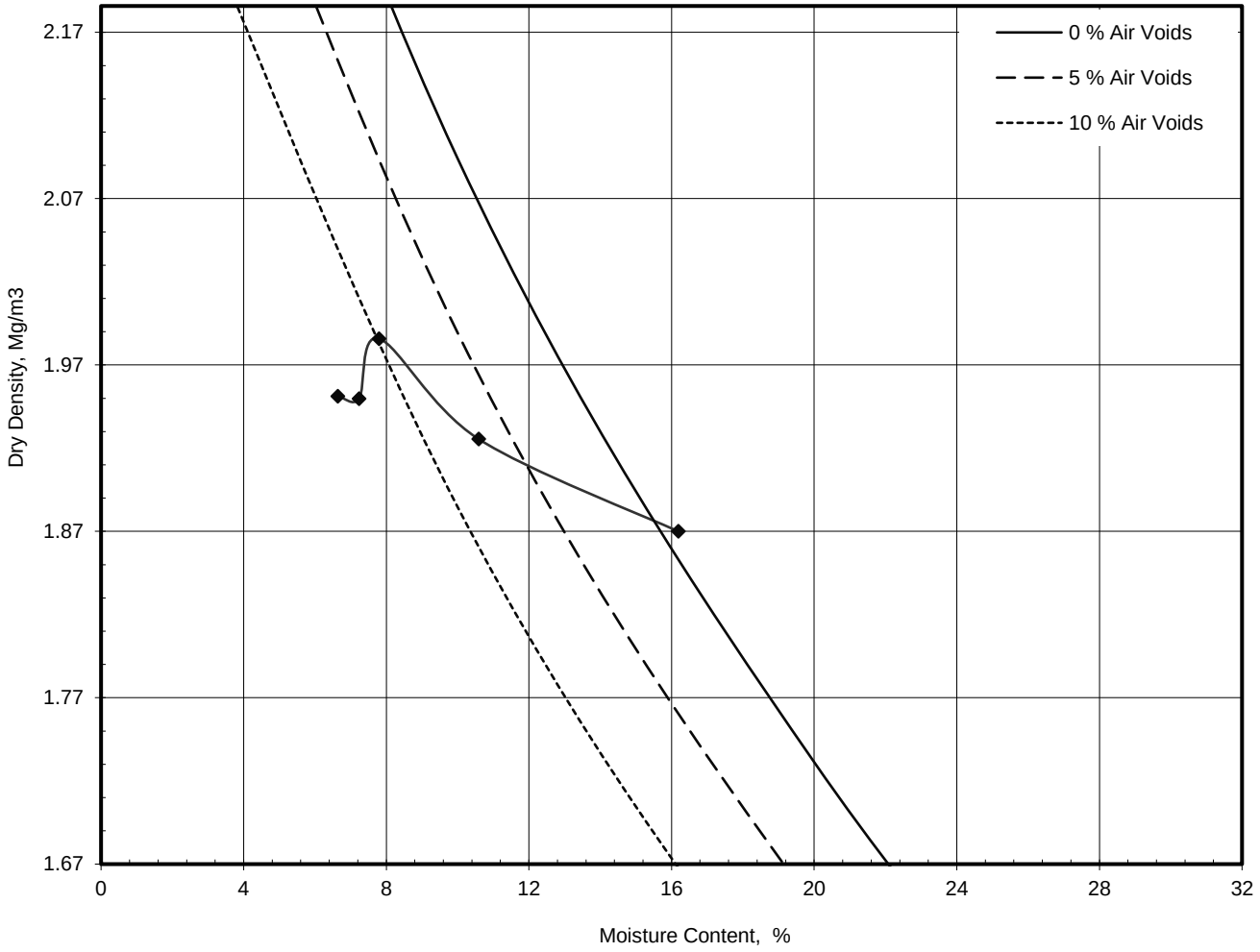
Preparation		-2146826273
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	24
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.10**
Optimum Moisture Content	%	**8.9**

Operator	Checked	Approved	Remarks / Report Date:	QC Form R4
	DCD	(01.11.23)		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TPT01
Site Name	**Derrygreenagh Power**			Sample No	6
Soil Description	Dark grey slightly silty very gravelly coarse SAND.			Depth	3.40 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023060983
				Compaction Test Reference/No.	



Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	2
Particle Density - Assumed	Mg/m³	2.65

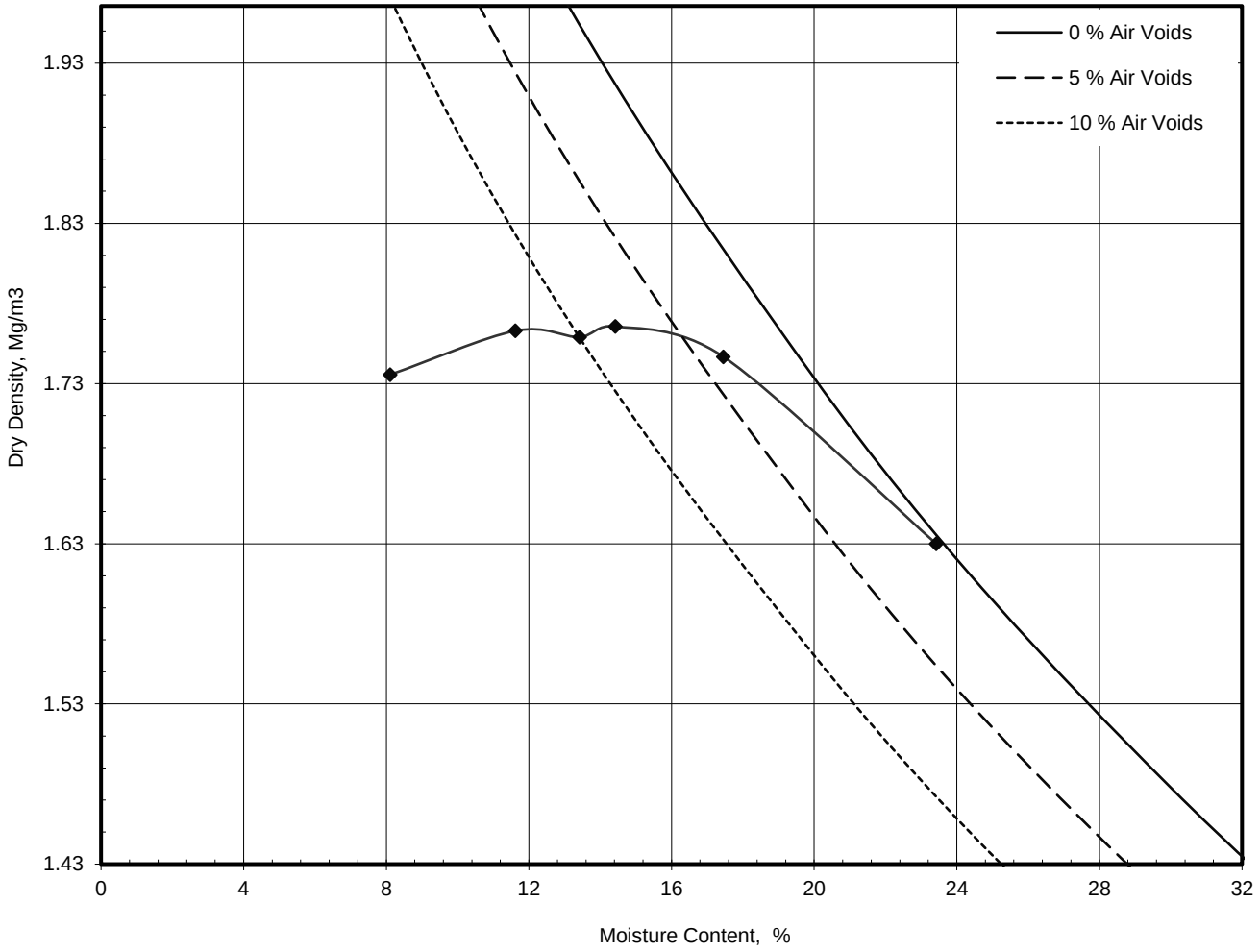
Maximum Dry Density	Mg/m³	**1.99**

Optimum Moisture Content	%	**7.8**

Operator	Checked	Approved	Remarks / Report Date:	**QC Form R4**
		DCD		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2023OY104
				Borehole / Pit No	TPT03
Site Name	**Derrygreenagh Power**			Sample No	3
Soil Description	Dark grey silty very gravelly medium SAND.			Depth	1.50 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL12023060995
				Compaction Test Reference/No.	



Preparation		Material used was natural and air dried
Mould Type		CBR
Samples Used		Composite specimens tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	10
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**1.76**
Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks / Report Date:	**QC Form R4**
		DCD		Sheet 1 of 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Grey slightly black slightly sandy slightly gravelly CLAY/SILT
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		73.23
Bulk density (Mg/m3)		1.86
Particle density	(Assumed)	2.65

Initial conditions

Settlement Channel	1107
Moisture content (%)	37.06
Dry density (Mg/m3)	1.36
Initial Voids Ratio	0.9479
Deg of Saturation (%)	103.6
Swelling pressure (kPa)	n/a

Final conditions

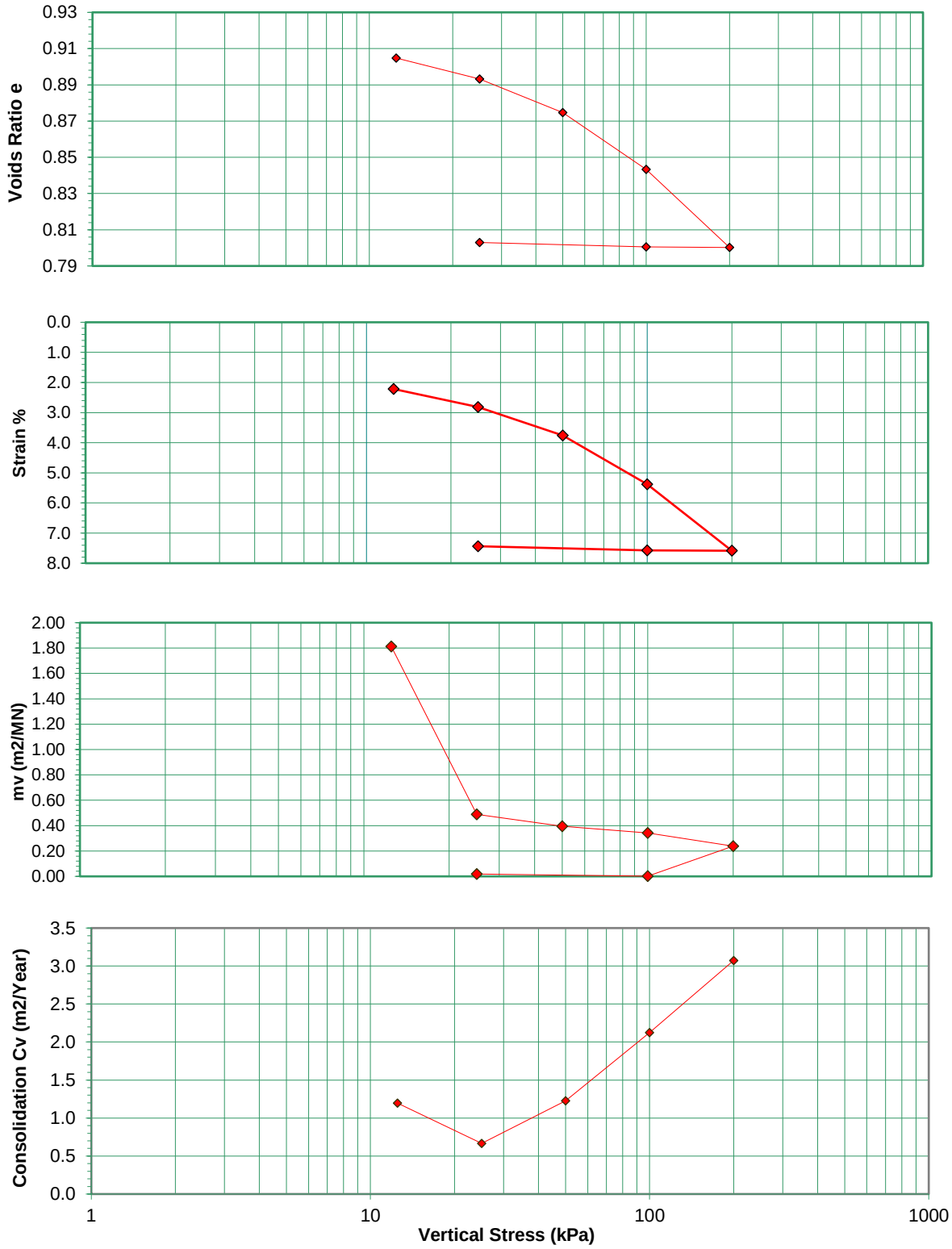
Moisture Content (%)	30.4
Dry Density (Mg/m3)	1.47
Final voids ratio	0.8030
Final degree of saturation (%)	100.4
Final settlement	1.488

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH101
		Sample No.	U5
		Depth m.	2.0-2.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH101 U5 2.0-2.45m

Oedometer Test

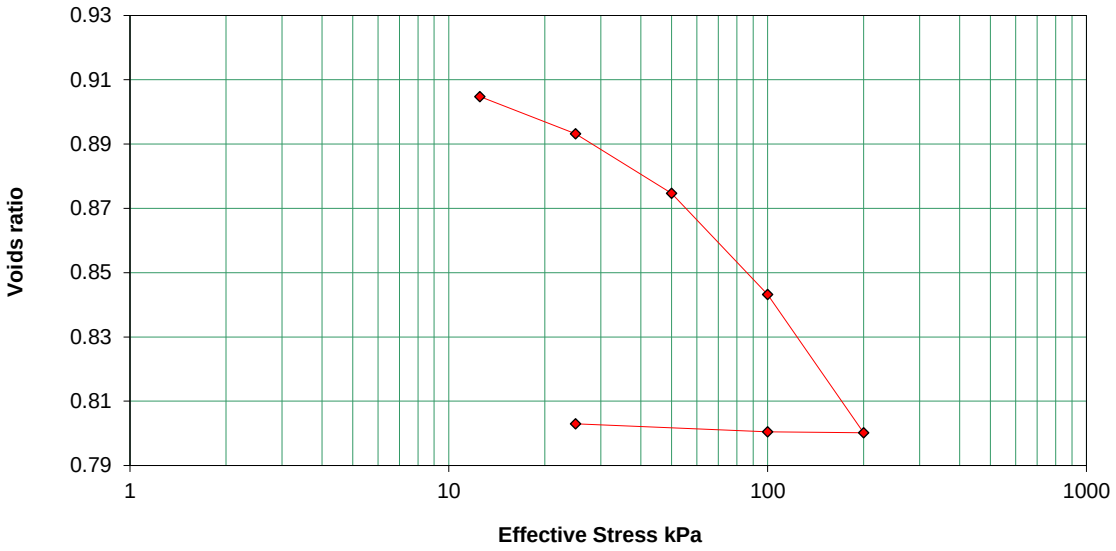
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Grey slightly black slightly sandy slightly gravelly CLAY/SILT

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		73.23
Bulk Density (mg/m3)		1.865
Particle Density	Assumed	2.65

Initial Conditions		Final Conditions	
Moisture content	37.1	30.4	%
Dry Density	1.360	1.470	Mg/m3
Initial Voids Ratio	0.9479	0.8030	
Degree of Saturation	103.60	100.43	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	2.215	0.9048	1.812	1.197	0.443
2	25	2.810	0.8932	0.490	0.666	0.562
3	50	3.760	0.8747	0.395	1.227	0.752
4	100	5.375	0.8432	0.341	2.125	1.075
5	200	7.585	0.8002	0.239	3.073	1.517
6	100	7.570	0.8005	0.002		1.514
7	25	7.440	0.8030	0.019		1.488

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH101
		Sample No.	U5
		Depth m.	2.0-2.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.96	1.99
Specimen Length	mm	205.00	Dry Density	Mg/m3	1.58	1.61
Specimen Diameter	mm	103.00	Moisture	%	24.44	23.51
Area	mm2	8332.29	Saturation	%	95.13	96.07
Volume	cc	1708.12	Sg(Assumed)	2.65		

Saturation Stage

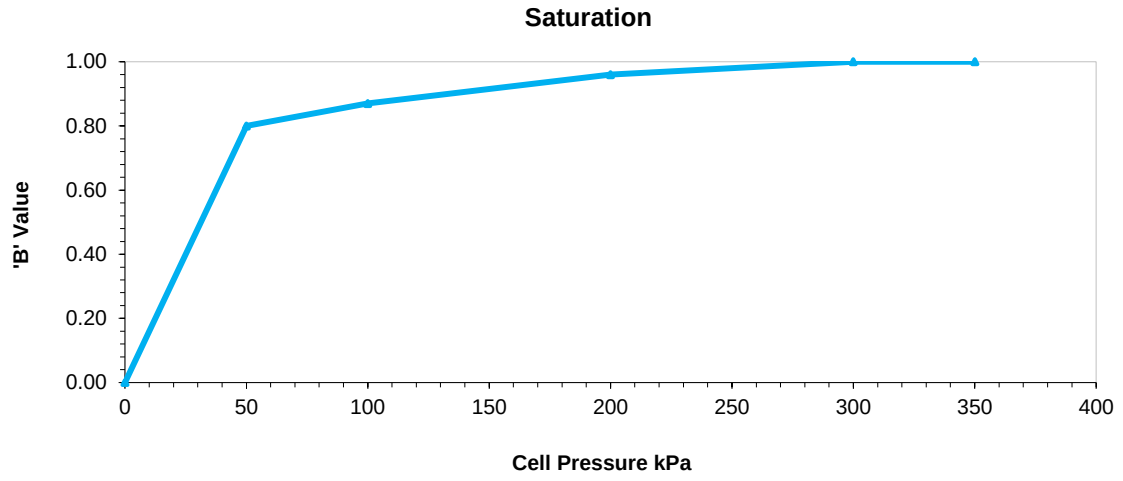
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.80
2	100	0.87
3	200	0.96
4	300	1.00
5	350	1.00

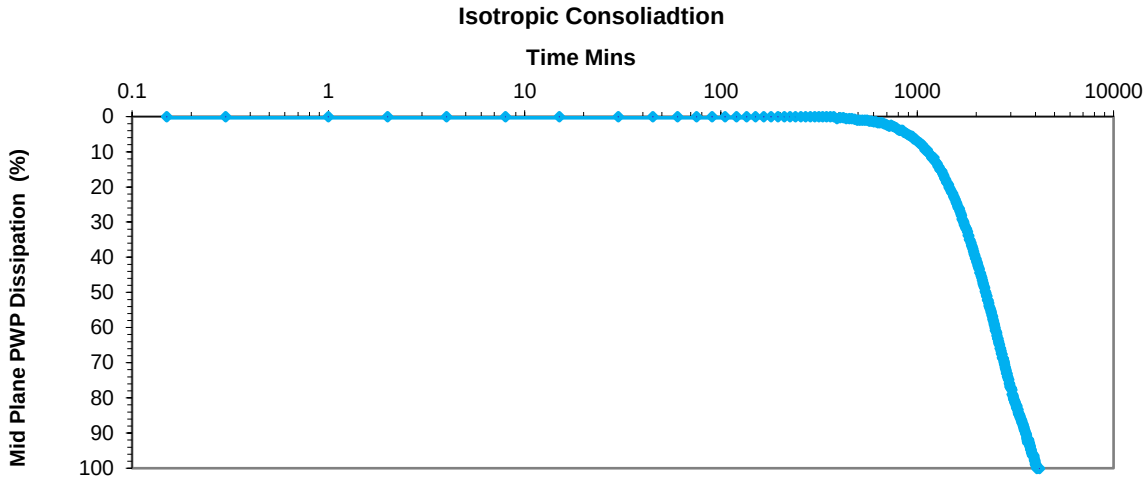
Isotropic Consolidation Stage

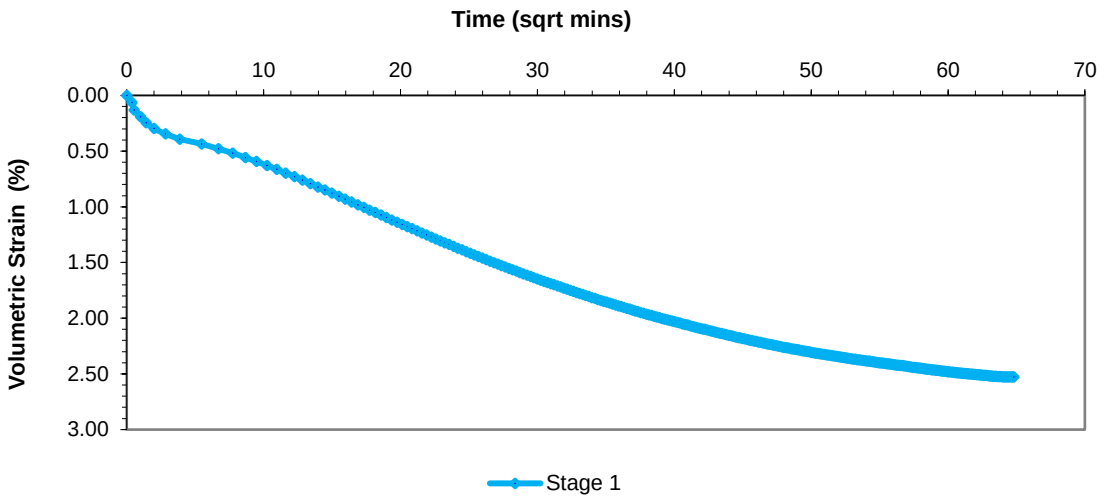
		Stage 1
Cell Pressure	kPa	350
Pore Pressure	kPa	346.4
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		2209.0
Coef. Of Consolidation Cv	m2/year	0.095
Coef. Of Compressibility Mv	m2/MN	0.545
Permeability k	m/sec	1.61E-11

	Stage 1
Deviator Stress (kPa)	110.8
External Axial Strain (%)	12.93
Shear Stress (kPa)	55.4
Peak Stress Ratio	4.33
Pore Water Pressure (kPa)	16.7
Radial Effective Stress (kPa)	33.3
Axial Effective Stress (kPa)	144.1
Effective angle of friction (Degrees)	38.7
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Grey slightly sandy slightly gravelly silty CLAY**
	Plastic Failure

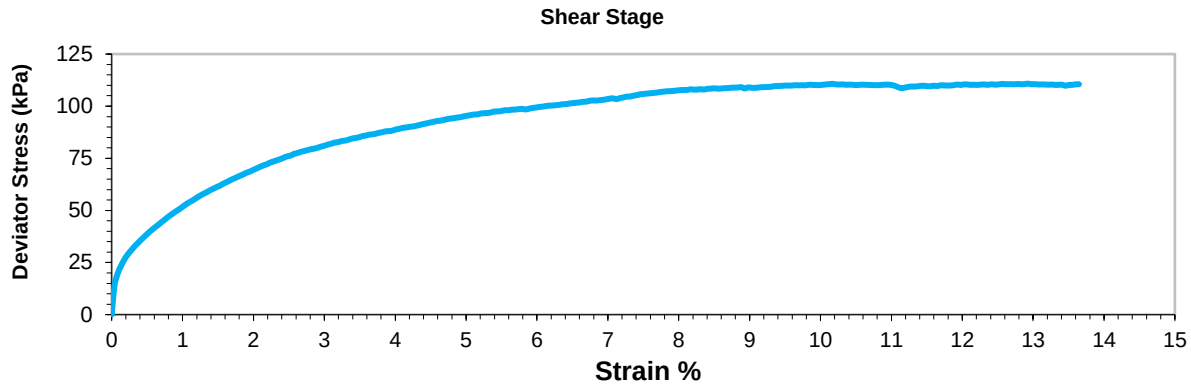
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH101
	Project: Derrygreenagh Power	Sample No.	U5
		Depth.	2.00-2.45m

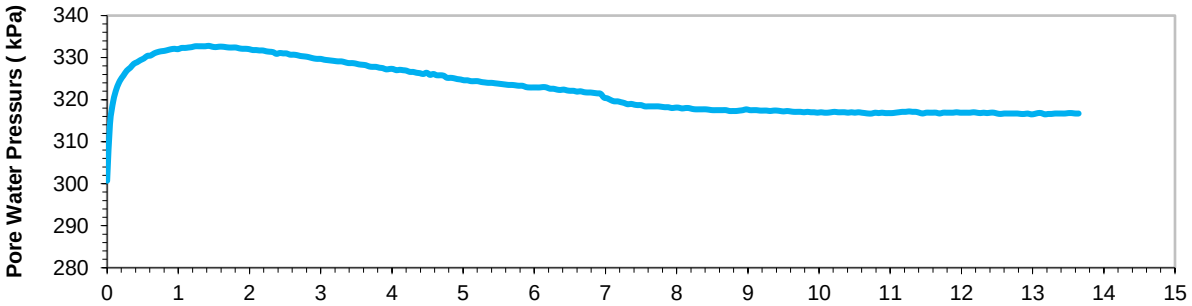


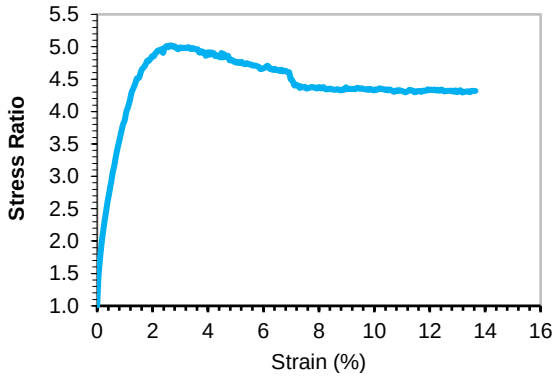


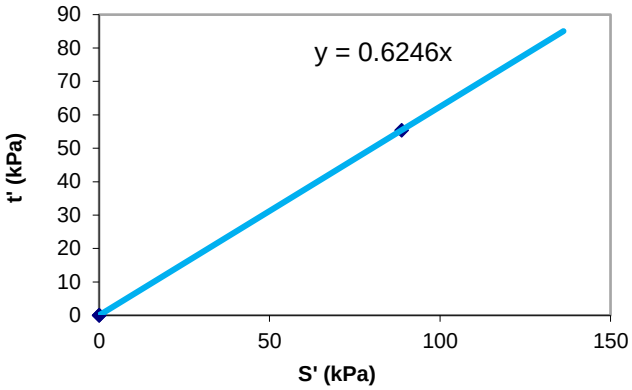


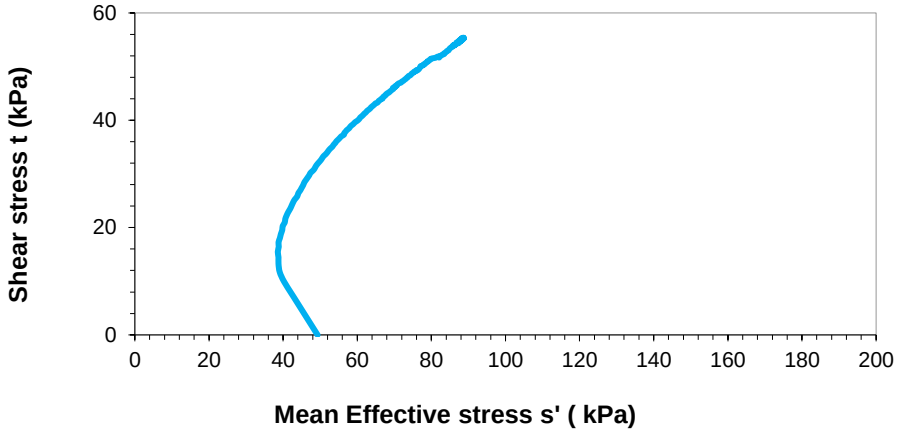
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH101
	Project: Derrygreenagh Power	Sample No. U5
		Depth. 2.00-2.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH101
	Project: Derrygreenagh Power	Sample No.	U5
		Depth.	2.00-2.45m

SPECIMEN AFTER TEST

Soil Description **Grey slightly sandy slightly gravelly silty CLAY**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH101
	Project: Derrygreenagh Power	Sample No.	U5
		Depth.	2.00-2.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown/black PEAT with some fine to medium roots
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		42.68
Bulk density (Mg/m3)		1.09
Particle density	(Assumed)	1.60

Initial conditions

Settlement Channel	1108
Moisture content (%)	130.08
Dry density (Mg/m3)	0.4723
Initial Voids Ratio	2.3876
Deg of Saturation (%)	87.2
Swelling pressure (kPa)	n/a

Final conditions

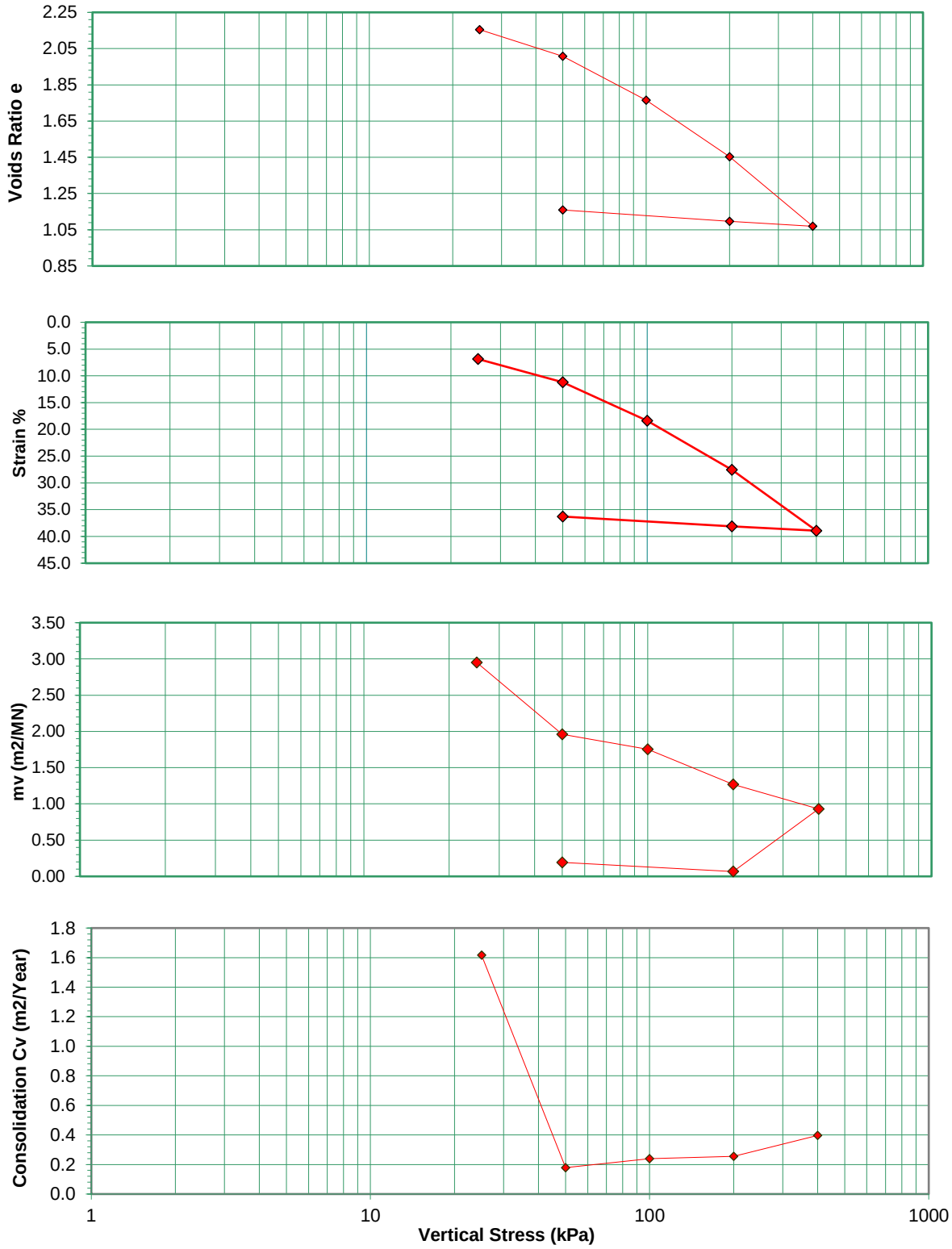
Moisture Content (%)	72.2
Dry Density (Mg/m3)	0.74
Final voids ratio	1.1589
Final degree of saturation (%)	99.7
Final settlement	7.254

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH102
		Sample No.	U9
		Depth m.	3.0-3.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH102 U9 3.0-3.45m

Oedometer Test

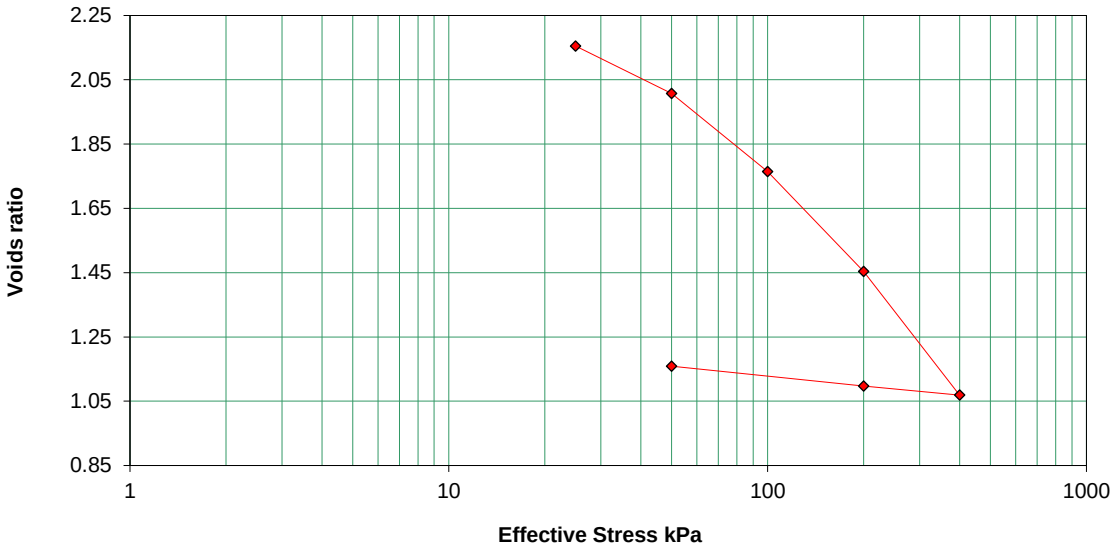
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown/black PEAT with some fine to medium roots

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		42.68
Bulk Density (mg/m3)		1.087
Particle Density	Assumed	1.60

Initial Conditions		Final Conditions	
Moisture content	130.1	72.2	%
Dry Density	0.472	0.741	Mg/m3
Initial Voids Ratio	2.3876	1.1589	
Degree of Saturation	87.17	99.73	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	25	6.870	2.1549	2.951	1.616	1.374
2	50	11.220	2.0075	1.960	0.179	2.244
3	100	18.380	1.7650	1.754	0.239	3.676
4	200	27.575	1.4535	1.270	0.255	5.515
5	400	38.925	1.0690	0.929	0.397	7.785
6	200	38.100	1.0969	0.067		7.620
7	50	36.270	1.1589	0.191		7.254

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH102
		Sample No.	U9
		Depth m.	3.0-3.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.07	1.10
Specimen Length	mm	202.00	Dry Density	Mg/m3	0.42	0.44
Specimen Diameter	mm	102.50	Moisture	%	154.06	147.85
Area	mm2	8251.59	Saturation	%	87.93	90.51
Volume	cc	1666.82	Sg(Assumed)	1.60		

Saturation Stage

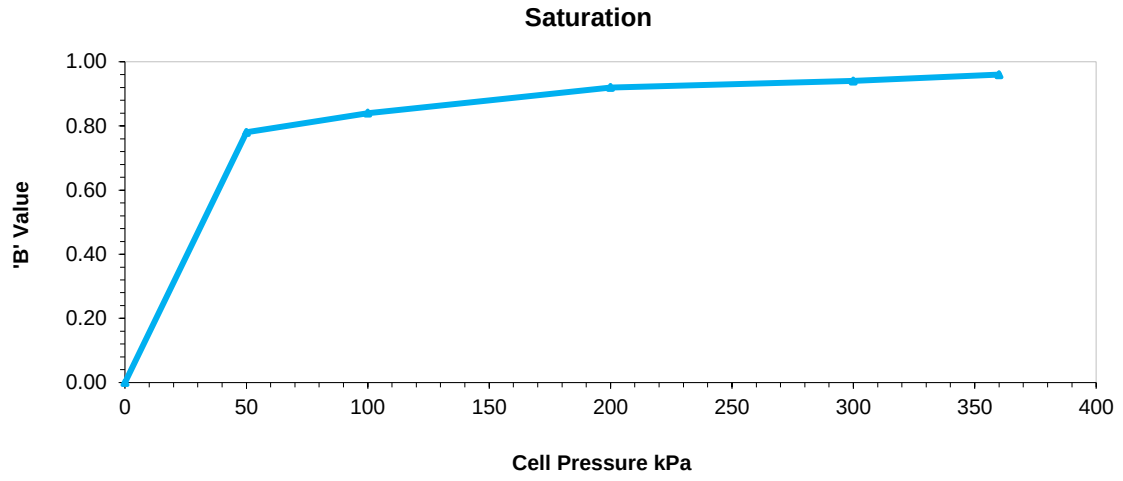
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.78
2	100	0.84
3	200	0.92
4	300	0.94
5	360	0.96

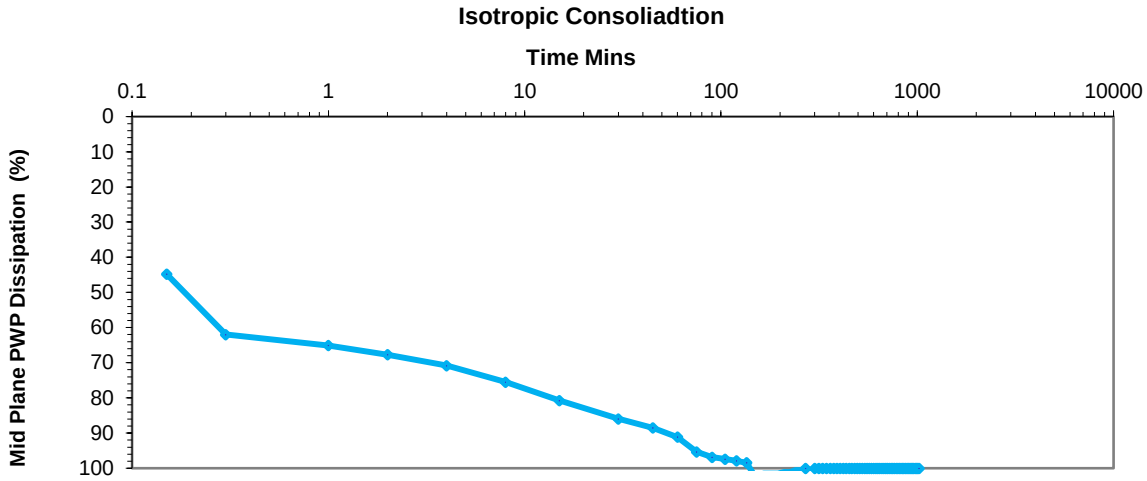
Isotropic Consolidation Stage

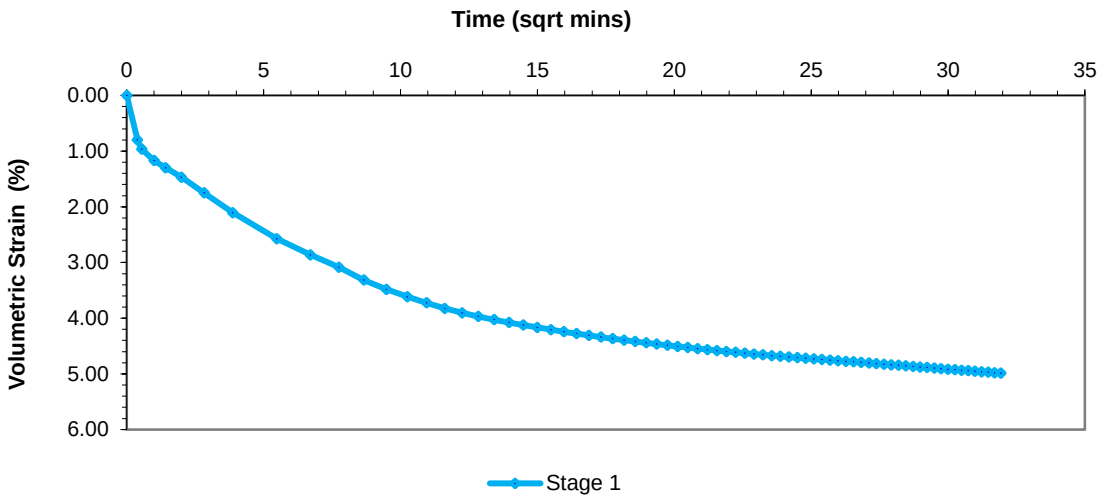
		Stage 1
Cell Pressure	kPa	360
Pore Pressure	kPa	319.1
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		187.7
Coef. Of Consolidation Cv	m2/year	1.119
Coef. Of Compressibility Mv	m2/MN	2.076
Permeability k	m/sec	7.20E-10

	Stage 1
Deviator Stress (kPa)	61.1
External Axial Strain (%)	10.57
Shear Stress (kPa)	30.6
Peak Stress Ratio	4.18
Pore Water Pressure (kPa)	40.8
Radial Effective Stress (kPa)	19.2
Axial Effective Stress (kPa)	80.3
Effective angle of friction (Degrees)	37.9
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown/black PEAT with fine to medium roots**
	Plastic Failure

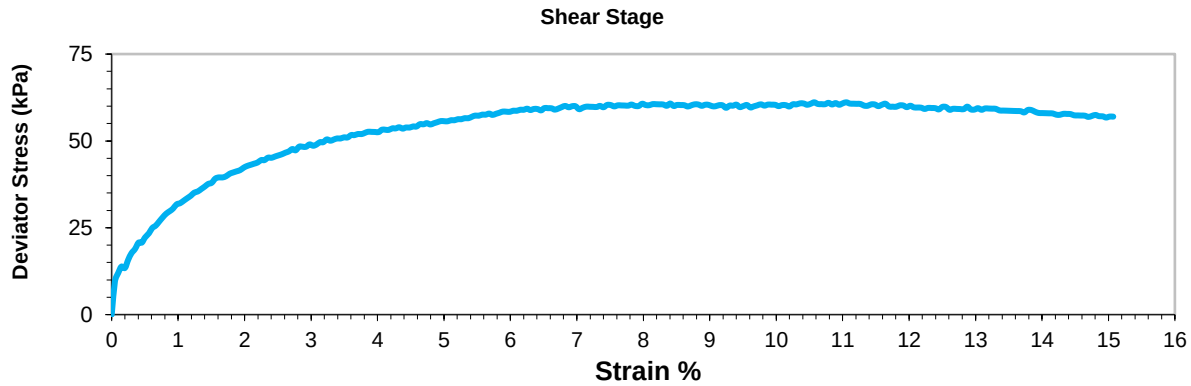
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH102
	Project: Derrygreenagh Power	Sample No.	U9
		Depth.	3.0-3.45m

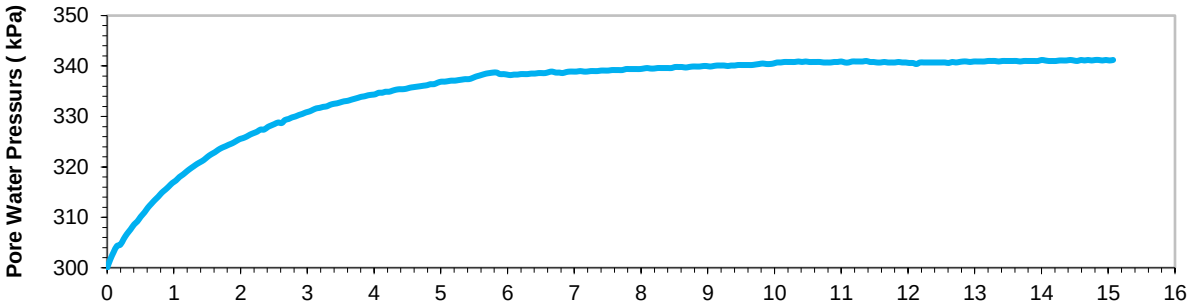


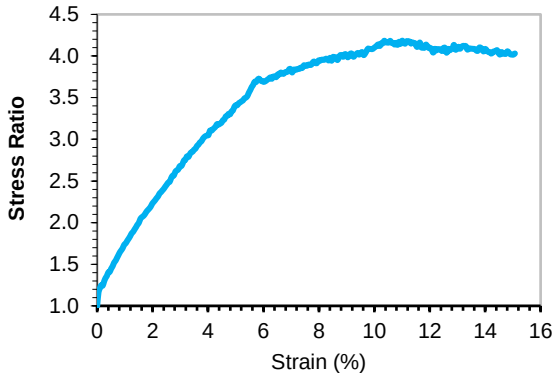


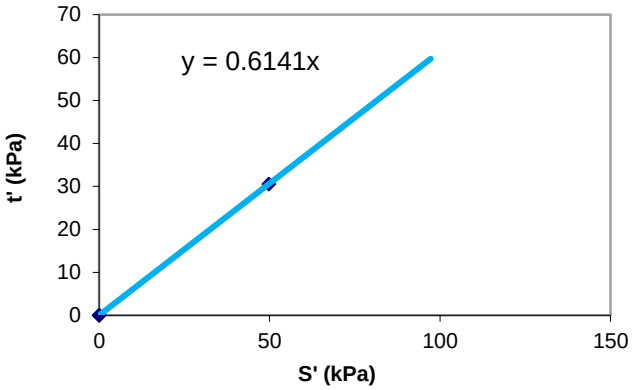


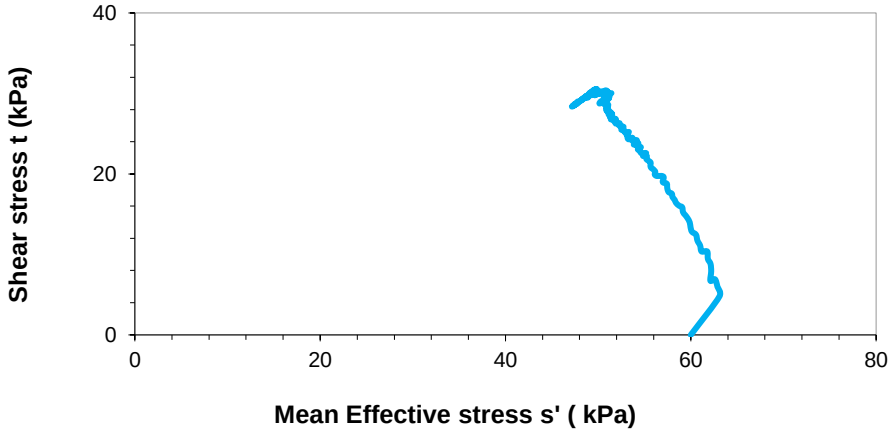
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH102
	Project: Derrygreenagh Power	Sample No. U9
		Depth. 3.0-3.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH102
	Project: Derrygreenagh Power	Sample No.	U9
		Depth.	3.0-3.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown/black PEAT with fine to medium roots**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH102
	Project: Derrygreenagh Power	Sample No.	U9
		Depth.	3.0-3.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown black slightly fiberous PEAT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		38.55
Bulk density (Mg/m3)		0.9815
Particle density	(Assumed)	1.50

Initial conditions

Settlement Channel	1109
Moisture content (%)	536.14
Dry density (Mg/m3)	0.1543
Initial Voids Ratio	8.7215
Deg of Saturation (%)	92.2
Swelling pressure (kPa)	n/a

Final conditions

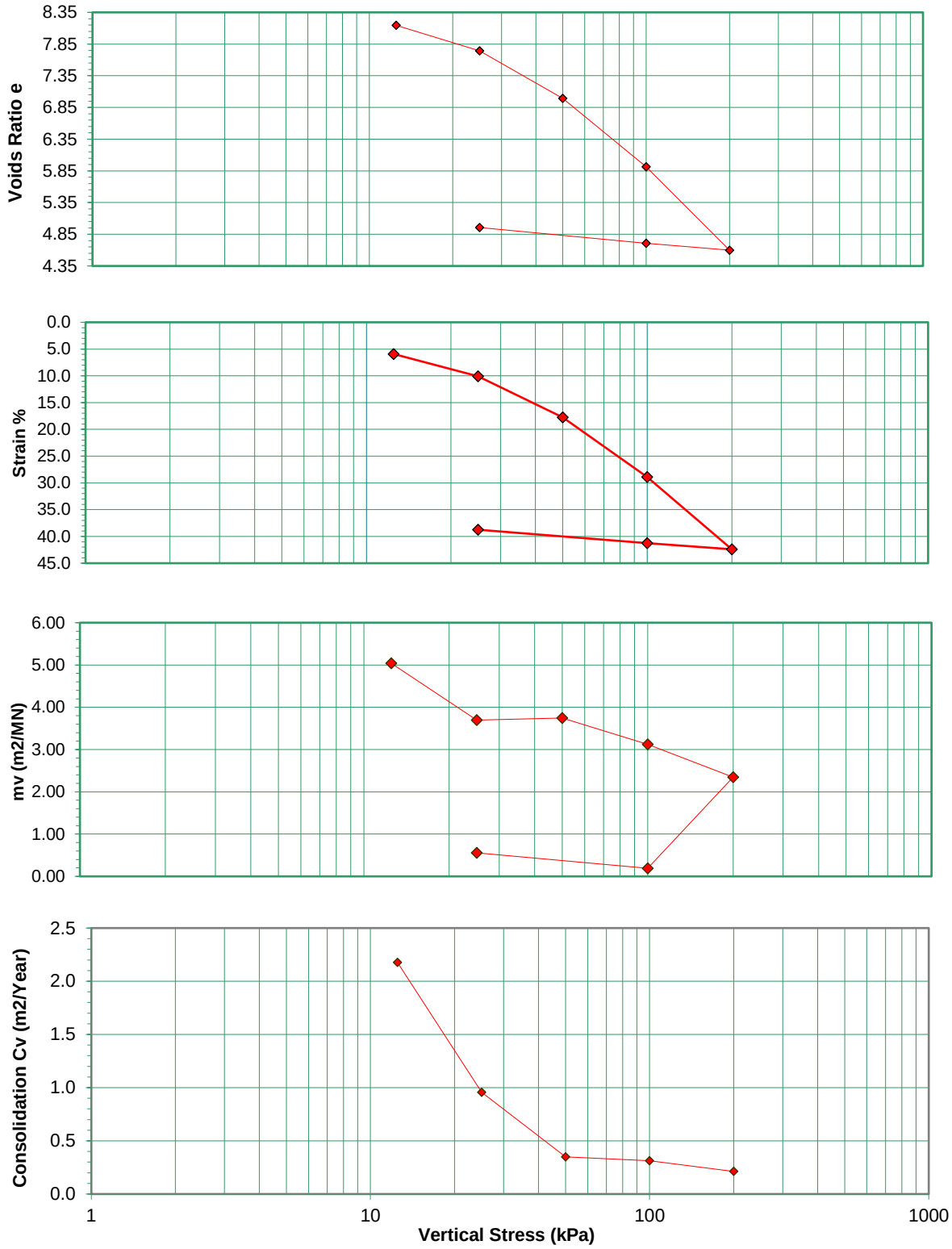
Moisture Content (%)	321.6
Dry Density (Mg/m3)	0.25
Final voids ratio	4.9564
Final degree of saturation (%)	97.3
Final settlement	7.746

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH104
		Sample No.	U3
		Depth m.	1.0-1.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH104 U3 1.0-1.45m

Oedometer Test

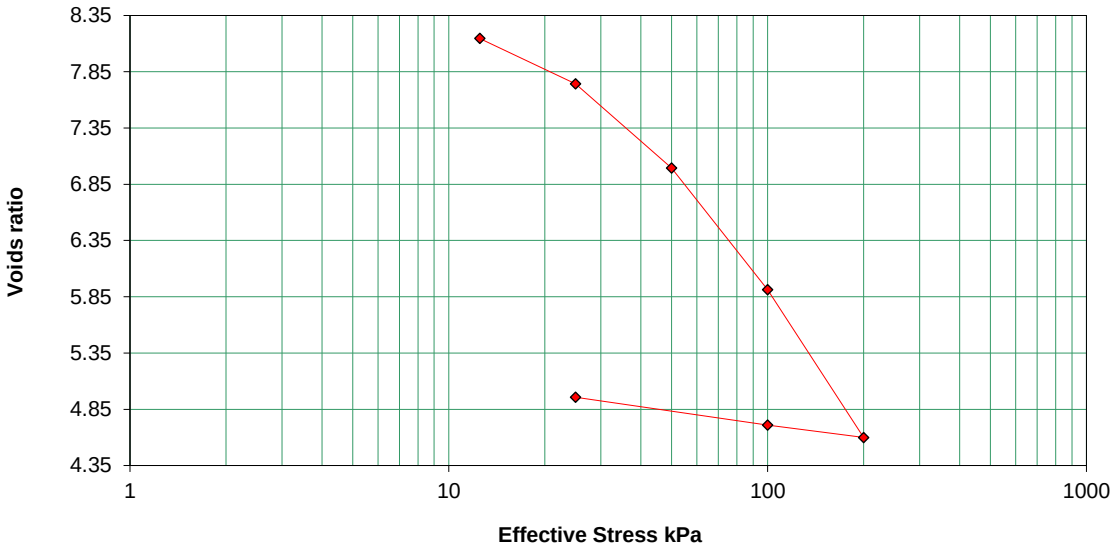
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown black slightly fiberous PEAT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		38.55
Bulk Density (mg/m3)		0.982
Particle Density	Assumed	1.50

Initial Conditions		Final Conditions	
Moisture content	536.1	321.6	%
Dry Density	0.154	0.252	Mg/m3
Initial Voids Ratio	8.7215	4.9564	
Degree of Saturation	92.21	97.33	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	5.925	8.1455	5.039	2.176	1.185
2	25	10.080	7.7416	3.697	0.957	2.016
3	50	17.780	6.9930	3.746	0.349	3.556
4	100	28.880	5.9140	3.121	0.313	5.776
5	200	42.400	4.5996	2.347	0.212	8.480
6	100	41.275	4.7090	0.192		8.255
7	25	38.730	4.9564	0.554		7.746

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH104
		Sample No.	U3
		Depth m.	1.0-1.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	0.94	0.95
Specimen Length	mm	200.00	Dry Density	Mg/m3	0.15	0.15
Specimen Diameter	mm	101.50	Moisture	%	518.24	523.06
Area	mm2	8091.37	Saturation	%	87.66	89.20
Volume	cc	1618.27	Sg(Assumed)	1.50		

Saturation Stage

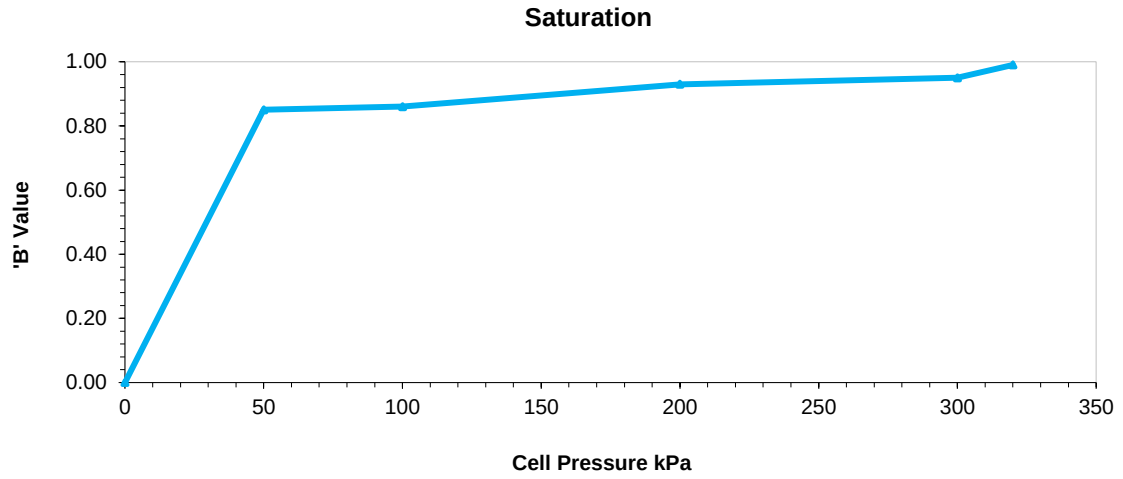
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.85
2	100	0.86
3	200	0.93
4	300	0.95
5	320	0.99

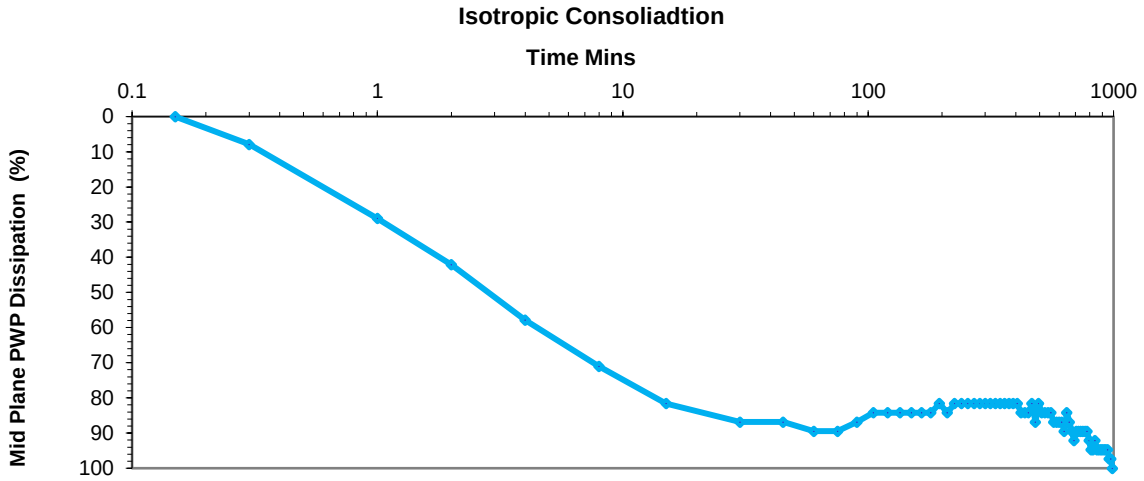
Isotropic Consolidation Stage

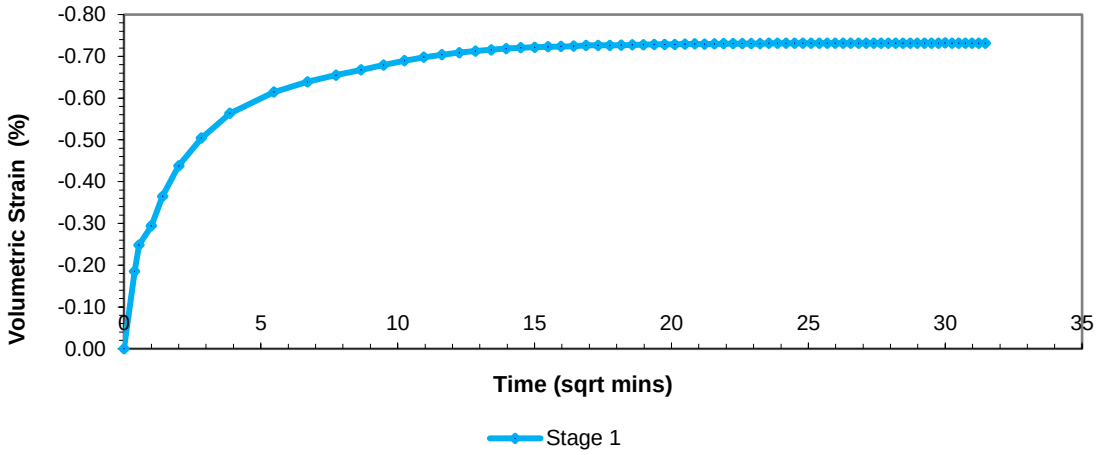
		Stage 1
Cell Pressure	kPa	322
Pore Pressure	kPa	292.5
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		5.3
Coef. Of Consolidation Cv	m2/year	39.698
Coef. Of Compressibility Mv	m2/MN	0.976
Permeability k	m/sec	1.20E-08

	Stage 1
Deviator Stress (kPa)	33.1
External Axial Strain (%)	12.08
Shear Stress (kPa)	16.5
Peak Stress Ratio	6.25
Pore Water Pressure (kPa)	15.7
Radial Effective Stress (kPa)	6.3
Axial Effective Stress (kPa)	39.4
Effective angle of friction (Degrees)	46.4
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown/black slightly fiberous PEAT.**
	Plastic Failure

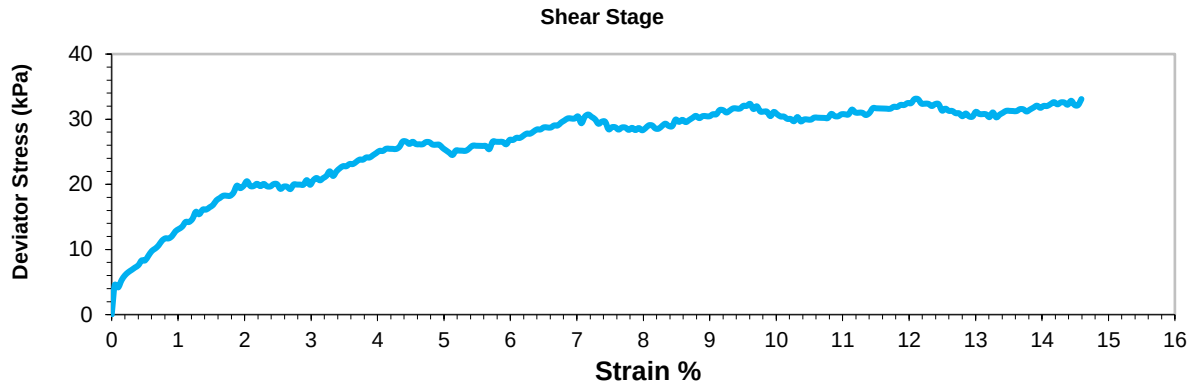
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH104
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

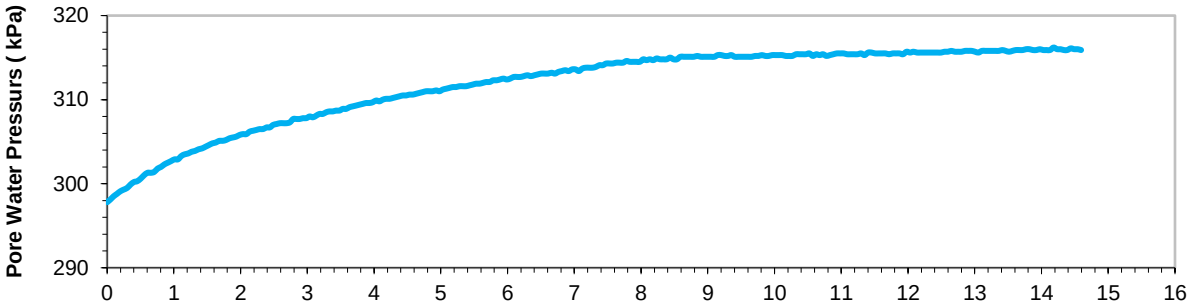


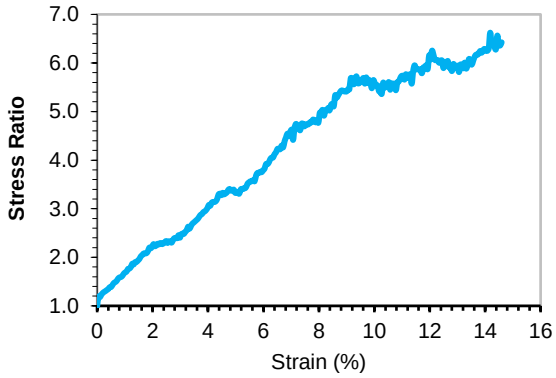


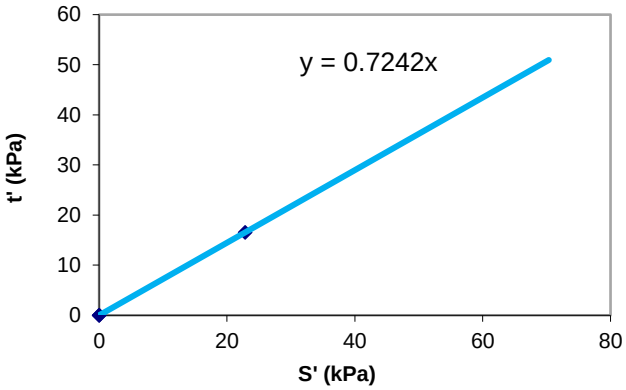


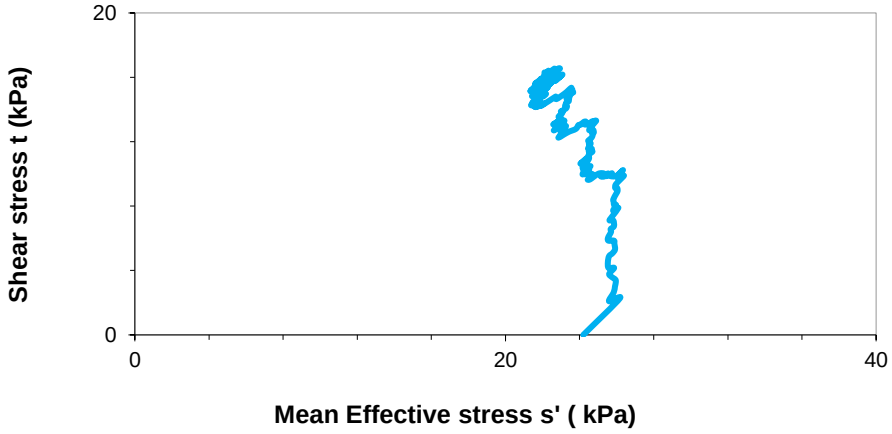
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH104
	Project: Derrygreenagh Power	Sample No. U3
		Depth. 1.00-1.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH104
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown/black slightly fiberous PEAT.**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH104
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Grey/brown orange slightly sandy slightly gravelly CLAY/ SILT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		84.92
Bulk density (Mg/m3)		2.16
Particle density	(Assumed)	2.70

Initial conditions

Settlement Channel	1110
Moisture content (%)	18.27
Dry density (Mg/m3)	1.83
Initial Voids Ratio	0.4769
Deg of Saturation (%)	103.5
Swelling pressure (kPa)	n/a

Final conditions

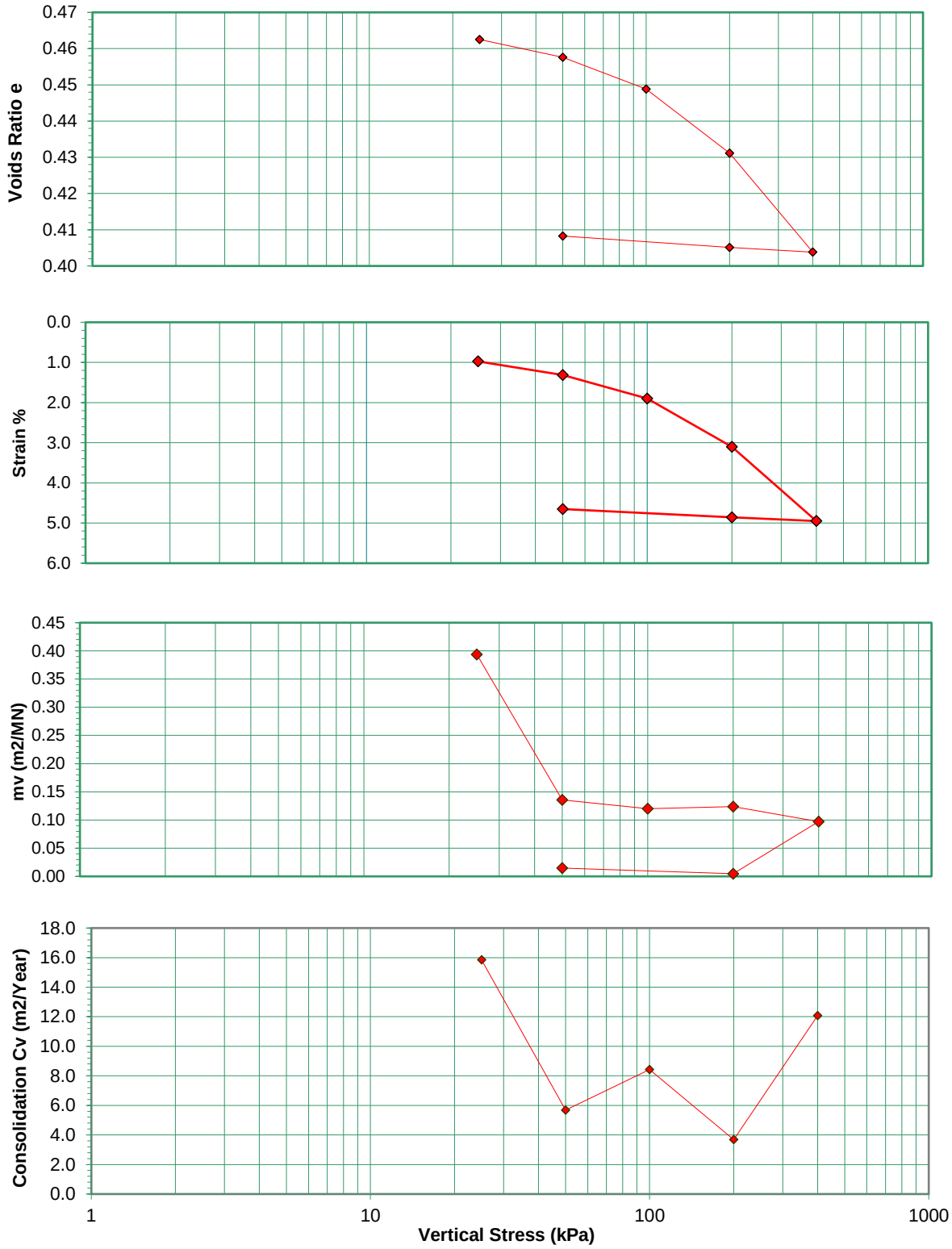
Moisture Content (%)	15.0
Dry Density (Mg/m3)	1.92
Final voids ratio	0.4082
Final degree of saturation (%)	99.1
Final settlement	0.93

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH105
		Sample No.	U9
		Depth m.	3.0-3.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH105 U9 3.0-3.45m

Oedometer Test

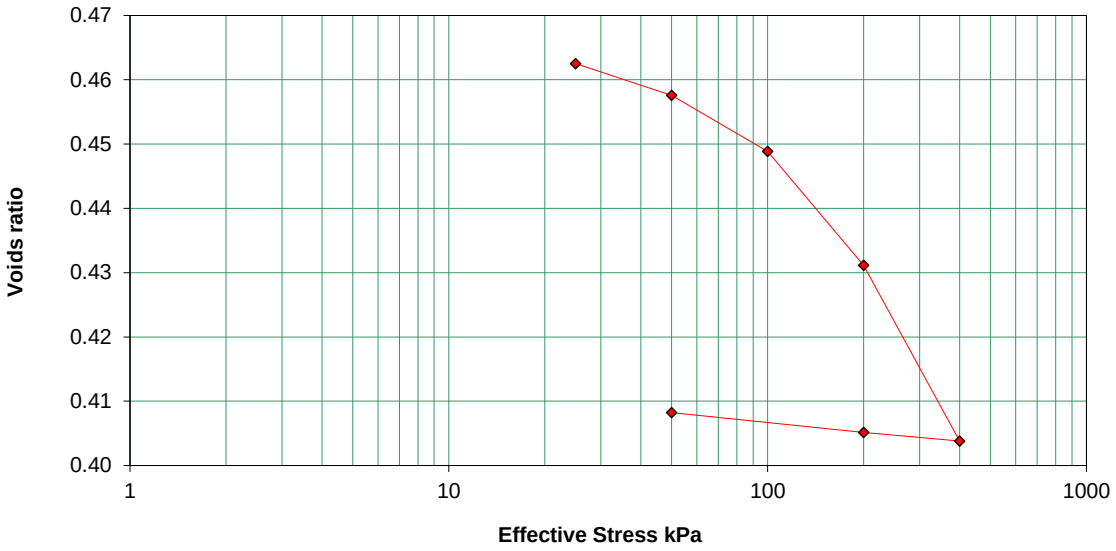
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Grey/brown orange slightly sandy slightly gravelly CLAY/ SILT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		84.92
Bulk Density (mg/m3)		2.162
Particle Density	Assumed	2.70

Initial Conditions		Final Conditions	
Moisture content	18.3	15.0	%
Dry Density	1.828	1.917	Mg/m3
Initial Voids Ratio	0.4769	0.4082	
Degree of Saturation	103.45	99.11	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	25	0.975	0.4625	0.394	15.844	0.195
2	50	1.310	0.4576	0.136	5.674	0.262
3	100	1.900	0.4489	0.120	8.426	0.380
4	200	3.100	0.4311	0.124	3.680	0.620
5	400	4.950	0.4038	0.097	12.081	0.990
6	200	4.860	0.4051	0.005		0.972
7	50	4.650	0.4082	0.015		0.930

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH105
		Sample No.	U9
		Depth m.	3.0-3.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	2.07	2.08
Specimen Length	mm	199.00	Dry Density	Mg/m3	1.75	1.76
Specimen Diameter	mm	100.50	Moisture	%	18.10	18.27
Area	mm2	7932.72	Saturation	%	93.73	95.76
Volume	cc	1578.61	Sg(Assumed)	2.65		

Saturation Stage

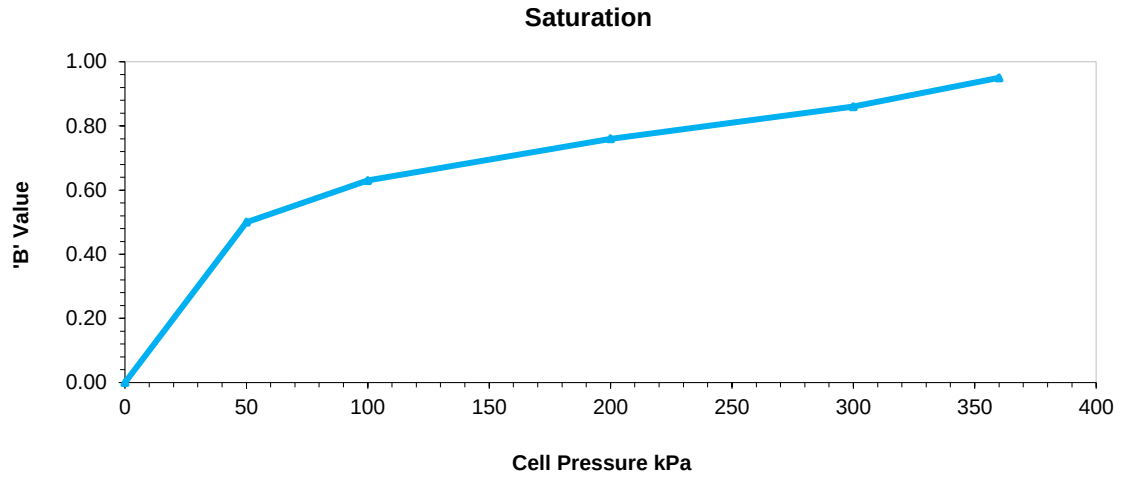
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.50
2	100	0.63
3	200	0.76
4	300	0.86
5	360	0.95

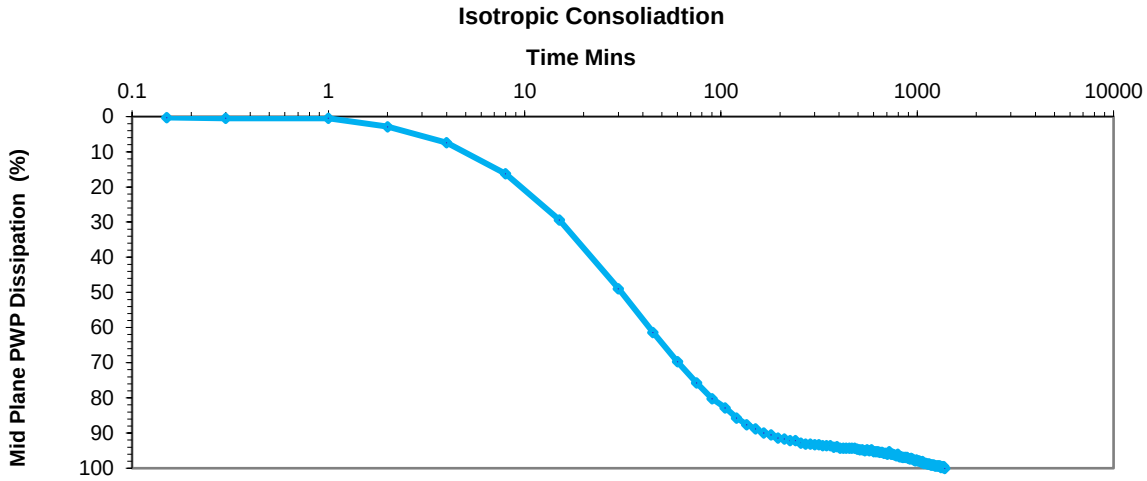
Isotropic Consolidation Stage

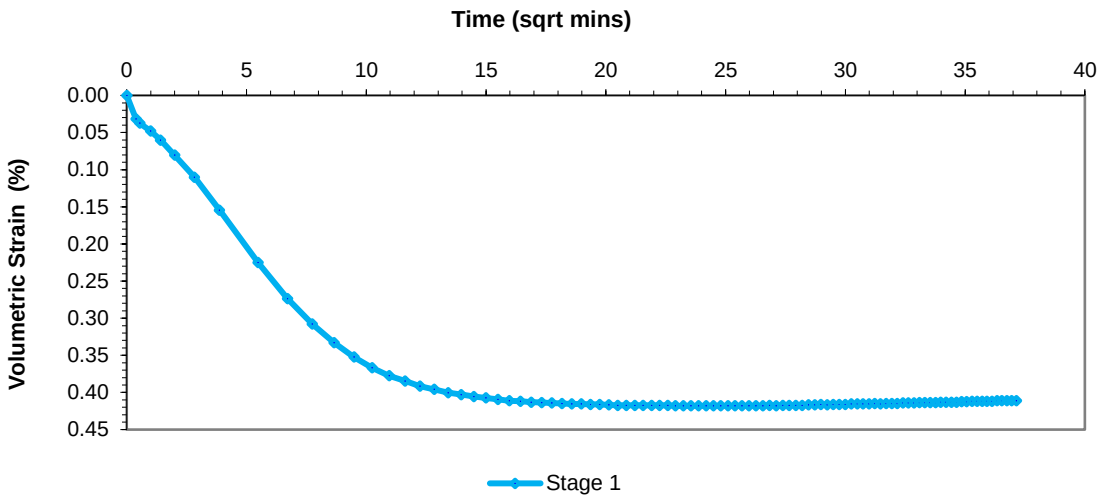
		Stage 1
Cell Pressure	kPa	360
Pore Pressure	kPa	343.8
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		114.5
Coef. Of Consolidation Cv	m2/year	1.834
Coef. Of Compressibility Mv	m2/MN	0.094
Permeability k	m/sec	5.34E-11

	Stage 1
Deviator Stress (kPa)	388.2
External Axial Strain (%)	19.93
Shear Stress (kPa)	194.1
Peak Stress Ratio	4.24
Pore Water Pressure (kPa)	-62.7
Radial Effective Stress (kPa)	122.7
Axial Effective Stress (kPa)	510.9
Effective angle of friction (Degrees)	37.8
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Brown/grey slightly sandy slightly gravellu silty CLAY. Plastic Failure**

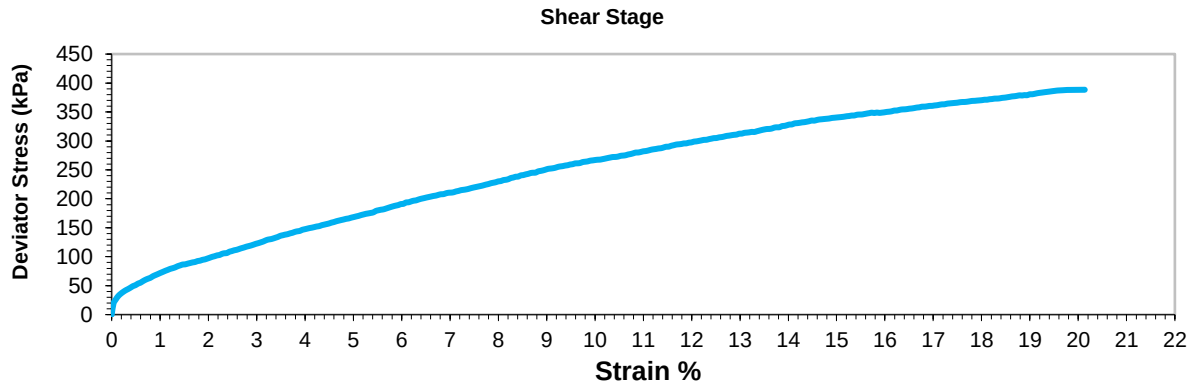
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH105
	Project: Derrygreenagh Power	Sample No.	U9
		Depth.	3.00-3.45m

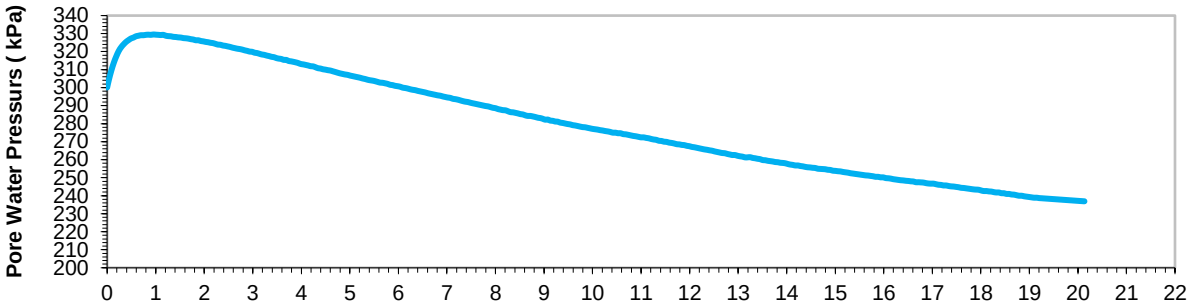


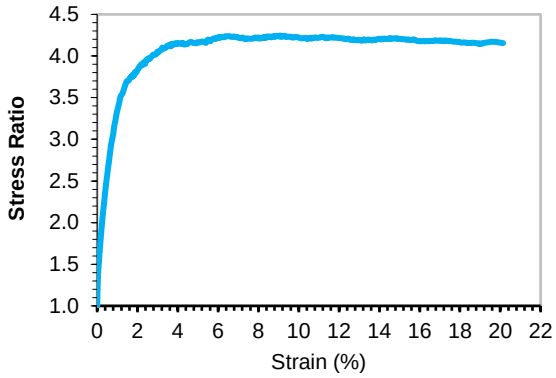


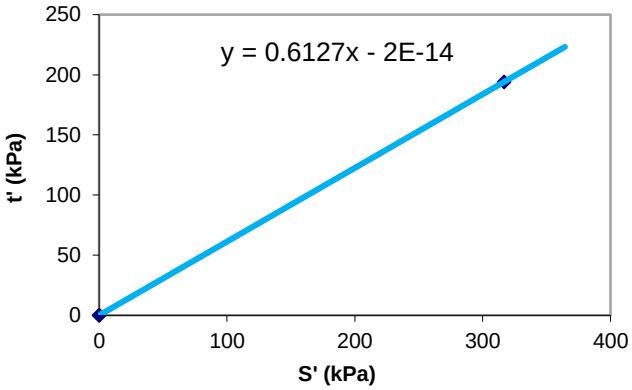


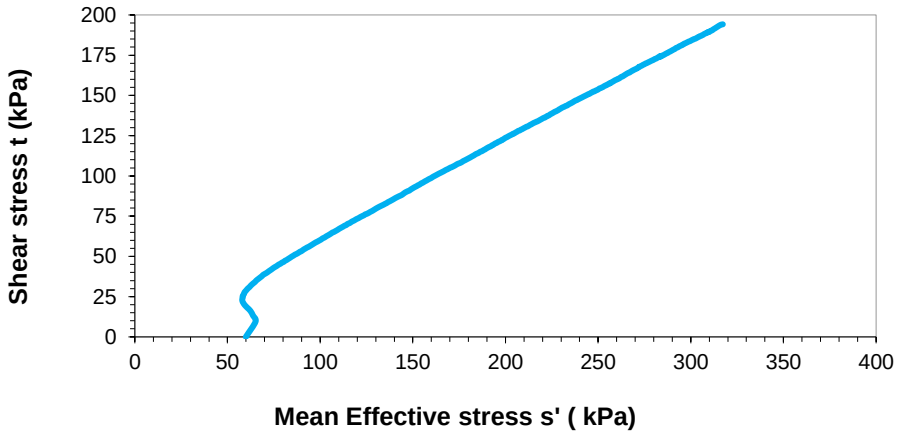
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH105
	Project: Derrygreenagh Power	Sample No. U9
		Depth. 3.00-3.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH105
	Project: Derrygreenagh Power	Sample No.	U9
		Depth.	3.00-3.45m

SPECIMEN AFTER TEST

Soil Description **Brown/grey slightly sandy slightly gravellu silty CLAY.**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH105
	Project: Derrygreenagh Power	Sample No.	U9
		Depth.	3.00-3.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown black slightly fiberous PEAT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		41.61
Bulk density (Mg/m3)		1.06
Particle density	(Assumed)	1.50

Initial conditions

Settlement Channel	SB1
Moisture content (%)	770.50
Dry density (Mg/m3)	0.122
Initial Voids Ratio	11.3248
Deg of Saturation (%)	102.1
Swelling pressure (kPa)	n/a

Final conditions

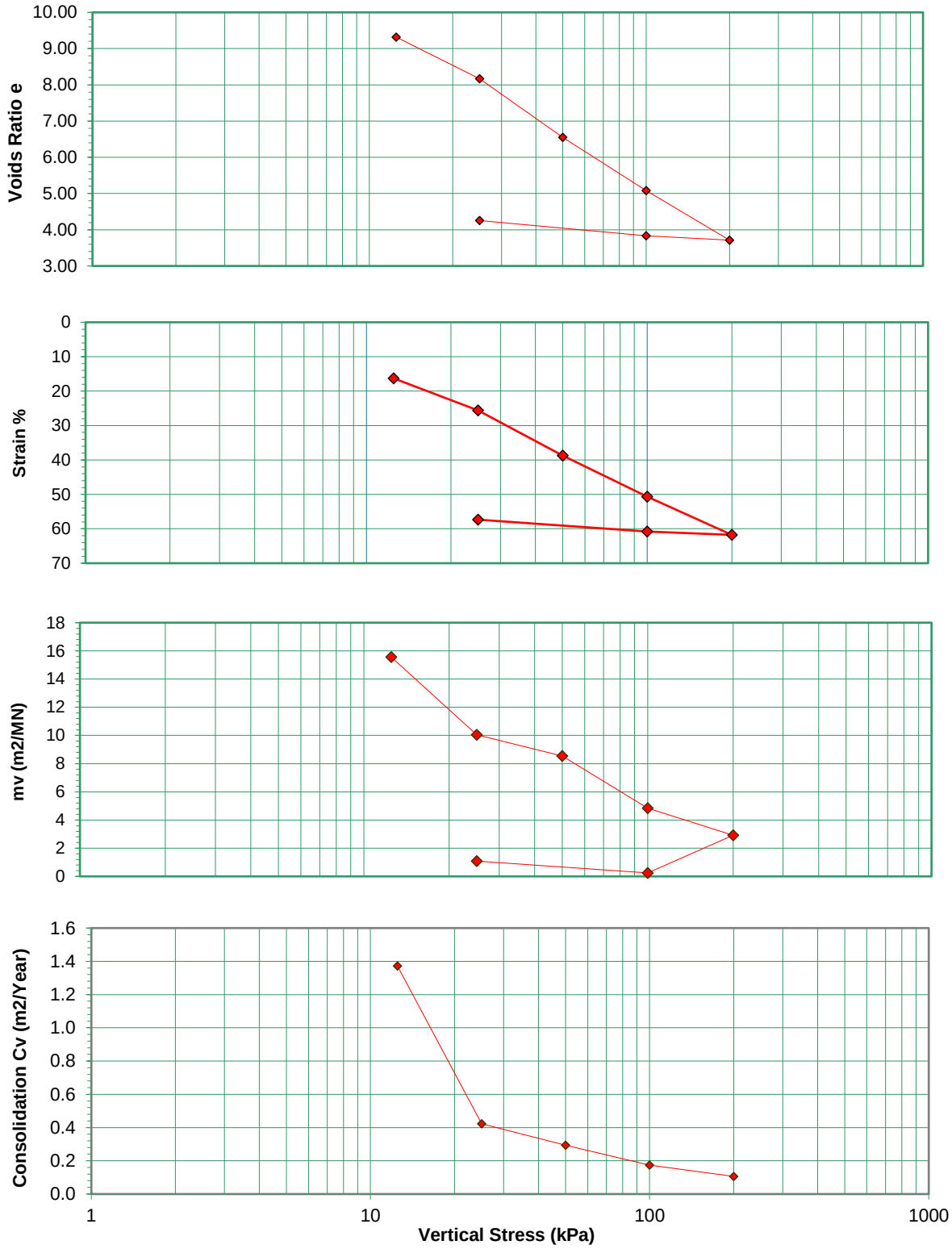
Moisture Content (%)	284.9
Dry Density (Mg/m3)	0.29
Final voids ratio	4.2565
Final degree of saturation (%)	100.4
Final settlement	11.47

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH109 U6 2.0-2.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH109 U6 2.0-2.45m

Oedometer Test

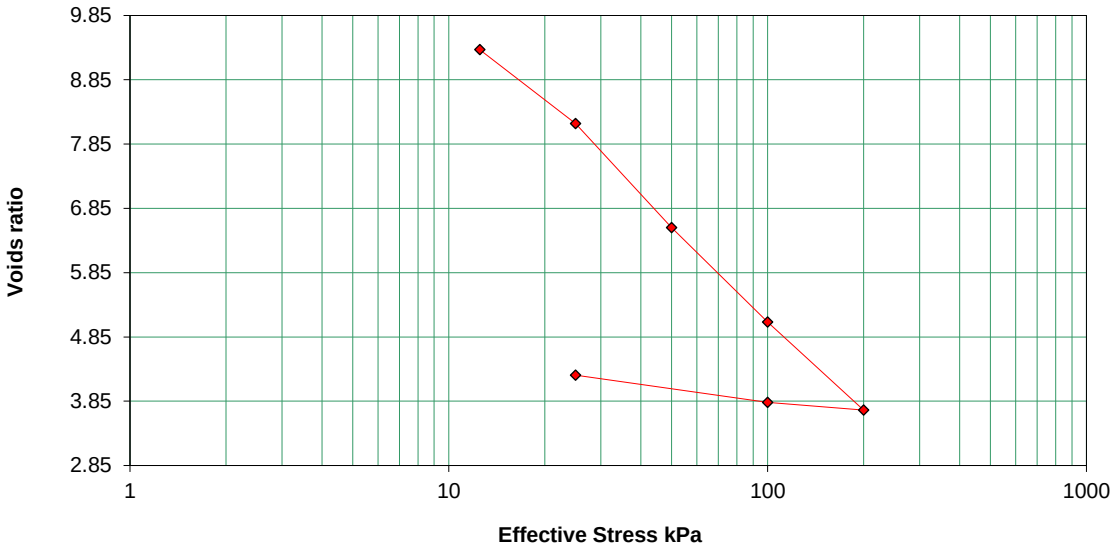
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown black slightly fiberous PEAT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		41.61
Bulk Density (mg/m3)		1.059
Particle Density	Assumed	1.50

Initial Conditions		**Final Conditions**	
Moisture content	770.5	284.9	%
Dry Density	0.122	0.285	Mg/m3
Initial Voids Ratio	11.3248	4.2565	
Degree of Saturation	102.06	100.41	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	16.280	9.3183	15.557	1.371	3.256
2	25	25.620	8.1672	10.046	0.423	5.124
3	50	38.720	6.5526	8.551	0.293	7.744
4	100	50.650	5.0823	4.835	0.175	10.130
5	200	61.765	3.7124	2.907	0.106	12.353
6	100	60.805	3.8307	0.245		12.161
7	25	57.350	4.2565	1.080		11.470

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH109
		Sample No.	U6
		Depth m.	2.0-2.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	0.99	1.00
Specimen Length	mm	202.50	Dry Density	Mg/m3	0.12	0.15
Specimen Diameter	mm	102.00	Moisture	%	702.57	570.46
Area	mm2	8171.28	Saturation	%	94.32	94.58
Volume	cc	1654.68	Sg(Assumed)	1.50		

Saturation Stage

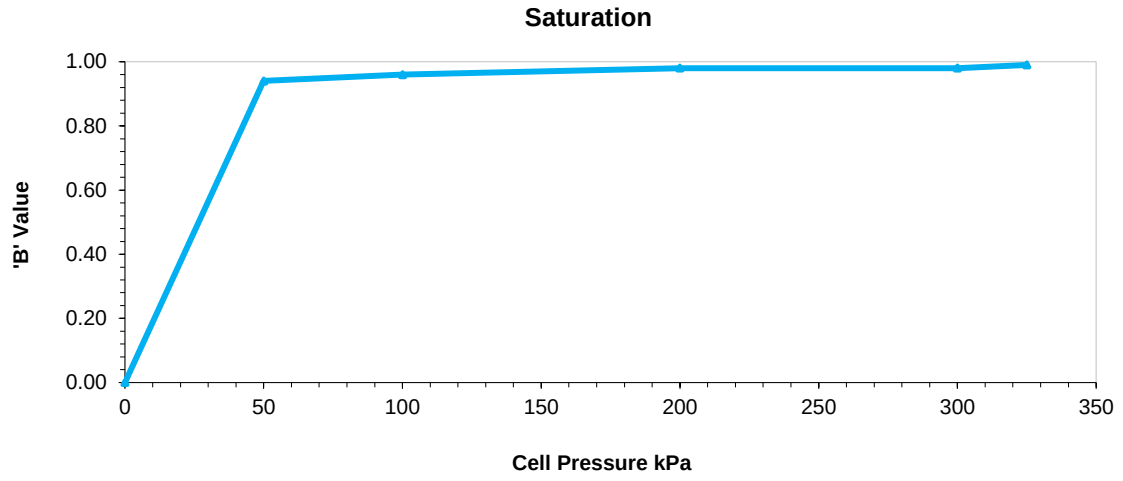
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.94
2	100	0.96
3	200	0.98
4	300	0.98
5	325	0.99

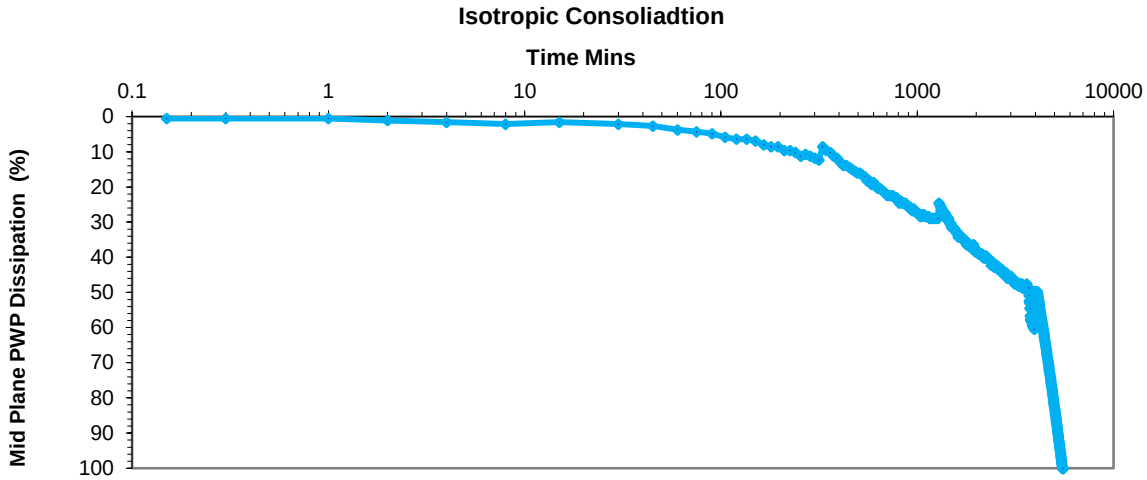
Isotropic Consolidation Stage

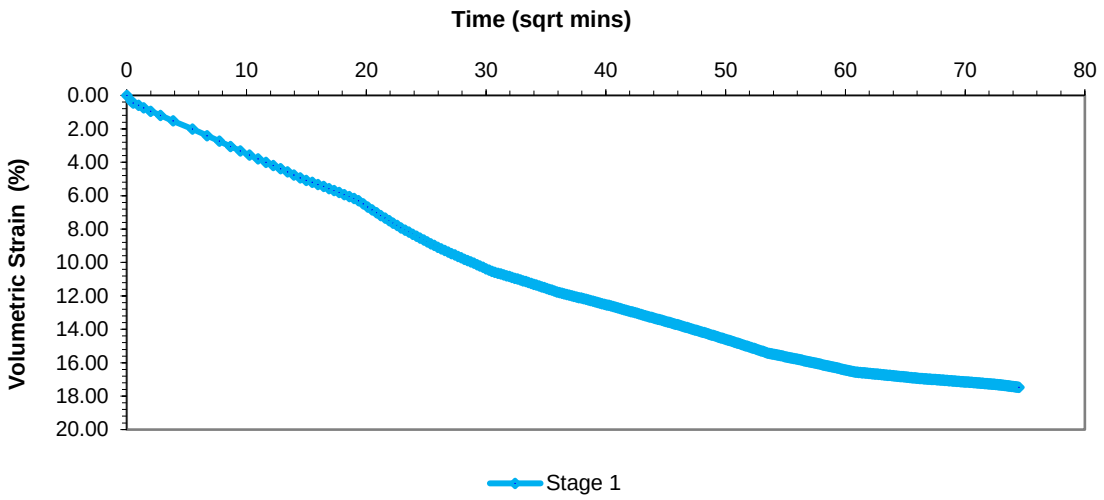
		Stage 1
Cell Pressure	kPa	325
Pore Pressure	kPa	318.8
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		2550.3
Coef. Of Consolidation Cv	m2/year	0.082
Coef. Of Compressibility Mv	m2/MN	9.291
Permeability k	m/sec	2.37E-10

	Stage 1
Deviator Stress (kPa)	20.3
External Axial Strain (%)	14.29
Shear Stress (kPa)	10.2
Peak Stress Ratio	4.18
Pore Water Pressure (kPa)	18.6
Radial Effective Stress (kPa)	6.4
Axial Effective Stress (kPa)	26.7
Effective angle of friction (Degrees)	37.9
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown /black slightly fiberous PEAT**
	Plastic Failure

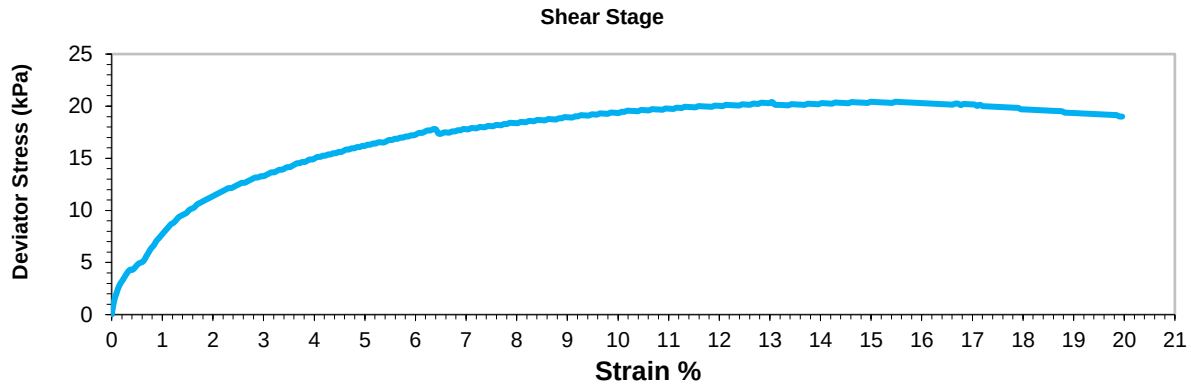
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH109
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

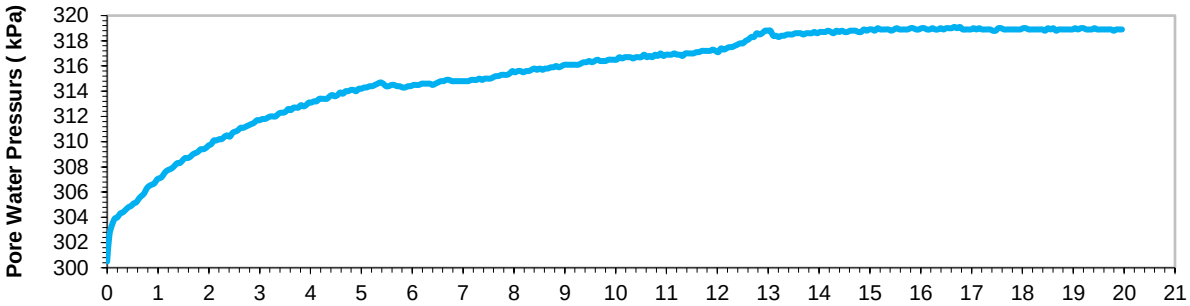


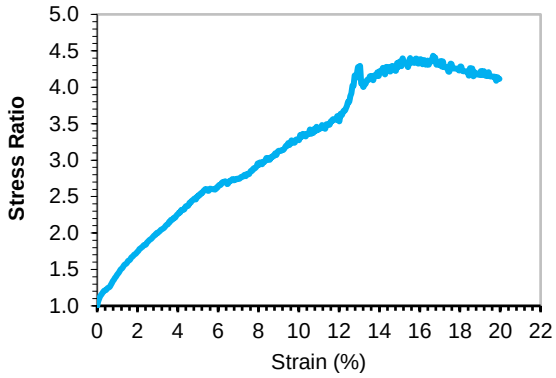


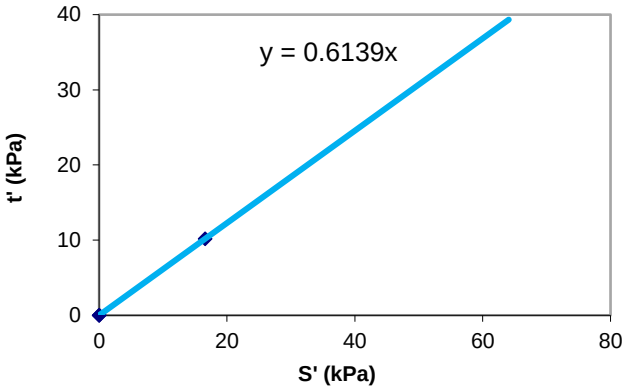


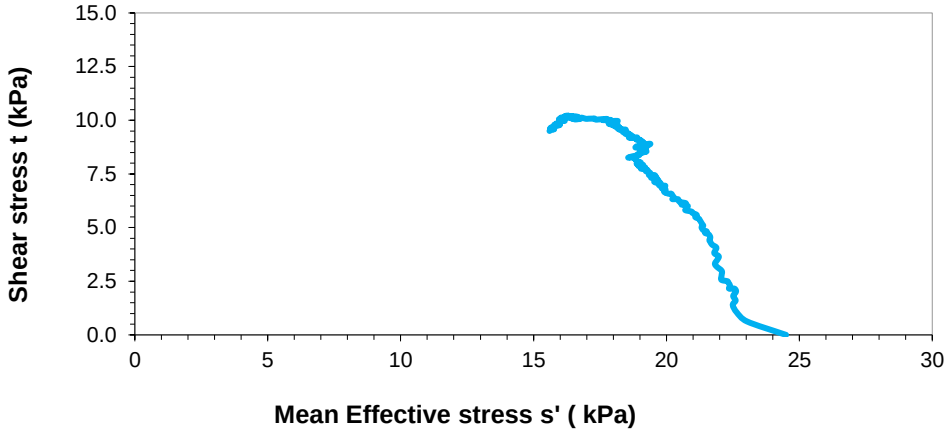
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH109
	Project: Derrygreenagh Power	Sample No. U6
		Depth. 2.00-2.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH109
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown /black slightly fiberous PEAT**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH109
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Light brown slightly sandy gravelly clayey SILT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		87.73
Bulk density (Mg/m3)		2.23
Particle density	(Assumed)	2.70

Initial conditions

Settlement Channel	1108
Moisture content (%)	10.35
Dry density (Mg/m3)	2.02
Initial Voids Ratio	0.3339
Deg of Saturation (%)	83.7
Swelling pressure (kPa)	n/a

Final conditions

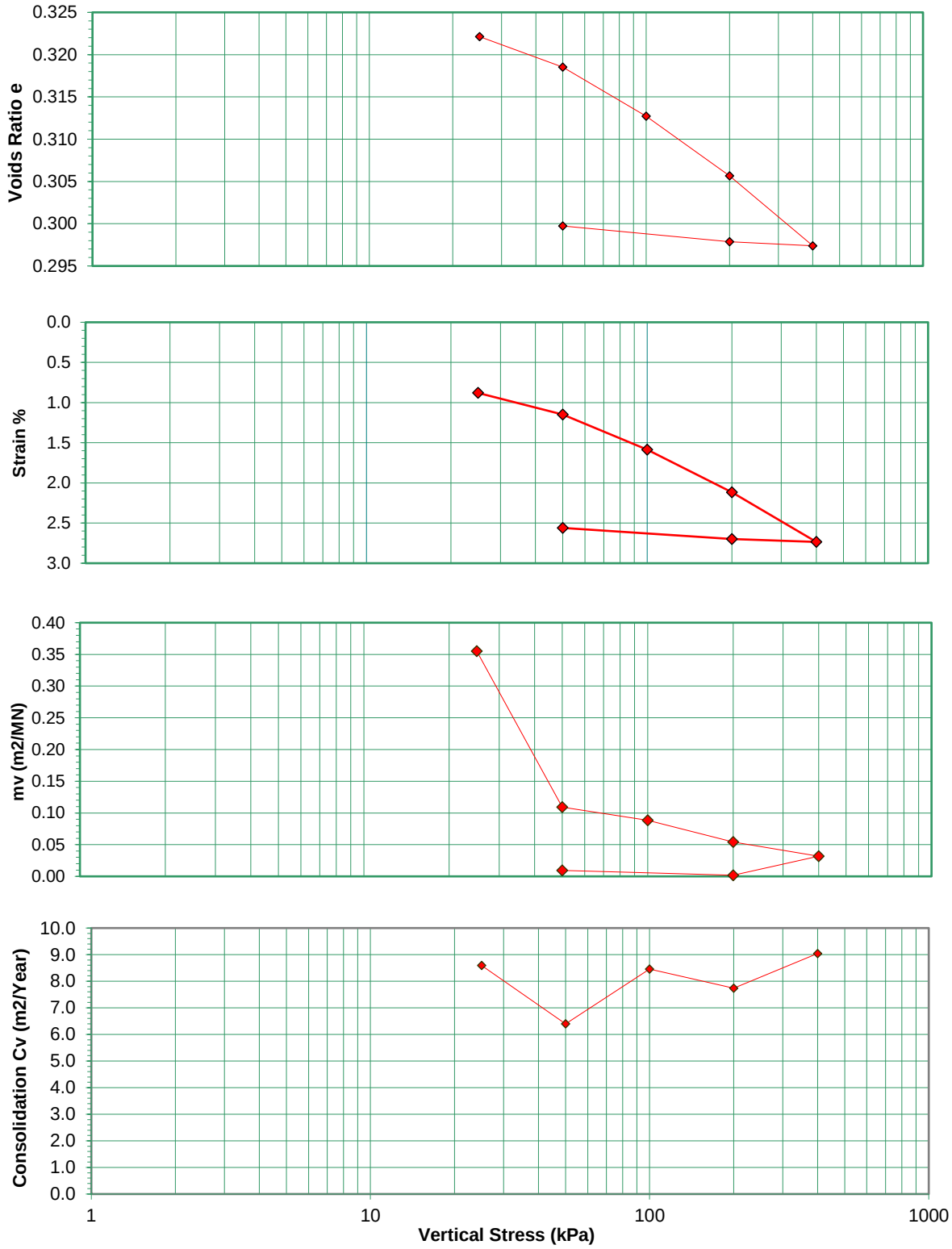
Moisture Content (%)	10.7
Dry Density (Mg/m3)	2.08
Final voids ratio	0.2997
Final degree of saturation (%)	96.3
Final settlement	0.512

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH113 U6 2.00-2.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BH113 U6 2.00-2.45m

Oedometer Test

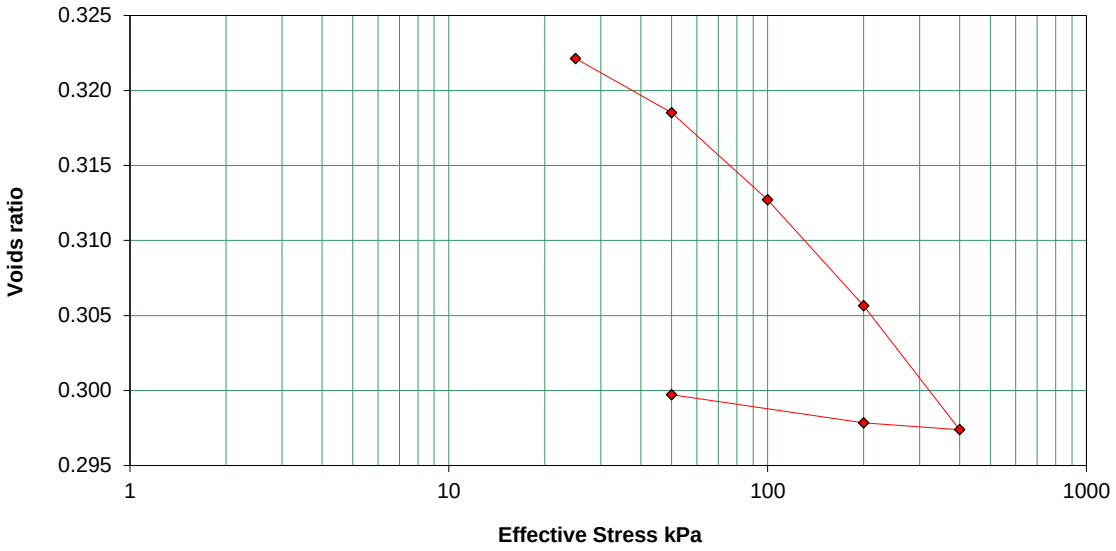
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Light brown slightly sandy gravelly clayey SILT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		87.73
Bulk Density (mg/m3)		2.234
Particle Density	Assumed	2.70

Initial Conditions		Final Conditions	
Moisture content	10.4	10.7	%
Dry Density	2.024	2.077	Mg/m3
Initial Voids Ratio	0.3339	0.2997	
Degree of Saturation	83.72	96.32	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	25	0.880	0.3221	0.355	N/A	0.176
2	50	1.150	0.3185	0.109	6.397	0.230
3	100	1.585	0.3127	0.088	8.462	0.317
4	200	2.115	0.3057	0.054	7.738	0.423
5	400	2.735	0.2974	0.032	9.044	0.547
6	200	2.700	0.2979	0.002		0.540
7	50	2.560	0.2997	0.010		0.512

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BH113
		Sample No.	U6
		Depth m.	2.00-2.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	2.26	2.27
Specimen Length	mm	201.00	Dry Density	Mg/m3	2.04	2.05
Specimen Diameter	mm	100.50	Moisture	%	10.67	10.81
Area	mm2	7932.72	Saturation	%	94.86	97.76
Volume	cc	1594.48	Sg(Assumed)	2.65		

Saturation Stage

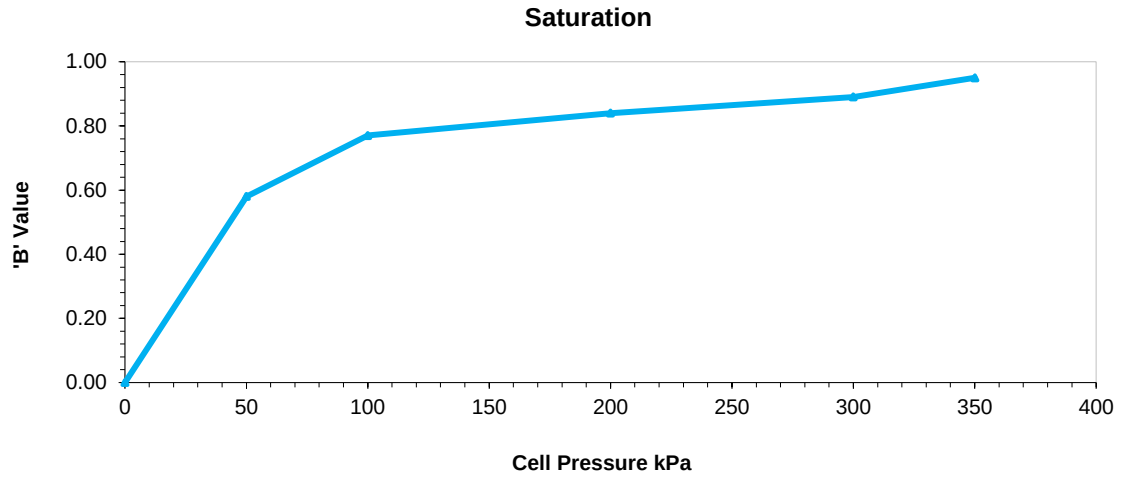
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.58
2	100	0.77
3	200	0.84
4	300	0.89
5	350	0.95

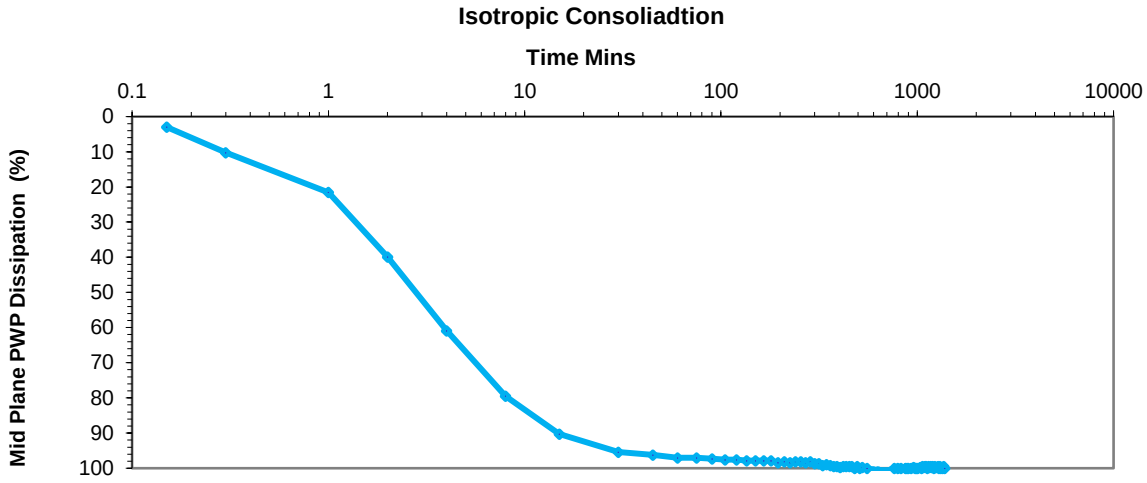
Isotropic Consolidation Stage

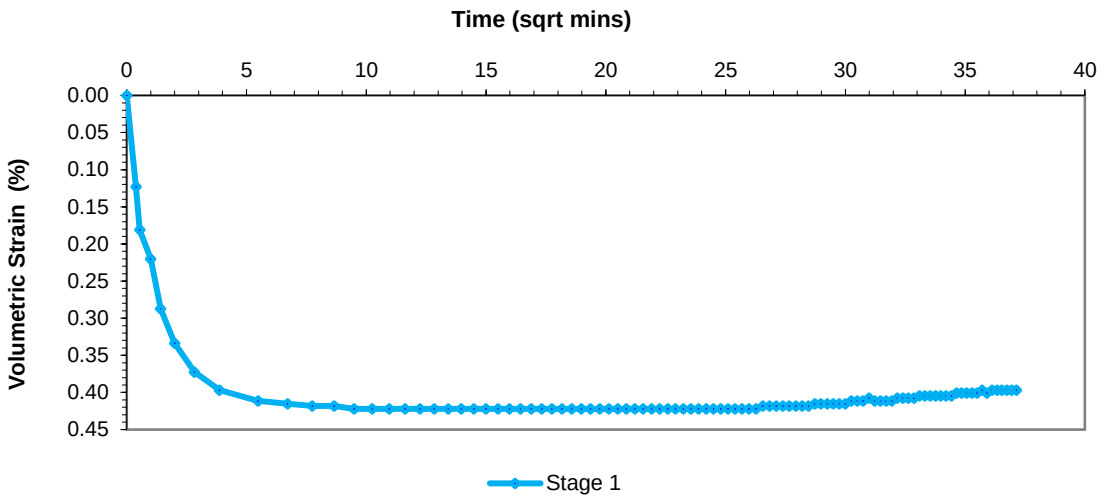
		Stage 1
Cell Pressure	kPa	350
Pore Pressure	kPa	333.6
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		7.8
Coef. Of Consolidation Cv	m2/year	26.786
Coef. Of Compressibility Mv	m2/MN	0.118
Permeability k	m/sec	9.81E-10

	Stage 1
Deviator Stress (kPa)	325.8
External Axial Strain (%)	20.08
Shear Stress (kPa)	162.9
Peak Stress Ratio	4.44
Pore Water Pressure (kPa)	-44.7
Radial Effective Stress (kPa)	94.7
Axial Effective Stress (kPa)	420.5
Effective angle of friction (Degrees)	39.2
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Light brown slightly sandy gravelly clayey SILT. Plastic Failure**

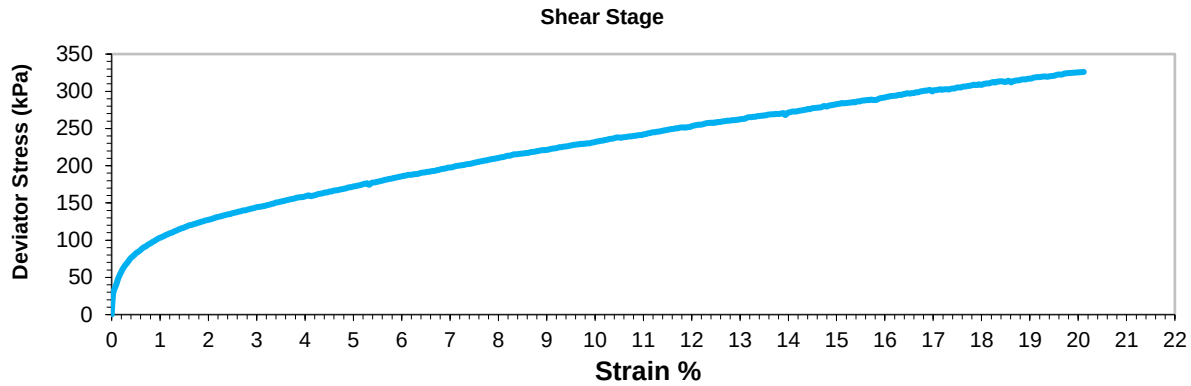
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH113
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

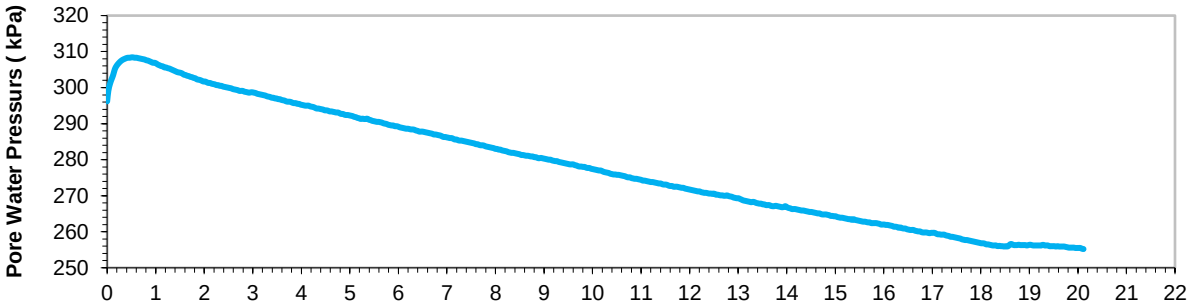


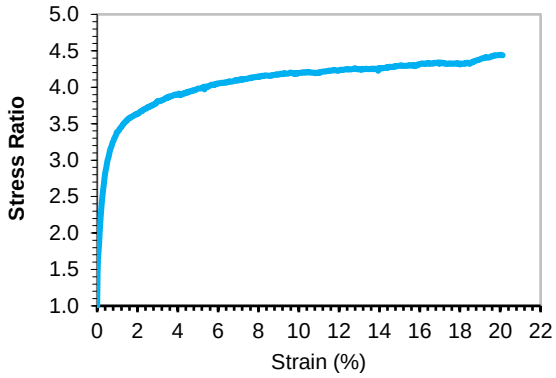


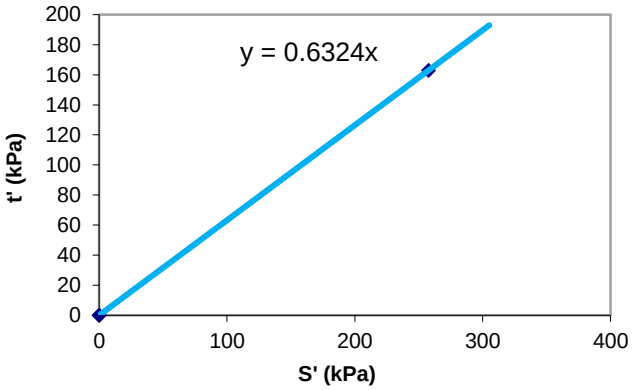


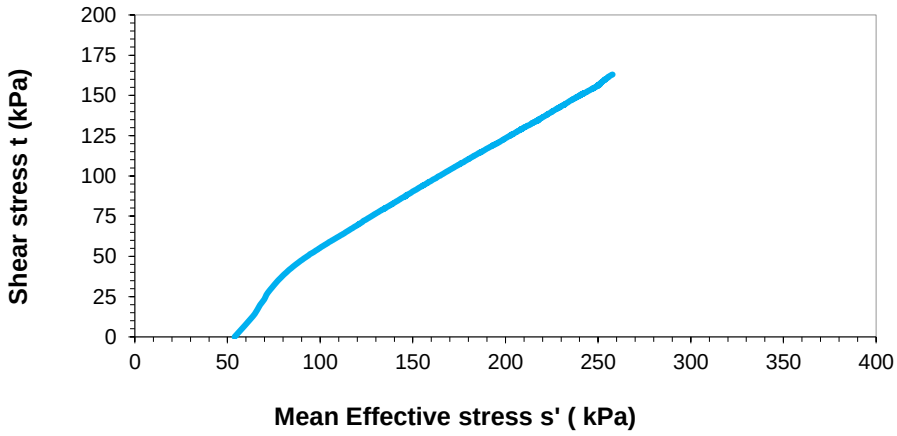
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH113
	Project: Derrygreenagh Power	Sample No. U6
		Depth. 2.00-2.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH113
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

SPECIMEN AFTER TEST

Soil Description **Light brown slightly sandy gravelly clayey SILT.**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH113
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.05	1.06
Specimen Length	mm	204.50	Dry Density	Mg/m3	0.14	0.16
Specimen Diameter	mm	102.50	Moisture	%	630.44	558.71
Area	mm2	8251.59	Saturation	%	100.55	100.62
Volume	cc	1687.45	Sg(Assumed)	1.50		

Saturation Stage

Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.88
2	100	0.98
3	200	0.98
4	300	0.98
5	315	0.98

Isotropic Consolidation Stage

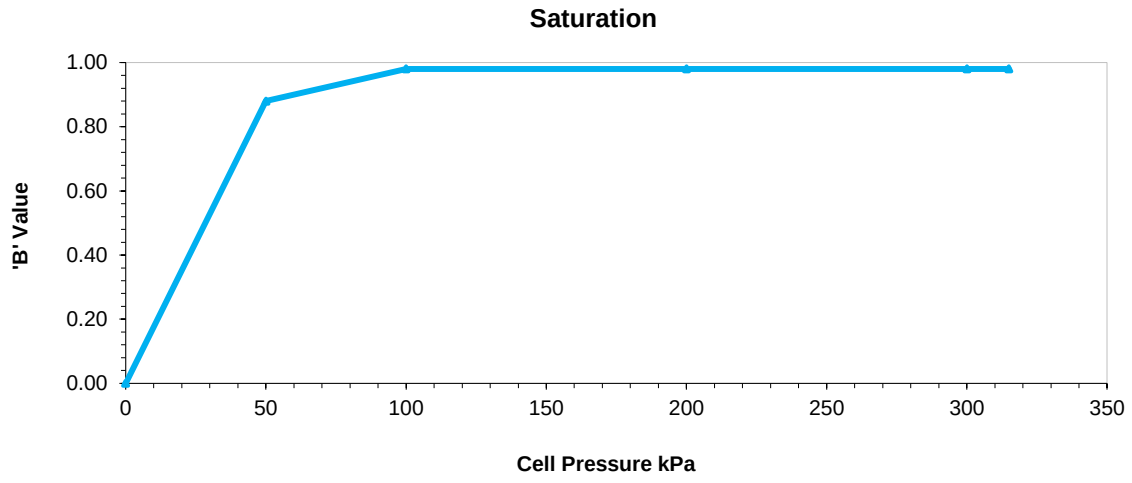
		Stage 1
Cell Pressure	kPa	315
Pore Pressure	kPa	309.9
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		1075.8
Coef. Of Consolidation Cv	m2/year	0.195
Coef. Of Compressibility Mv	m2/MN	10.444
Permeability k	m/sec	6.32E-10

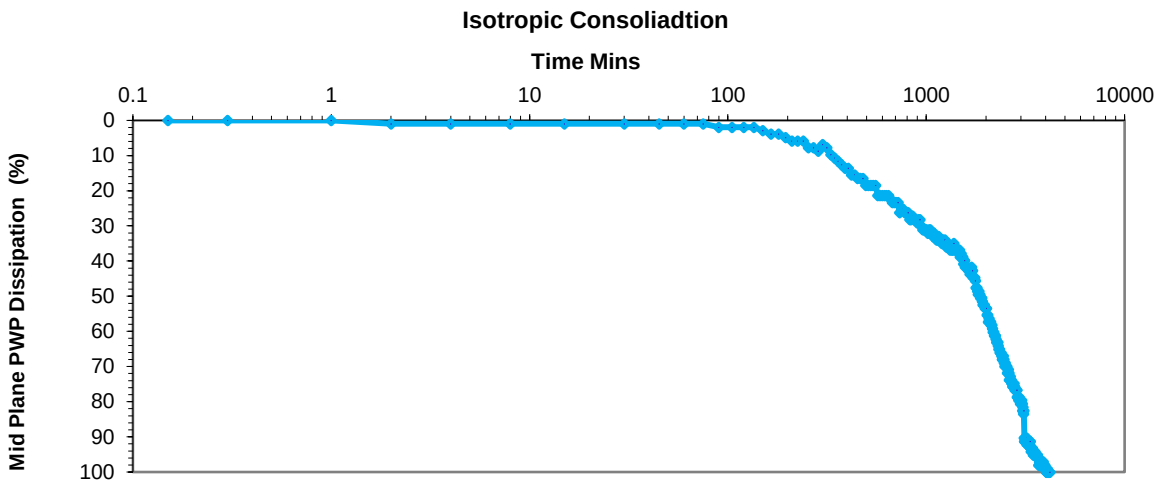
	Stage 1
Deviator Stress (kPa)	39.2
External Axial Strain (%)	22.64
Shear Stress (kPa)	19.6
Peak Stress Ratio	3.63
Pore Water Pressure (kPa)	0.1
Radial Effective Stress (kPa)	14.9
Axial Effective Stress (kPa)	54.1
Effective angle of friction (Degrees)	34.6°
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0040

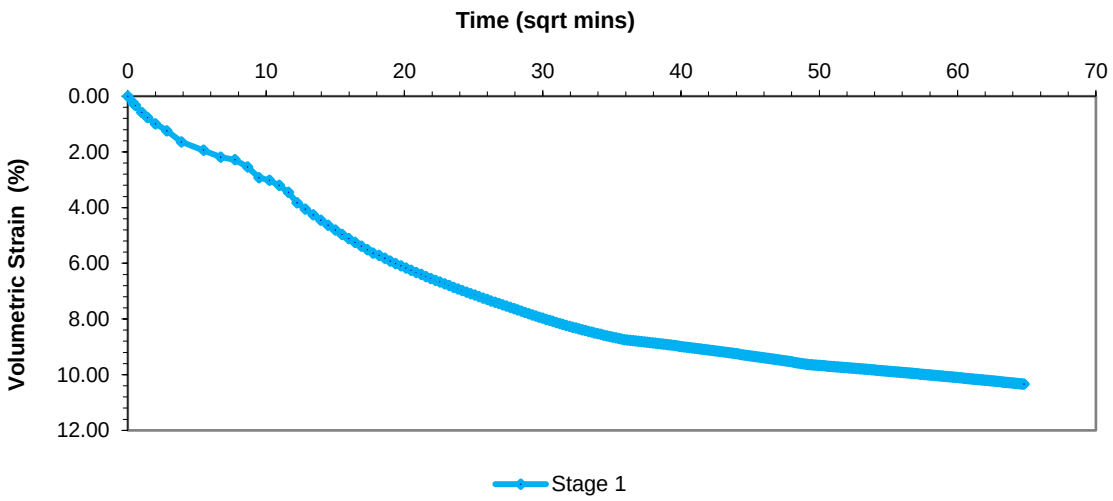
Sample Description **Dark brown/black slightly firberous PEAT, with some completely decompoded wood fragments**

Plastic Failure

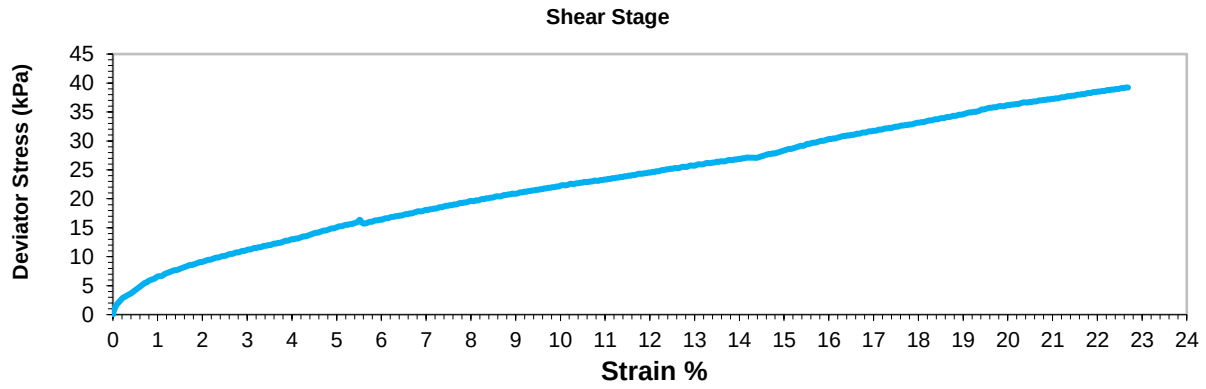
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH116
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

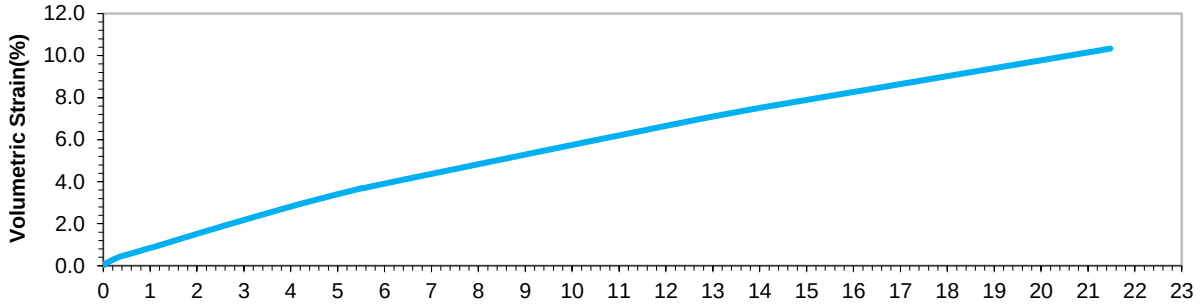


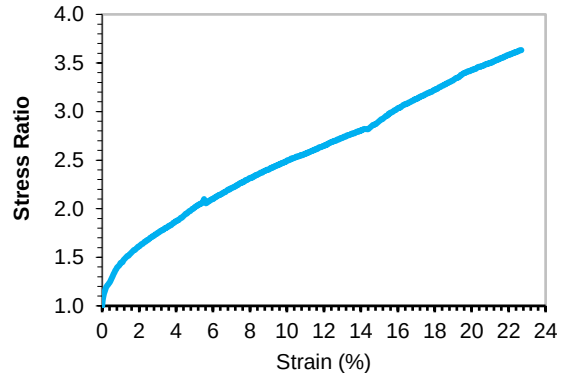


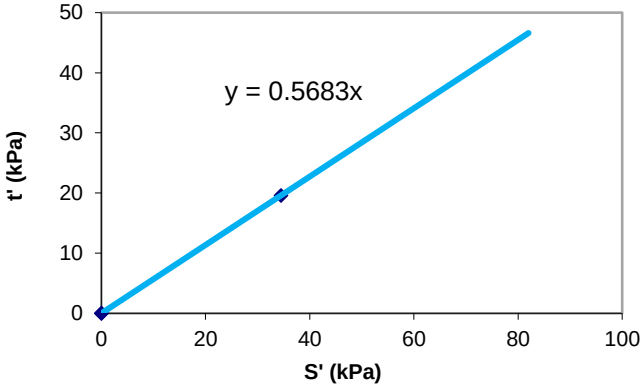


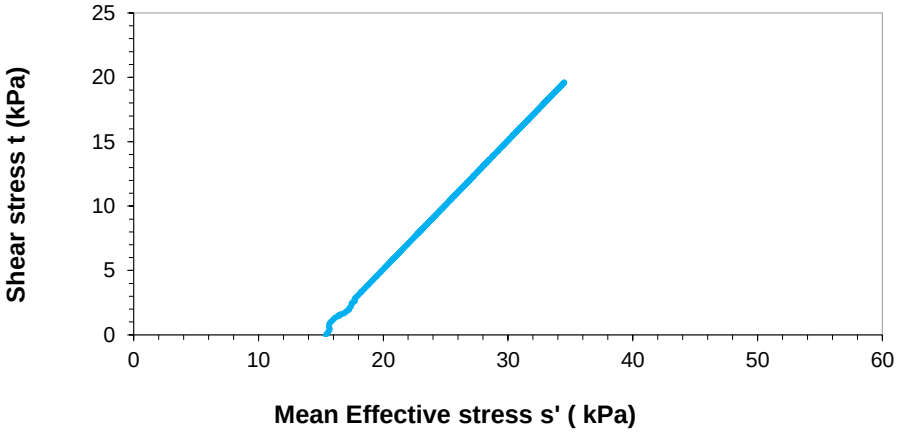
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH116
	Project: Derrygreenagh Power	Sample No. U3
		Depth. 1.00-1.45m











NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH116
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown/black slightly firberous PEAT, with some completely decompoded wood fragments**

NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH116
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.97	2.00
Specimen Length	mm	199.00	Dry Density	Mg/m3	1.56	1.62
Specimen Diameter	mm	102.50	Moisture	%	26.01	23.43
Area	mm2	8251.59	Saturation	%	98.57	97.93
Volume	cc	1642.07	Sg(Assumed)	2.65		

Saturation Stage

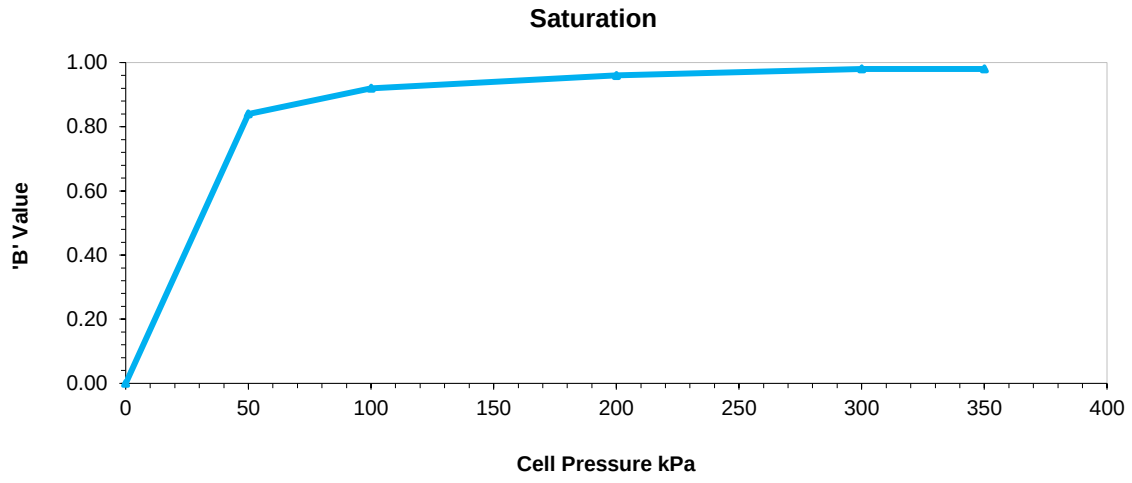
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.84
2	100	0.92
3	200	0.96
4	300	0.98
5	350	0.98

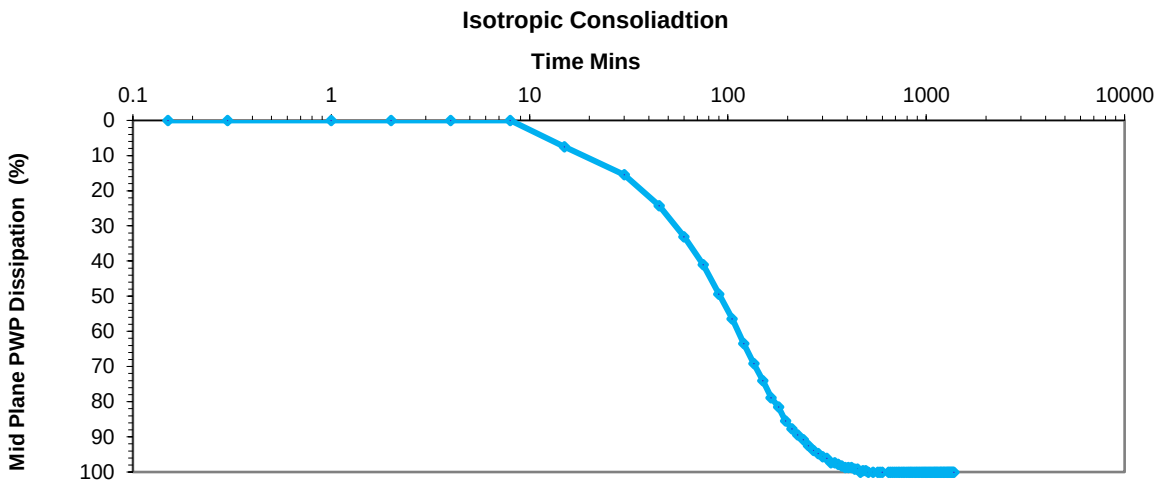
Isotropic Consolidation Stage

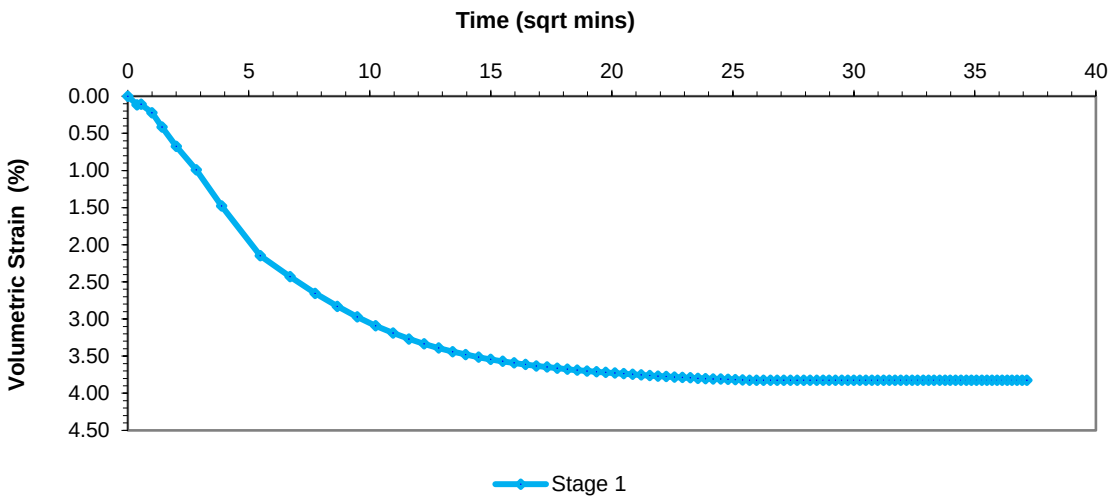
		Stage 1
Cell Pressure	kPa	325
Pore Pressure	kPa	317.7
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		96.0
Coef. Of Consolidation Cv	m2/year	2.187
Coef. Of Compressibility Mv	m2/MN	2.161
Permeability k	m/sec	1.47E-09

	Stage 1
Deviator Stress (kPa)	86.7
External Axial Strain (%)	11.47
Shear Stress (kPa)	43.4
Peak Stress Ratio	4.03
Pore Water Pressure (kPa)	-3.6
Radial Effective Stress (kPa)	28.6
Axial Effective Stress (kPa)	115.3
Effective angle of friction (Degrees)	37.2
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0040
Sample Description	**Dark brown/grey and black slightly organic slightly sandy silty CLAY. Plastic Failure**

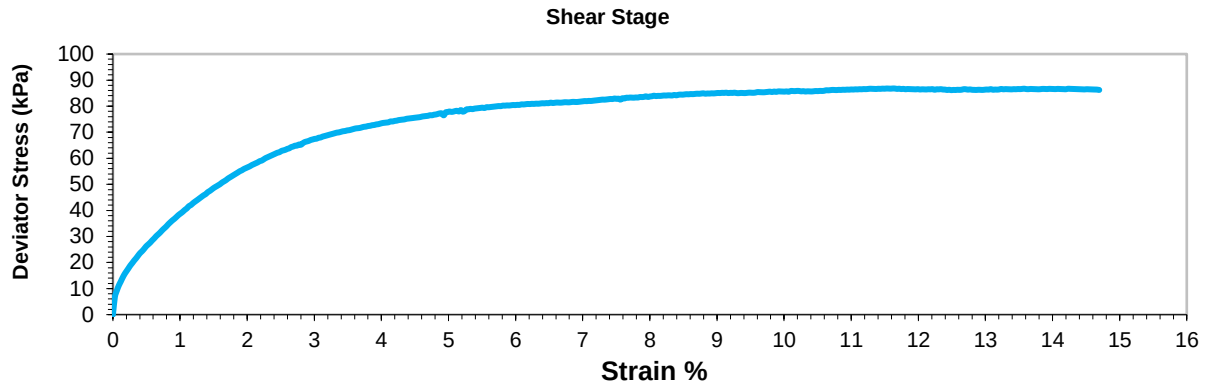
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH117
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

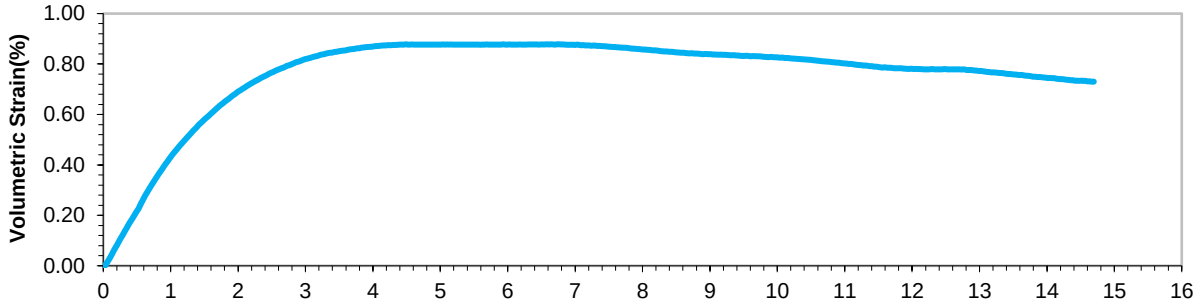


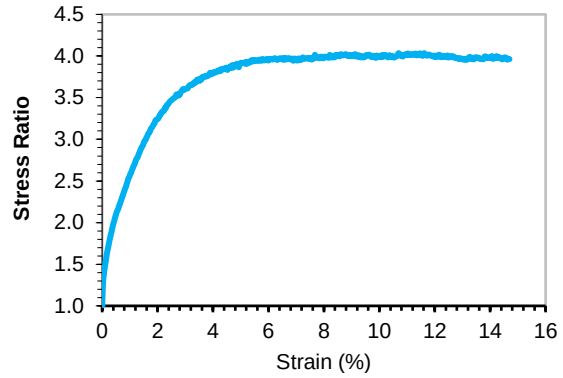


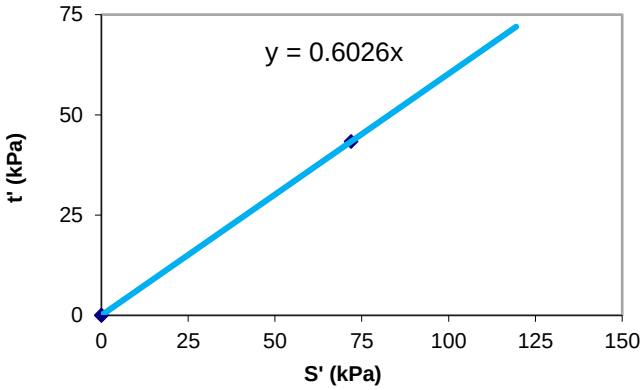


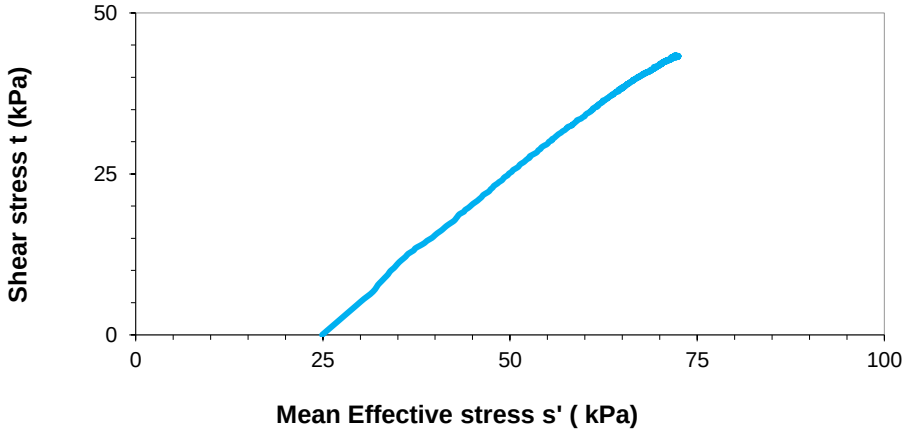
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BH117
	Project: Derrygreenagh Power	Sample No. U3
		Depth. 1.00-1.45m











NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No. BH117
	Project:	Sample No. U3
	Derrygreenagh Power	Depth. 1.00-1.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown/grey and black slightly organic slightly sandy silty CLAY.**

NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BH117
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown black slightly fiberous PEAT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		41.22
Bulk density (Mg/m3)		1.05
Particle density	(Assumed)	1.50

Initial conditions

Settlement Channel	1107
Moisture content (%)	685.14
Dry density (Mg/m3)	0.134
Initial Voids Ratio	10.2214
Deg of Saturation (%)	100.5
Swelling pressure (kPa)	n/a

Final conditions

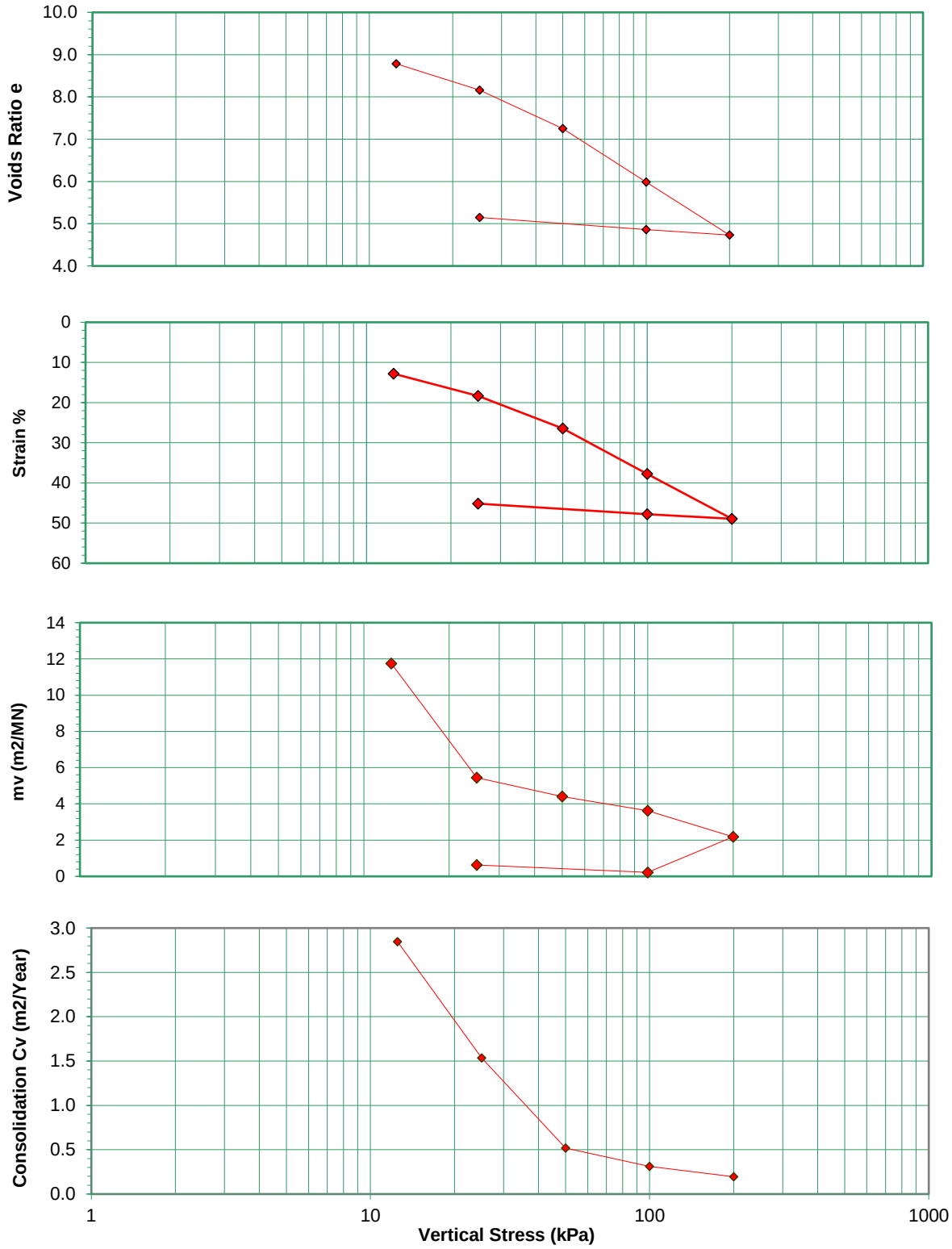
Moisture Content (%)	333.1
Dry Density (Mg/m3)	0.24
Final voids ratio	5.150
Final degree of saturation (%)	97.0
Final settlement	9.038

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHPW301
		Sample No.	U6
		Depth m.	2.00-2.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BHPW301 U6 2.00-2.45m

Oedometer Test

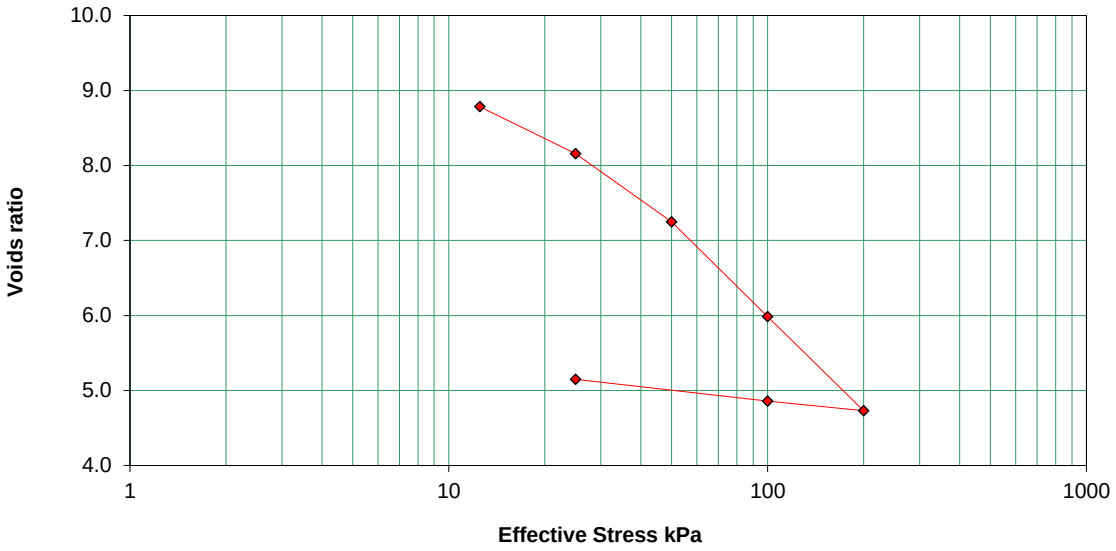
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown black slightly fiberous PEAT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		41.22
Bulk Density (mg/m3)		1.050
Particle Density	Assumed	1.50

Initial Conditions		Final Conditions	
Moisture content	685.1	333.1	%
Dry Density	0.134	0.244	Mg/m3
Initial Voids Ratio	10.2214	5.1505	
Degree of Saturation	100.55	97.02	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	12.805	8.7845	11.748	2.847	2.561
2	25	18.370	8.1601	5.454	1.535	3.674
3	50	26.475	7.2506	4.409	0.519	5.295
4	100	37.750	5.9853	3.622	0.312	7.550
5	200	48.930	4.7308	2.189	0.195	9.786
6	100	47.770	4.8610	0.222		9.554
7	25	45.190	5.1505	0.628		9.038

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHPW301
		Sample No.	U6
		Depth m.	2.00-2.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.00	1.06
Specimen Length	mm	202.50	Dry Density	Mg/m3	0.13	0.16
Specimen Diameter	mm	102.50	Moisture	%	659.74	567.95
Area	mm2	8251.59	Saturation	%	94.69	100.58
Volume	cc	1670.95	Sg(Assumed)	1.50		

Saturation Stage

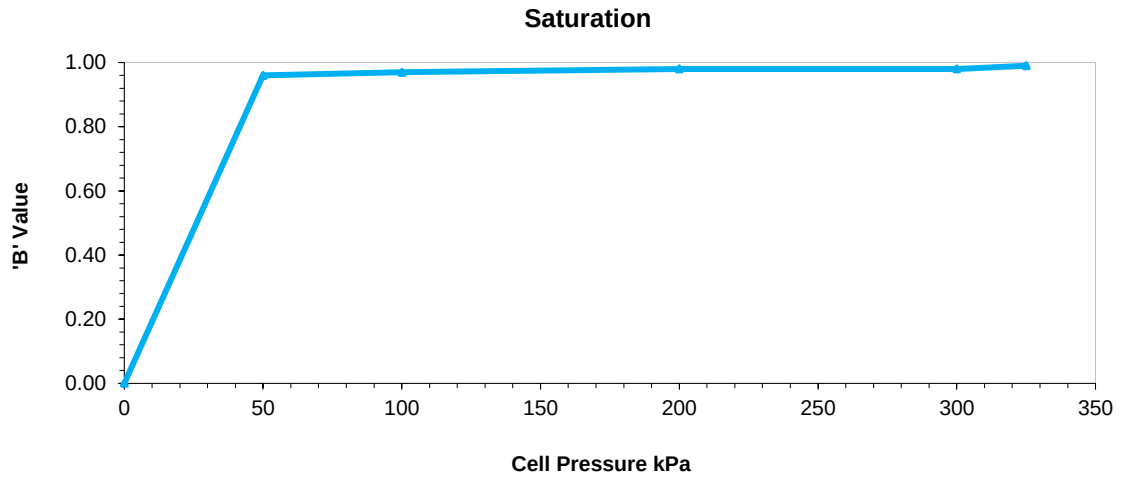
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.96
2	100	0.97
3	200	0.98
4	300	0.98
5	325	0.99

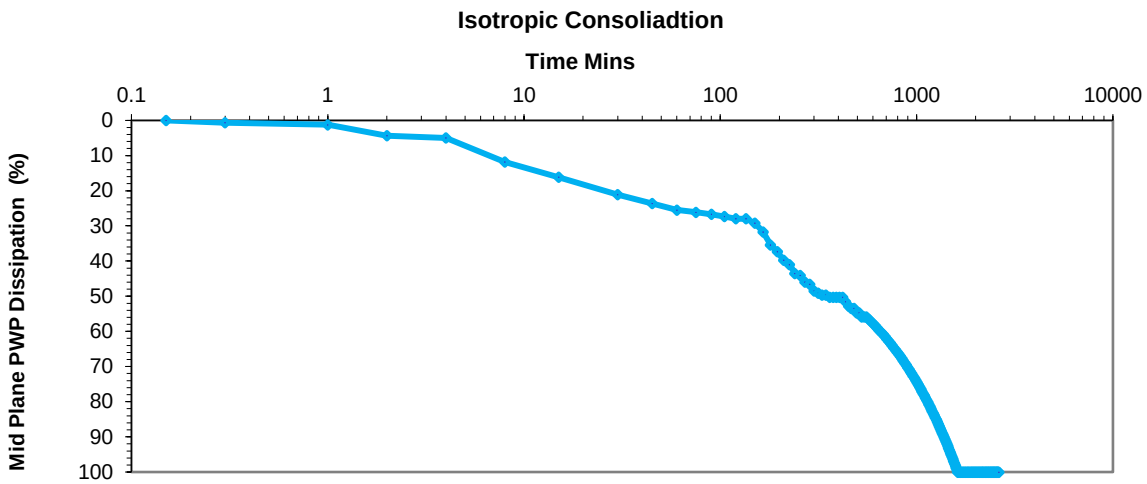
Isotropic Consolidation Stage

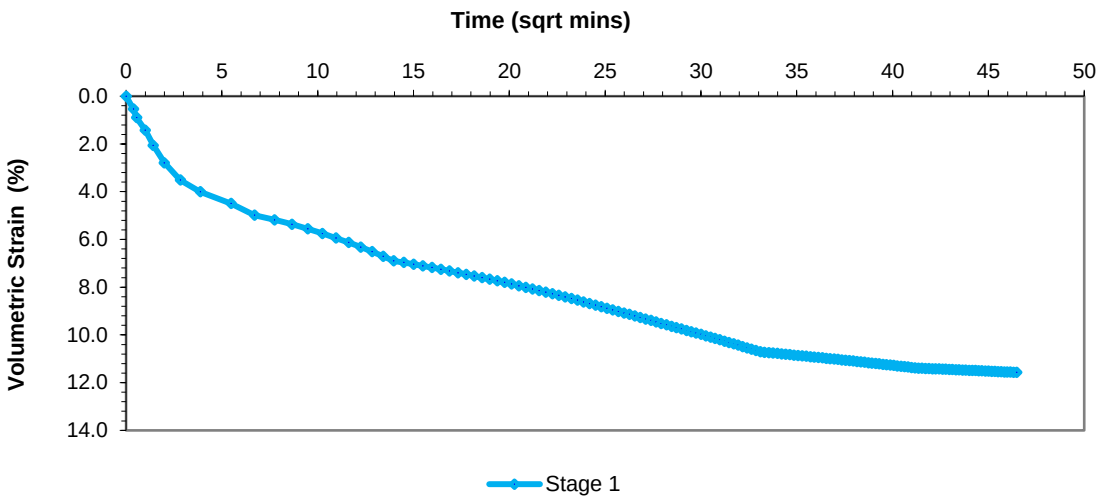
		Stage 1
Cell Pressure	kPa	325
Pore Pressure	kPa	316.2
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		552.3
Coef. Of Consolidation Cv	m2/year	0.380
Coef. Of Compressibility Mv	m2/MN	7.144
Permeability k	m/sec	8.42E-10

	Stage 1
Deviator Stress (kPa)	29.3
External Axial Strain (%)	16.63
Shear Stress (kPa)	14.7
Peak Stress Ratio	5.38
Pore Water Pressure (kPa)	18.3
Radial Effective Stress (kPa)	6.7
Axial Effective Stress (kPa)	36.0
Effective angle of friction (Degrees)	43.3°
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown /black slightly fiberous PEAT, with decomposed wood. Plastic Failure**

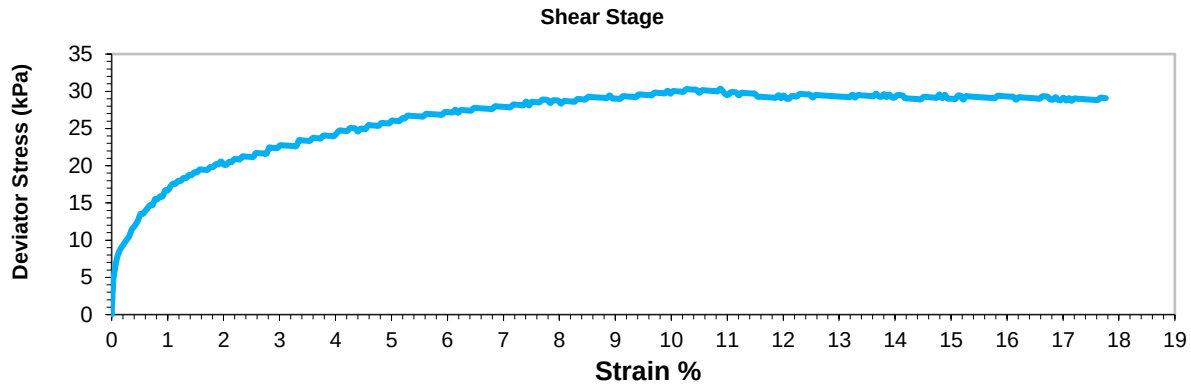
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHPW301
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

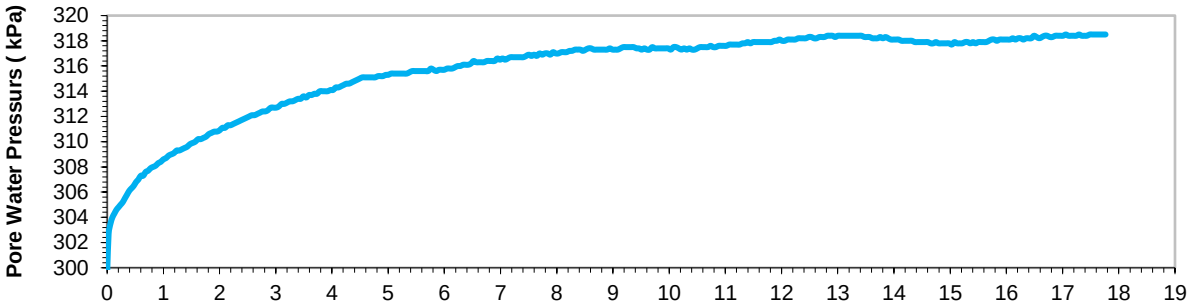


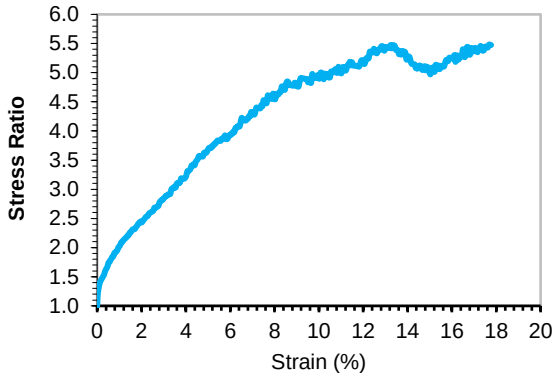


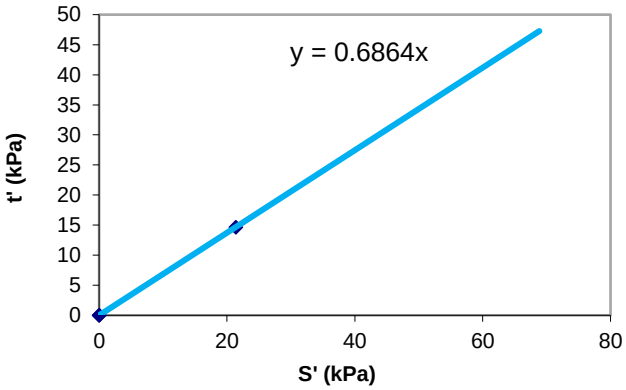


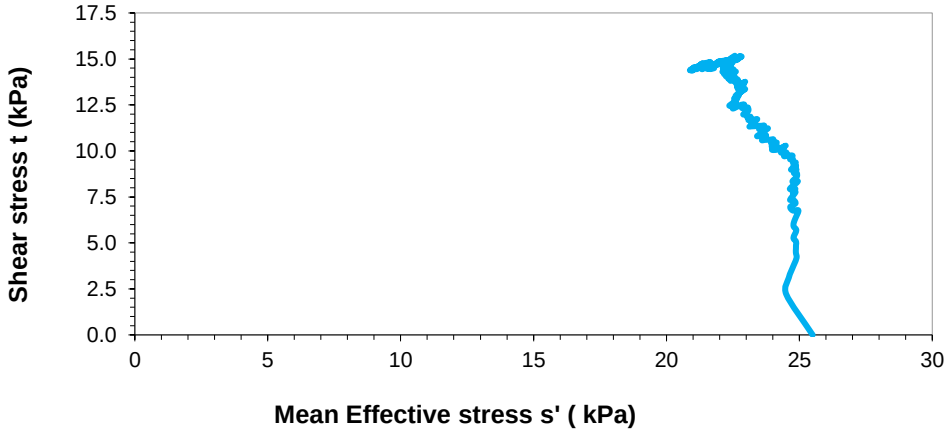
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BHPW301
	Project: Derrygreenagh Power	Sample No. U6
		Depth. 2.00-2.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHPW301
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown /black slightly fiberous PEAT, with decomposed wood.**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHPW301
	Project: Derrygreenagh Power	Sample No.	U6
		Depth.	2.00-2.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown black slightly fiberous PEAT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		41.9
Bulk density (Mg/m3)		1.07
Particle density	(Assumed)	1.50

Initial conditions

Settlement Channel	1108
Moisture content (%)	498.57
Dry density (Mg/m3)	0.178
Initial Voids Ratio	7.4161
Deg of Saturation (%)	100.8
Swelling pressure (kPa)	n/a

Final conditions

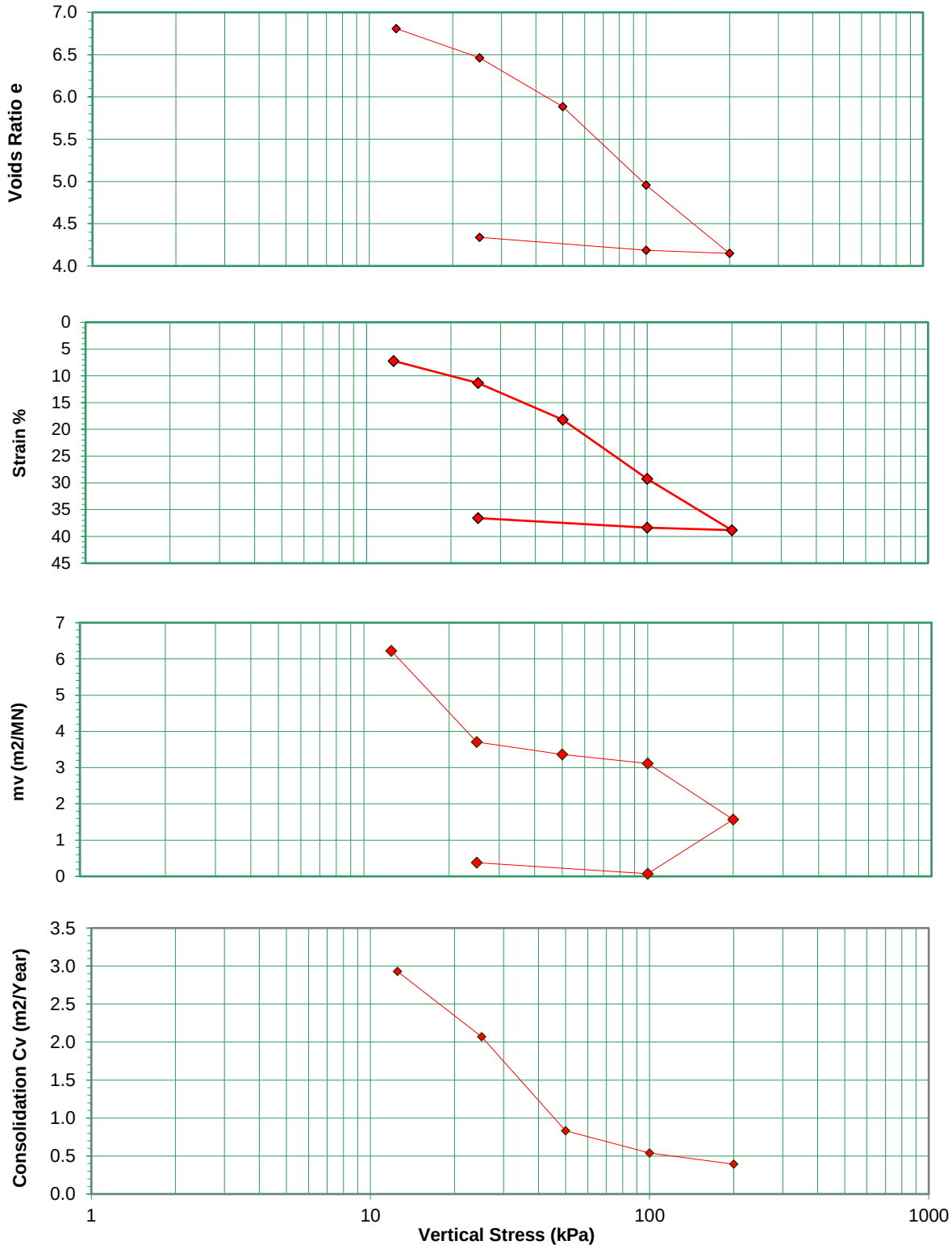
Moisture Content (%)	288.6
Dry Density (Mg/m3)	0.28
Final voids ratio	4.337
Final degree of saturation (%)	99.8
Final settlement	7.316

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHPW301
		Sample No.	U11
		Depth m.	4.00-4.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BHPW301 U11 4.00-4.45m

Oedometer Test

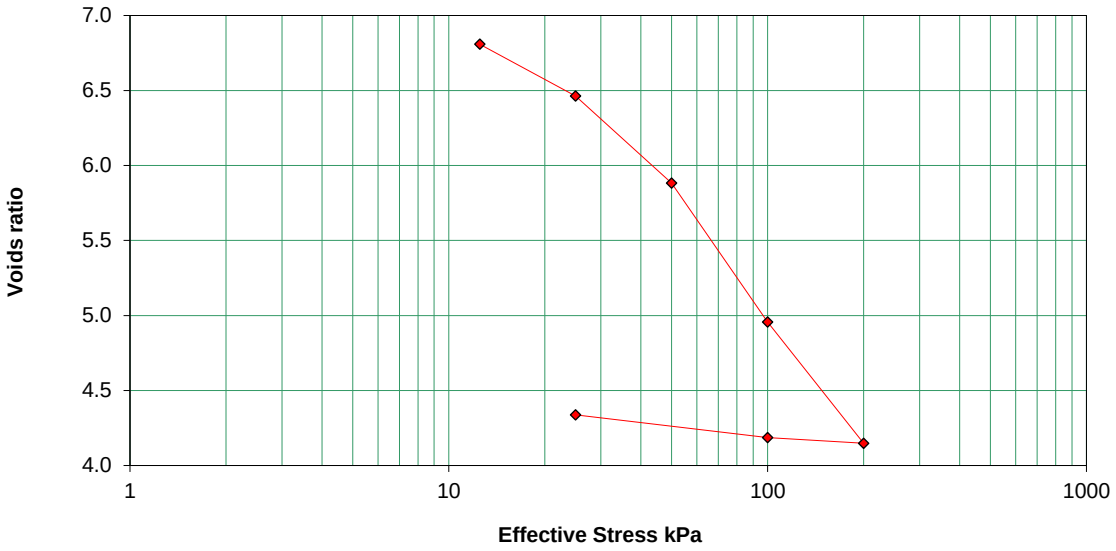
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown black slightly fiberous PEAT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		41.90
Bulk Density (mg/m3)		1.067
Particle Density	Assumed	1.50

Initial Conditions		Final Conditions	
Moisture content	498.6	288.6	%
Dry Density	0.178	0.281	Mg/m3
Initial Voids Ratio	7.4161	4.3375	
Degree of Saturation	100.84	99.79	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	7.220	6.8084	6.225	2.928	1.444
2	25	11.330	6.4625	3.708	2.071	2.266
3	50	18.210	5.8835	3.365	0.832	3.642
4	100	29.225	4.9565	3.113	0.540	5.845
5	200	38.825	4.1485	1.569	0.393	7.765
6	100	38.370	4.1868	0.074		7.674
7	25	36.580	4.3375	0.376		7.316

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHPW301
		Sample No.	U11
		Depth m.	4.00-4.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.01	1.07
Specimen Length	mm	202.00	Dry Density	Mg/m3	0.17	0.21
Specimen Diameter	mm	101.50	Moisture	%	478.86	406.43
Area	mm2	8091.37	Saturation	%	94.24	99.98
Volume	cc	1634.46	Sg(Assumed)	1.50		

Saturation Stage

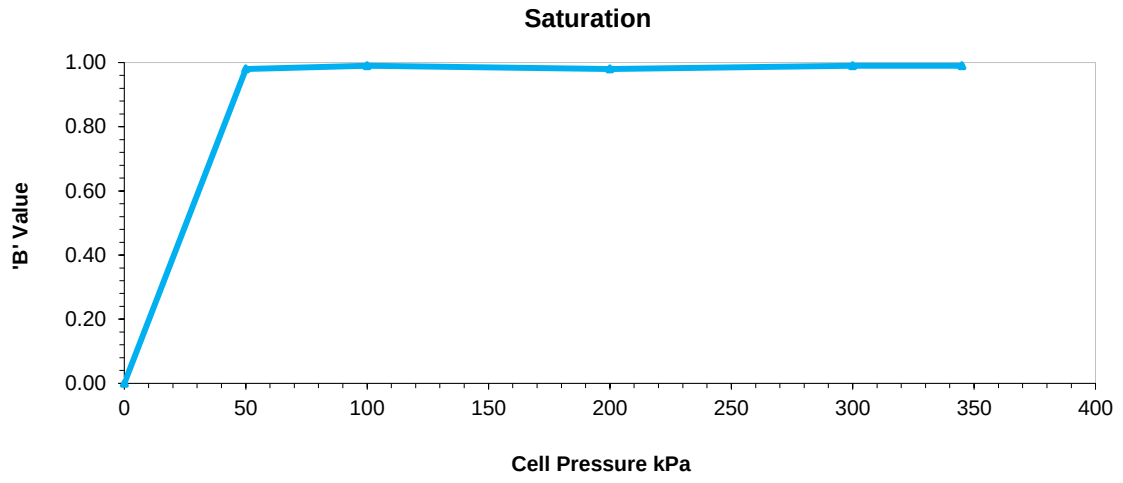
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.98
2	100	0.99
3	200	0.98
4	300	0.99
5	345	0.99

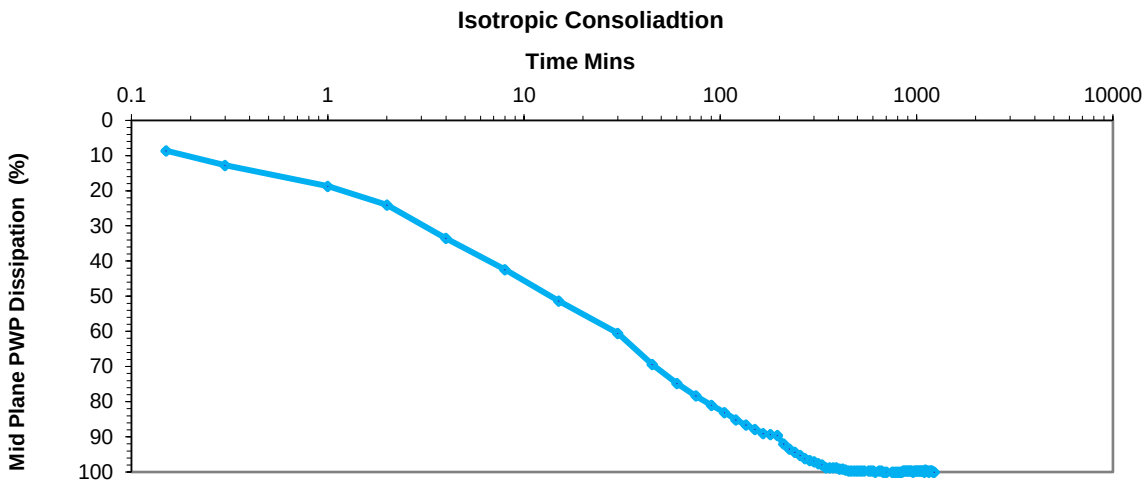
Isotropic Consolidation Stage

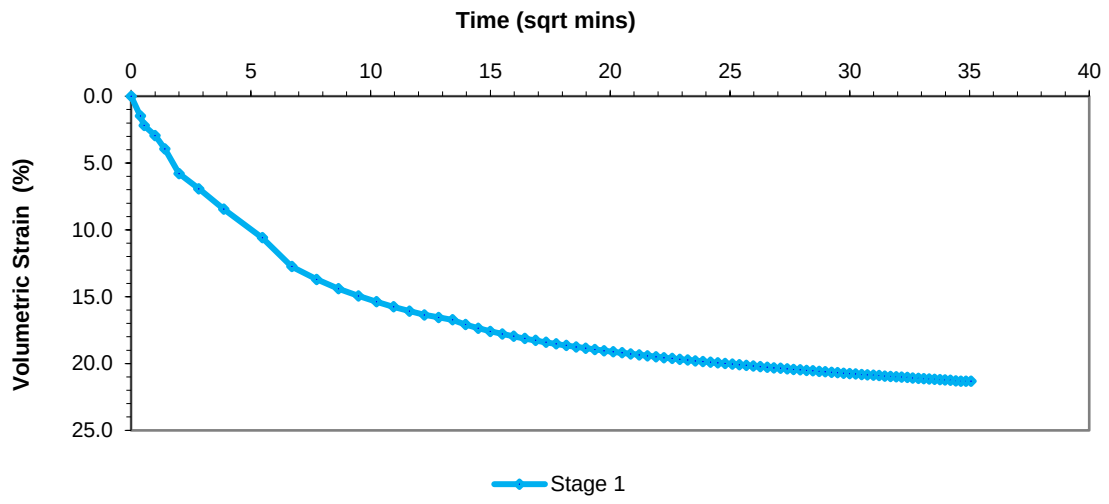
		Stage 1
Cell Pressure	kPa	345
Pore Pressure	kPa	332.7
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		151.3
Coef. Of Consolidation Cv	m2/year	1.388
Coef. Of Compressibility Mv	m2/MN	6.522
Permeability k	m/sec	2.81E-09

	Stage 1
Deviator Stress (kPa)	38.9
External Axial Strain (%)	19.16
Shear Stress (kPa)	19.5
Peak Stress Ratio	4.14
Pore Water Pressure (kPa)	32.6
Radial Effective Stress (kPa)	12.4
Axial Effective Stress (kPa)	51.3
Effective angle of friction (Degrees)	37.7°
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown /black slightly fiberous PEAT.**
	Plastic Failure

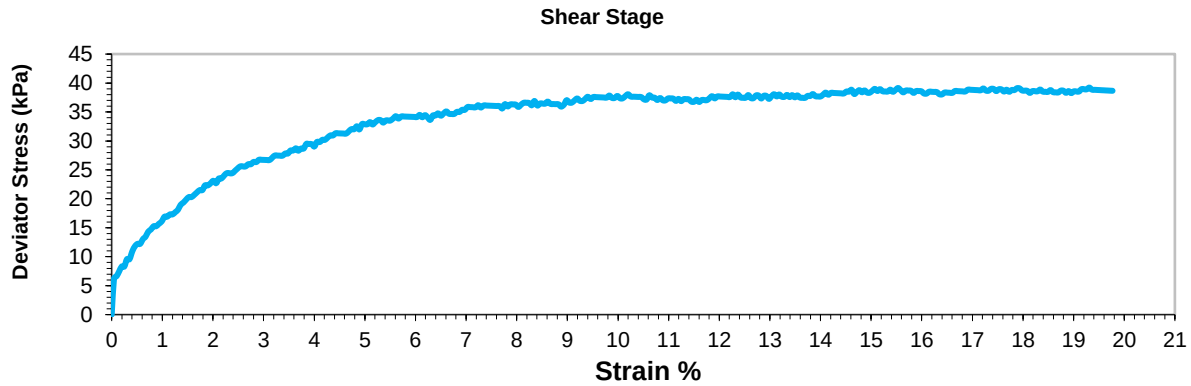
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHPW301
	Project: Derrygreenagh Power	Sample No.	U11
		Depth.	4.00-4.45m

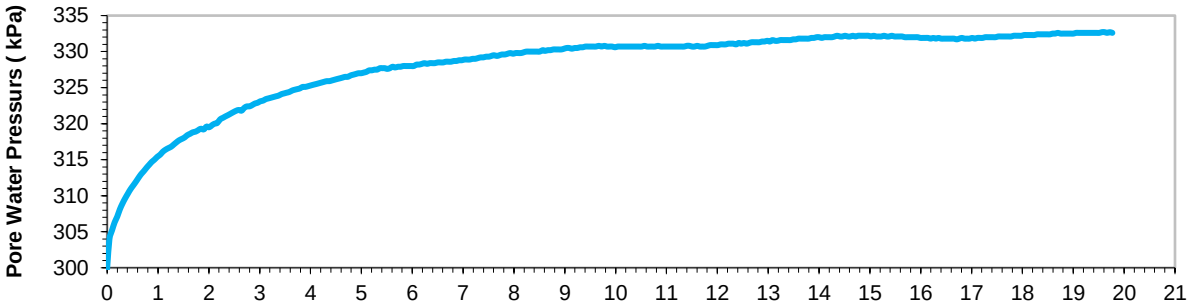


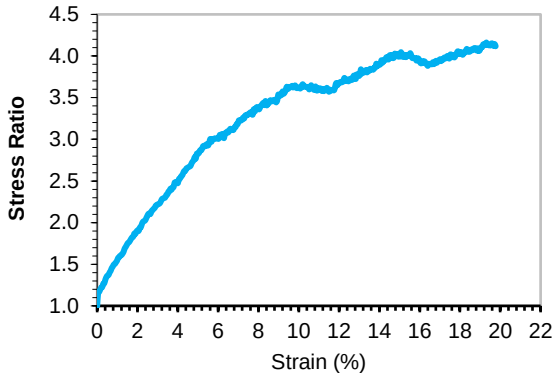


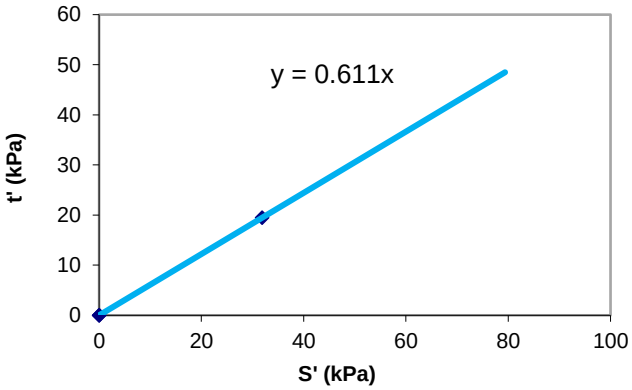


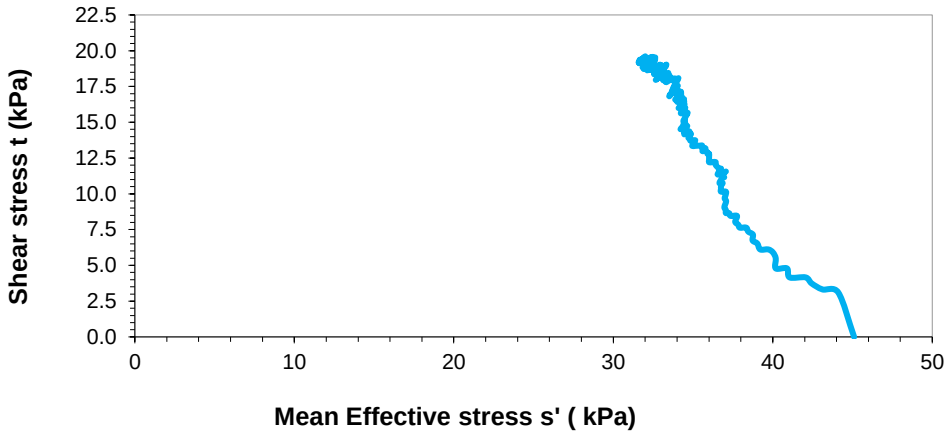
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BHPW301
	Project: Derrygreenagh Power	Sample No. U11
		Depth. 4.00-4.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHPW301
	Project: Derrygreenagh Power	Sample No.	U11
		Depth.	4.00-4.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown /black slightly fiberous PEAT.**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHPW301
	Project: Derrygreenagh Power	Sample No.	U11
		Depth.	4.00-4.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	0.95	0.99
Specimen Length	mm	202.00	Dry Density	Mg/m3	0.10	0.12
Specimen Diameter	mm	101.50	Moisture	%	823.61	731.90
Area	mm2	8091.37	Saturation	%	91.40	94.76
Volume	cc	1634.46	Sg(Assumed)	1.50		

Saturation Stage

Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.80
2	100	0.98
3	200	0.98
4	300	0.98
5	315	0.99

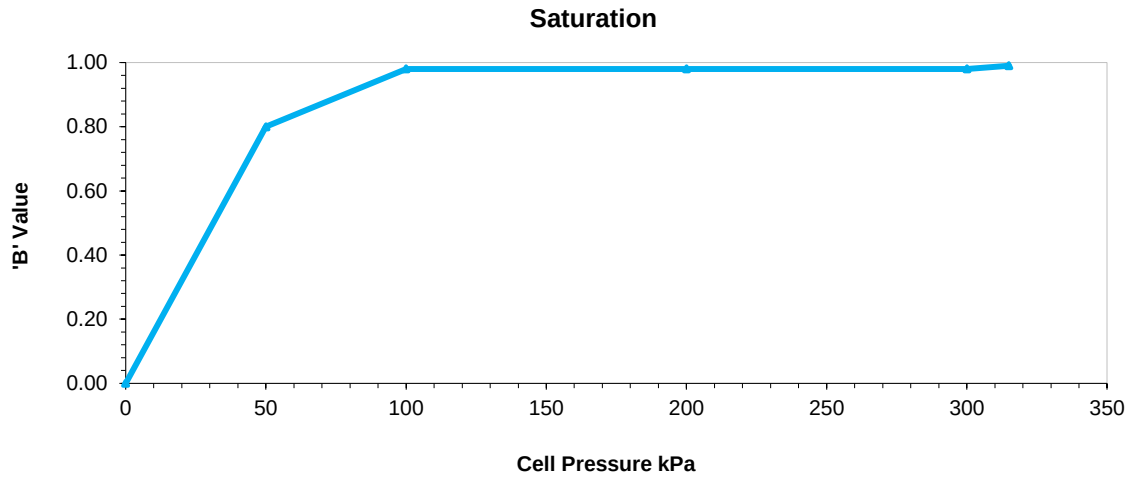
Isotropic Consolidation Stage

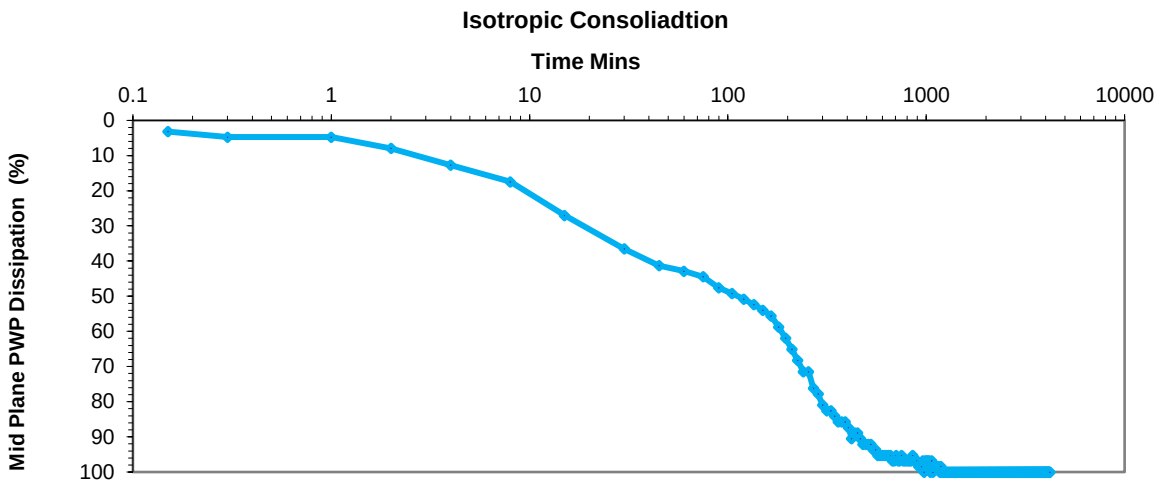
		Stage 1
Cell Pressure	kPa	315
Pore Pressure	kPa	305.4
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		324.0
Coef. Of Consolidation Cv	m2/year	0.648
Coef. Of Compressibility Mv	m2/MN	12.828
Permeability k	m/sec	2.58E-09

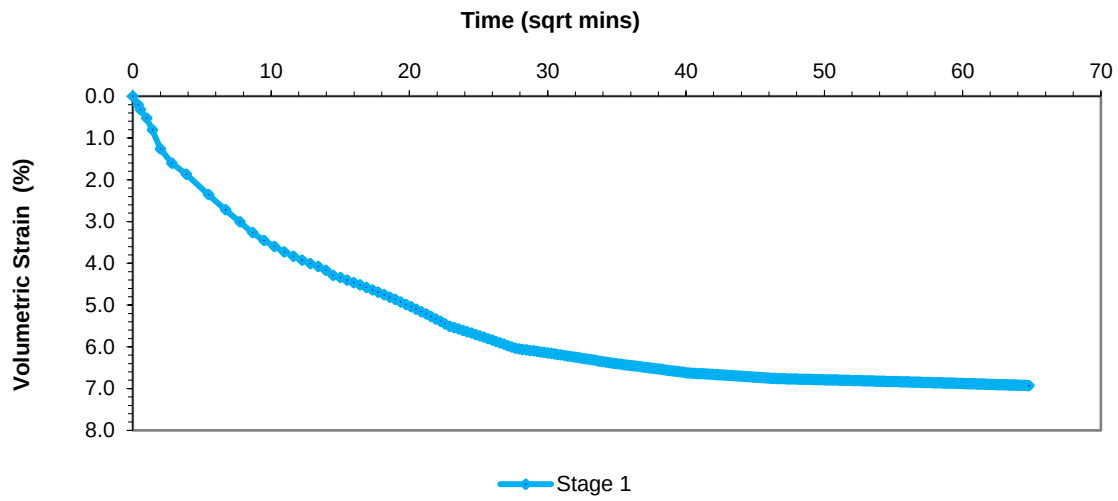
	Stage 1
Deviator Stress (kPa)	54.7
External Axial Strain (%)	18.18
Shear Stress (kPa)	27.3
Peak Stress Ratio	4.69
Pore Water Pressure (kPa)	0.2
Radial Effective Stress (kPa)	14.8
Axial Effective Stress (kPa)	69.5
Effective angle of friction (Degrees)	40.4°
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0030
Sample Description	**Dark brown/black slightly firberous PEAT.**

Plastic Failure

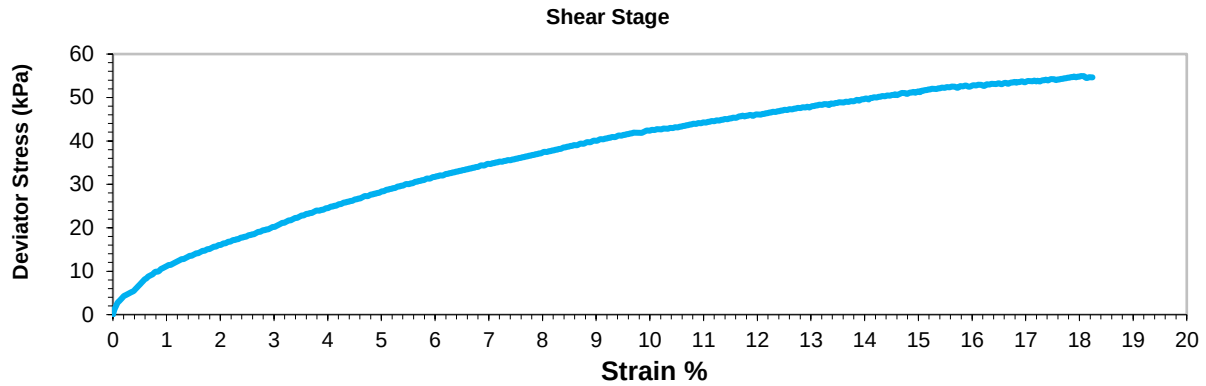
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS01
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

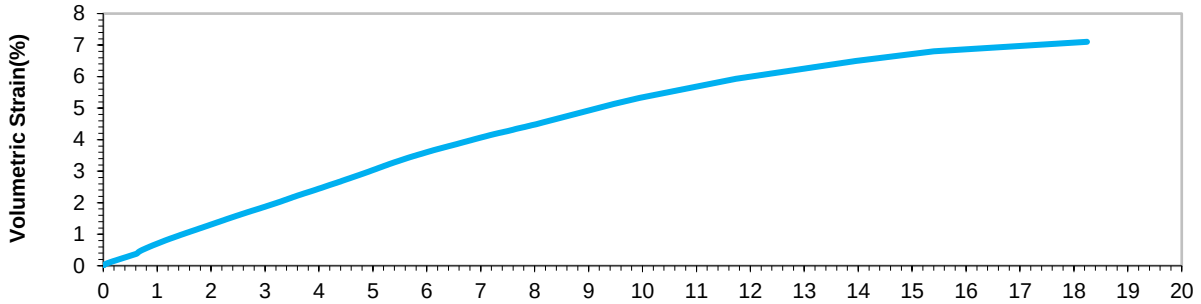


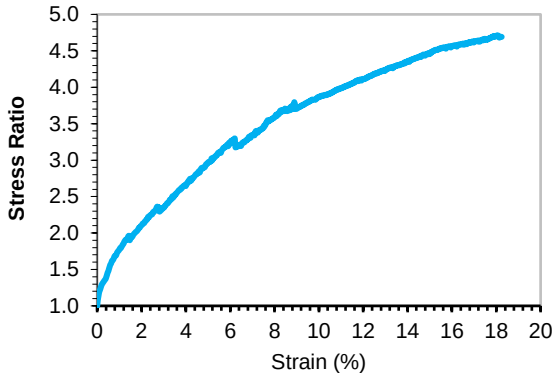


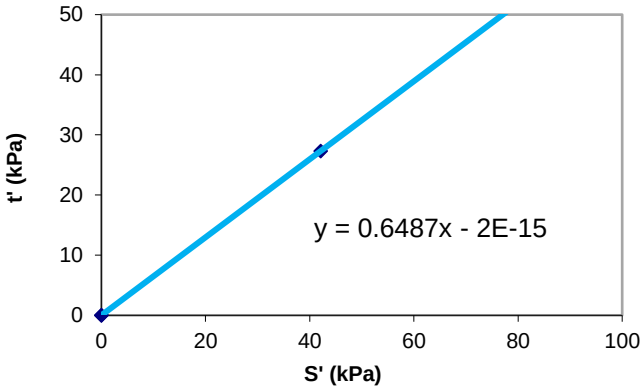


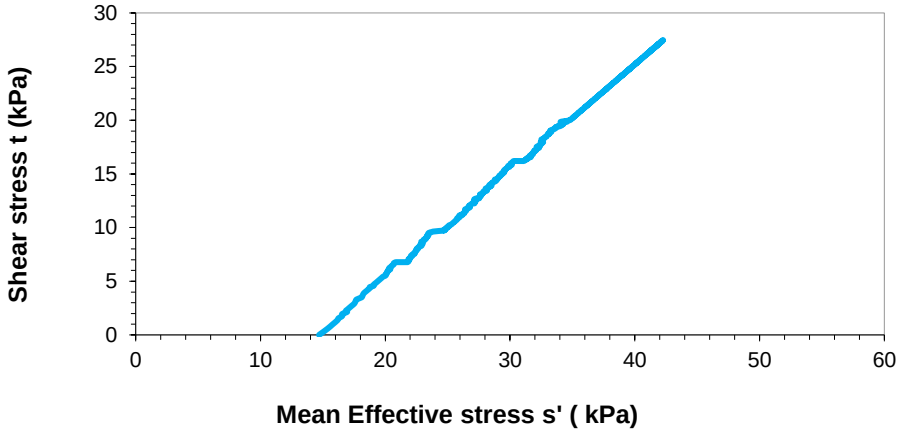
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No	BHSS01
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m











NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS01
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown/black slightly firberous PEAT.**

NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS01
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.05	1.07
Specimen Length	mm	206.00	Dry Density	Mg/m3	0.18	0.23
Specimen Diameter	mm	102.00	Moisture	%	492.67	369.08
Area	mm2	8171.28	Saturation	%	99.19	98.92
Volume	cc	1683.28	Sg(Assumed)	1.50		

Saturation Stage

Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.92
2	100	0.92
3	200	0.98
4	300	0.98
5	330	0.96

Isotropic Consolidation Stage

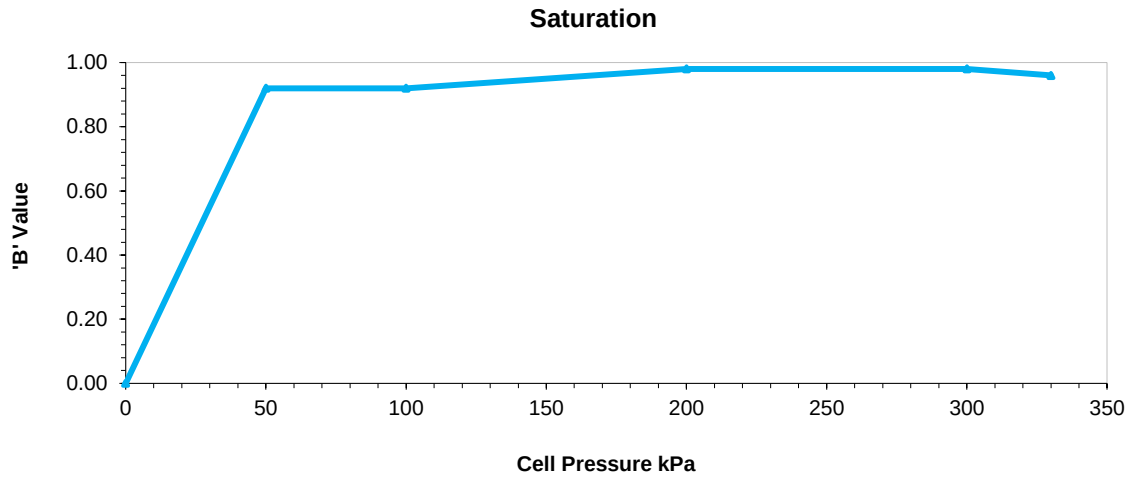
		Stage 1
Cell Pressure	kPa	325
Pore Pressure	kPa	319.3
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		992.3
Coef. Of Consolidation Cv	m2/year	0.212
Coef. Of Compressibility Mv	m2/MN	7.449
Permeability k	m/sec	4.89E-10

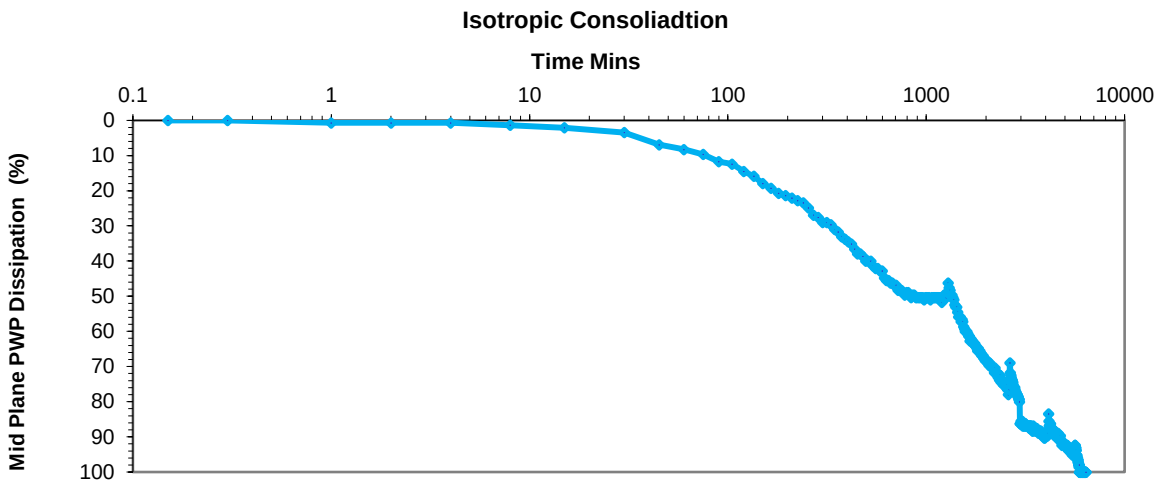
	Stage 1
Deviator Stress (kPa)	101.7
External Axial Strain (%)	24.65
Shear Stress (kPa)	50.8
Peak Stress Ratio	4.40
Pore Water Pressure (kPa)	0.1
Radial Effective Stress (kPa)	29.9
Axial Effective Stress (kPa)	131.6
Effective angle of friction (Degrees)	39.0°
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0040

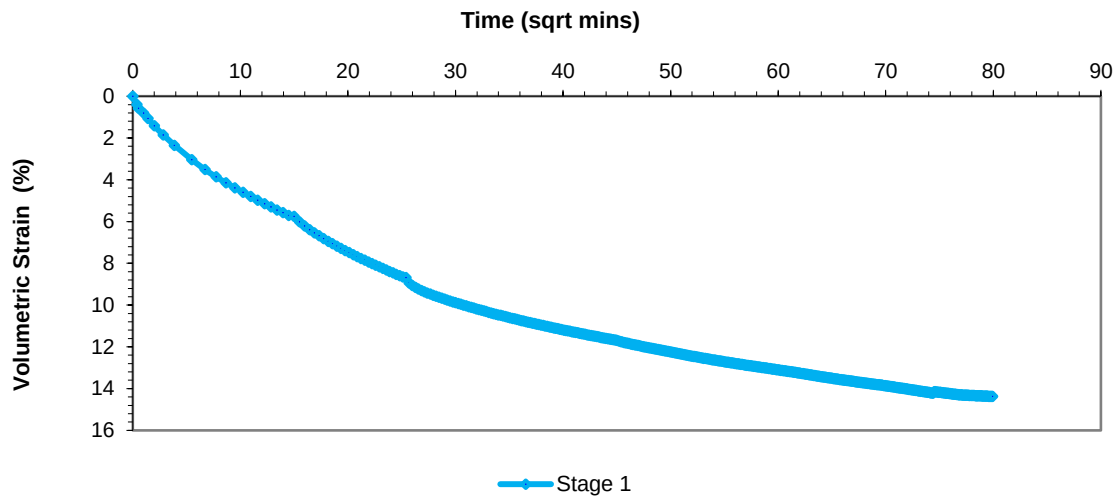
Sample Description **Dark brown/black slightly firberous PEAT, with some completely decompoded wood fragments, and shell.**

Plastic Failure

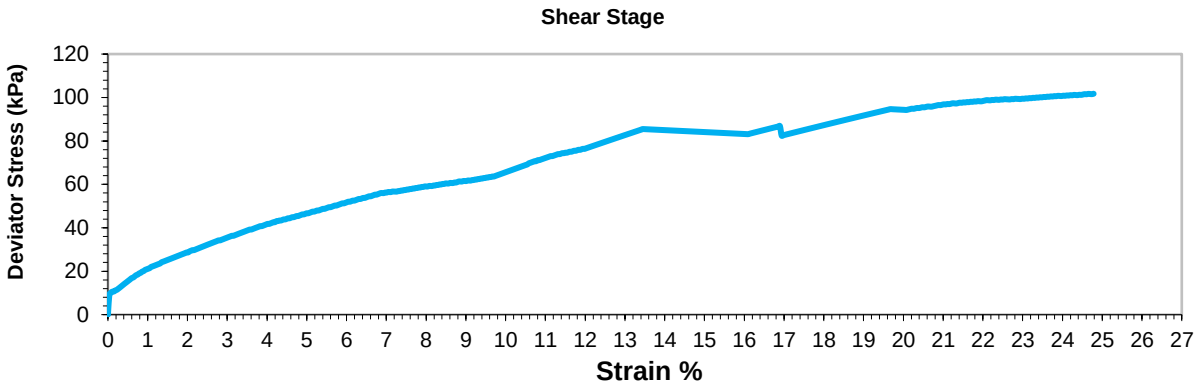
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS01
	Project: Derrygreenagh Power	Sample No.	U8
		Depth.	3.0-3.45m

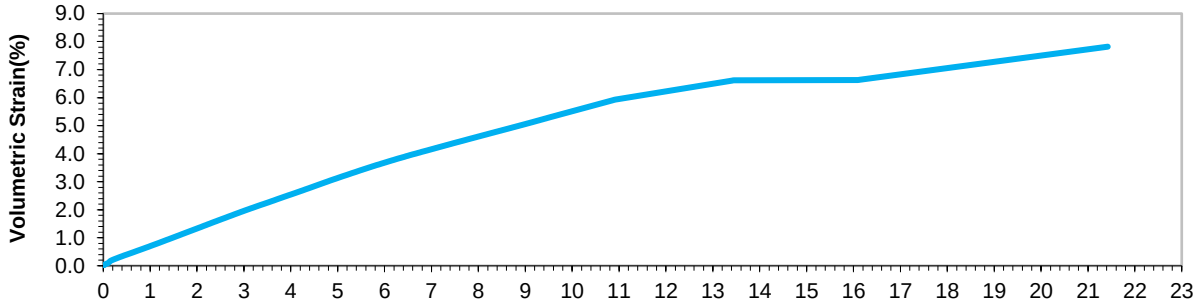


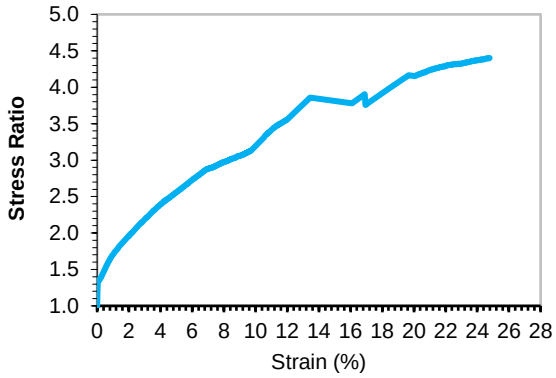


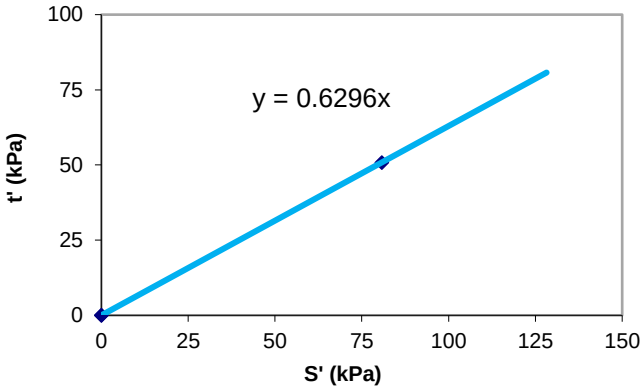


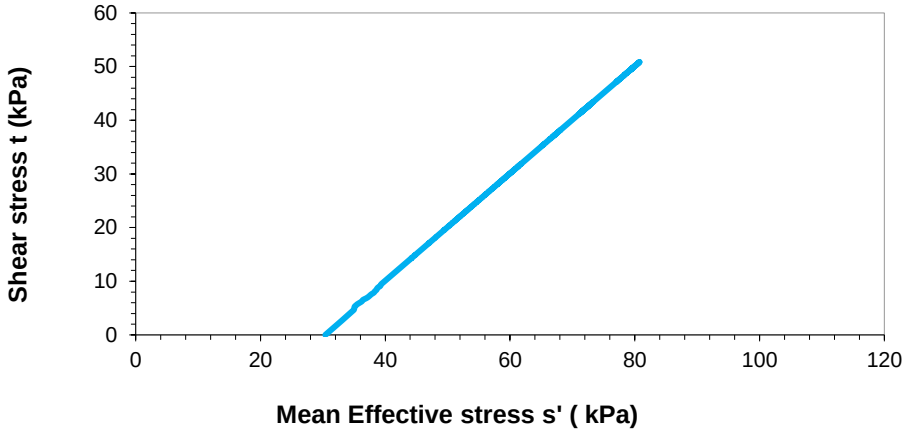
NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No	BHSS01
	Project: Derrygreenagh Power	Sample No.	U8
		Depth.	3.0-3.45m











NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS01
	Project: Derrygreenagh Power	Sample No.	U8
		Depth.	3.0-3.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown/black slightly firberous PEAT, with some completely decompoded wood fragments, and shell.**

NM TL Ltd	**Consolidated drained SingleTriaxial test with Volume change measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS01
	Project: Derrygreenagh Power	Sample No.	U8
		Depth.	3.0-3.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown black slightly fiberous PEAT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		39.02
Bulk density (Mg/m3)		0.99
Particle density	(Assumed)	1.50

Initial conditions

Settlement Channel	1107
Moisture content (%)	721.47
Dry density (Mg/m3)	0.121
Initial Voids Ratio	11.4026
Deg of Saturation (%)	94.9
Swelling pressure (kPa)	n/a

Final conditions

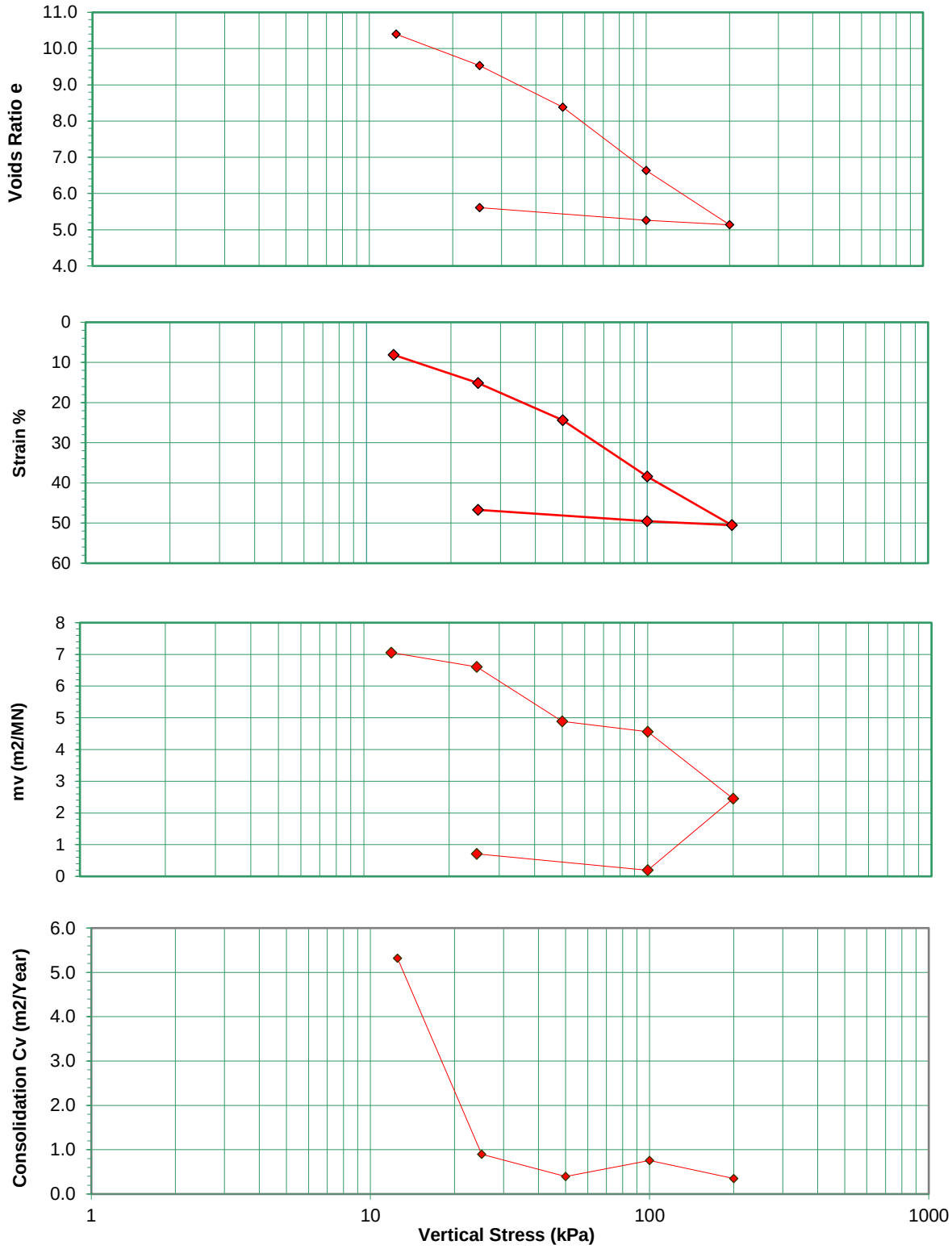
Moisture Content (%)	356.0
Dry Density (Mg/m3)	0.23
Final voids ratio	5.610
Final degree of saturation (%)	95.2
Final settlement	9.341

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHSS02
		Sample No.	U3
		Depth m.	1.0-1.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BHSS02 U3 1.0-1.45m

Oedometer Test

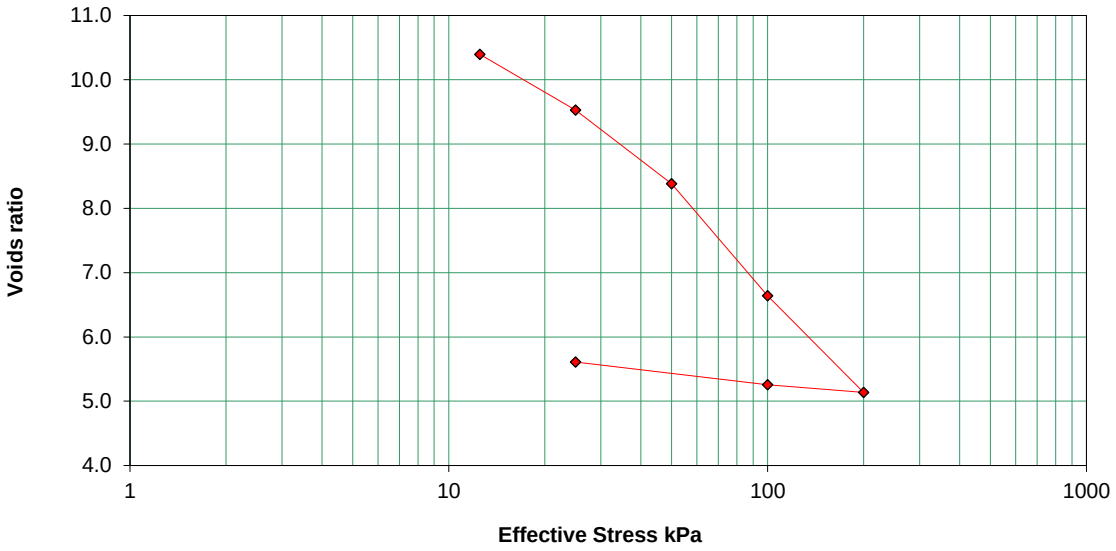
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown black slightly fiberous PEAT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		39.02
Bulk Density (mg/m3)		0.994
Particle Density	Assumed	1.50

Initial Conditions		Final Conditions	
Moisture content	721.5	356.0	%
Dry Density	0.121	0.227	Mg/m3
Initial Voids Ratio	11.4026	5.6100	
Degree of Saturation	94.91	95.19	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	8.105	10.3974	7.056	5.319	1.621
2	25	15.115	9.5280	6.607	0.895	3.023
3	50	24.355	8.3820	4.886	0.398	4.871
4	100	38.400	6.6400	4.560	0.755	7.680
5	200	50.520	5.1368	2.449	0.351	10.104
6	100	49.545	5.2577	0.193		9.909
7	25	46.705	5.6100	0.711		9.341

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHSS02
		Sample No.	U3
		Depth m.	1.0-1.45m

SUMMARY OF TEST RESULTS

		Initial				Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3		1.05	1.06
Specimen Length	mm	201.50	Dry Density	Mg/m3		0.13	0.18
Specimen Diameter	mm	101.50	Moisture	%		706.89	490.00
Area	mm2	8091.37	Saturation	%		101.19	100.43
Volume	cc	1630.41	Sg(Assumed)	1.50			

Saturation Stage

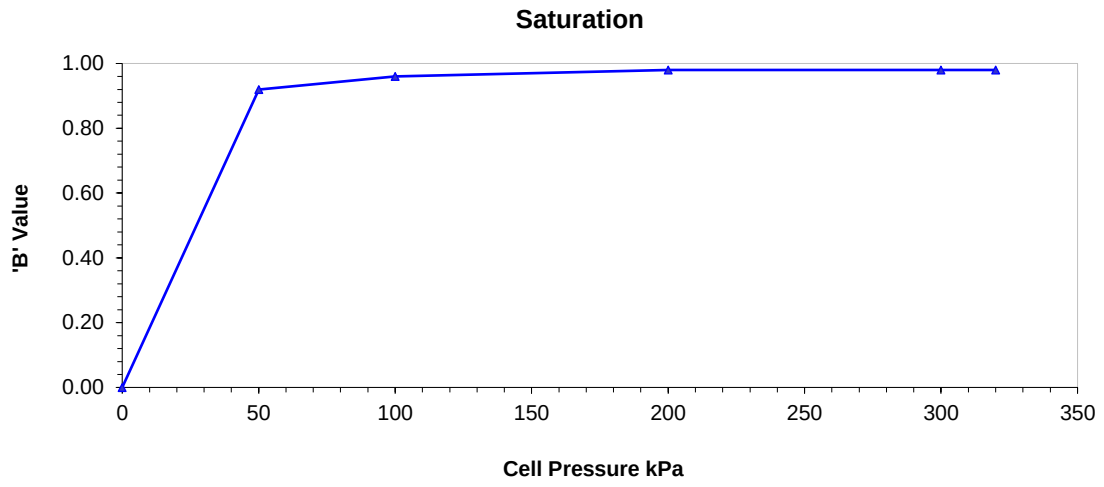
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.92
2	100	0.96
3	200	0.98
4	300	0.98
5	320	0.98

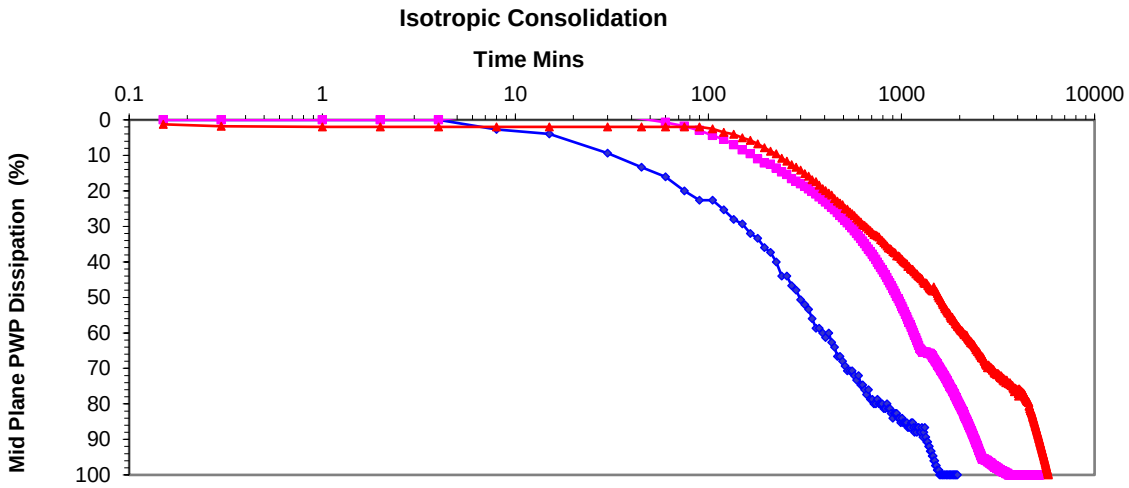
Isotropic Consolidation Stage

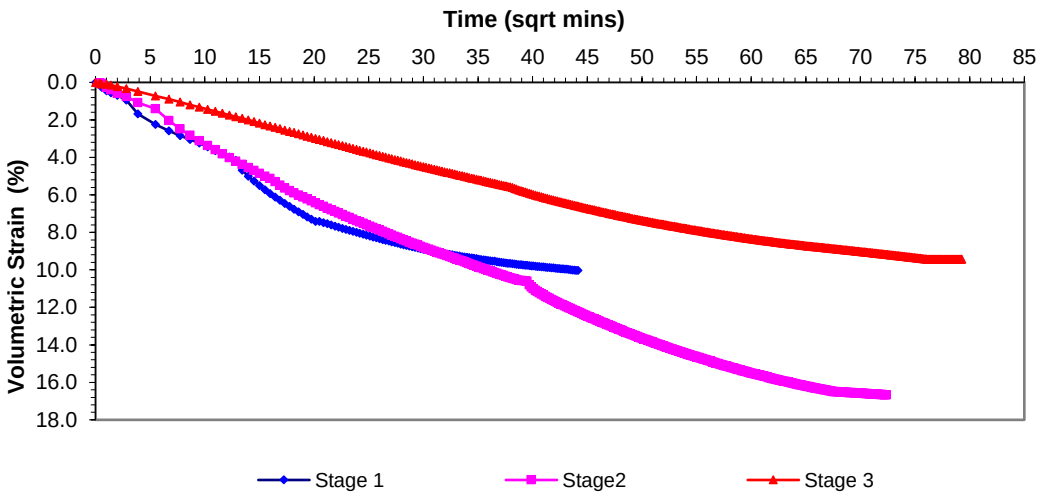
		Stage 1	Stage 2	Stage 3
Cell Pressure	kPa	320	340	380
Pore Pressure	kPa	308.5	327.1	348.5
Back Pressure	kPa	300	300	300
Drainage Method		One End and Radial boundary		
t100 (min)		686.4	2601.0	3136.0
Coef. Of Consolidation Cv	m2/year	0.306	0.081	0.067
Coef. Of Compressibility Mv	m2/MN	12.380	6.152	1.942
Permeability K	m/Sec	1.17E-09	1.54E-10	4.03E-11

	At Peak Stress Ratio			At peak deviator stress
	Stage 1	Stage 2	Stage 3	
Deviator Stress (kPa)	19.3	31.0	47.2	47.5
External Axial Strain (%)	6.36	10.24	17.88	20.10
Shear Stress (kPa)	9.7	15.51	23.6	23.8
Peak Stress Ratio	2.61	2.77	3.61	3.66
Pore Water Pressure (kPa)	8	22.50	61.9	62.1
Radial Effective Stress (kPa)	12	17.5	18.1	17.9
Axial Effective Stress (kPa)	31.3	48.5	65.3	65.4
Effective angle of friction (Degrees)	31.1°			34.8°
Cohesion c' (kPa)	0			
Rate of strain mm/min	0.0067			
Sample Description	**Dark brown /black fiberous PEAT. Plastic**			

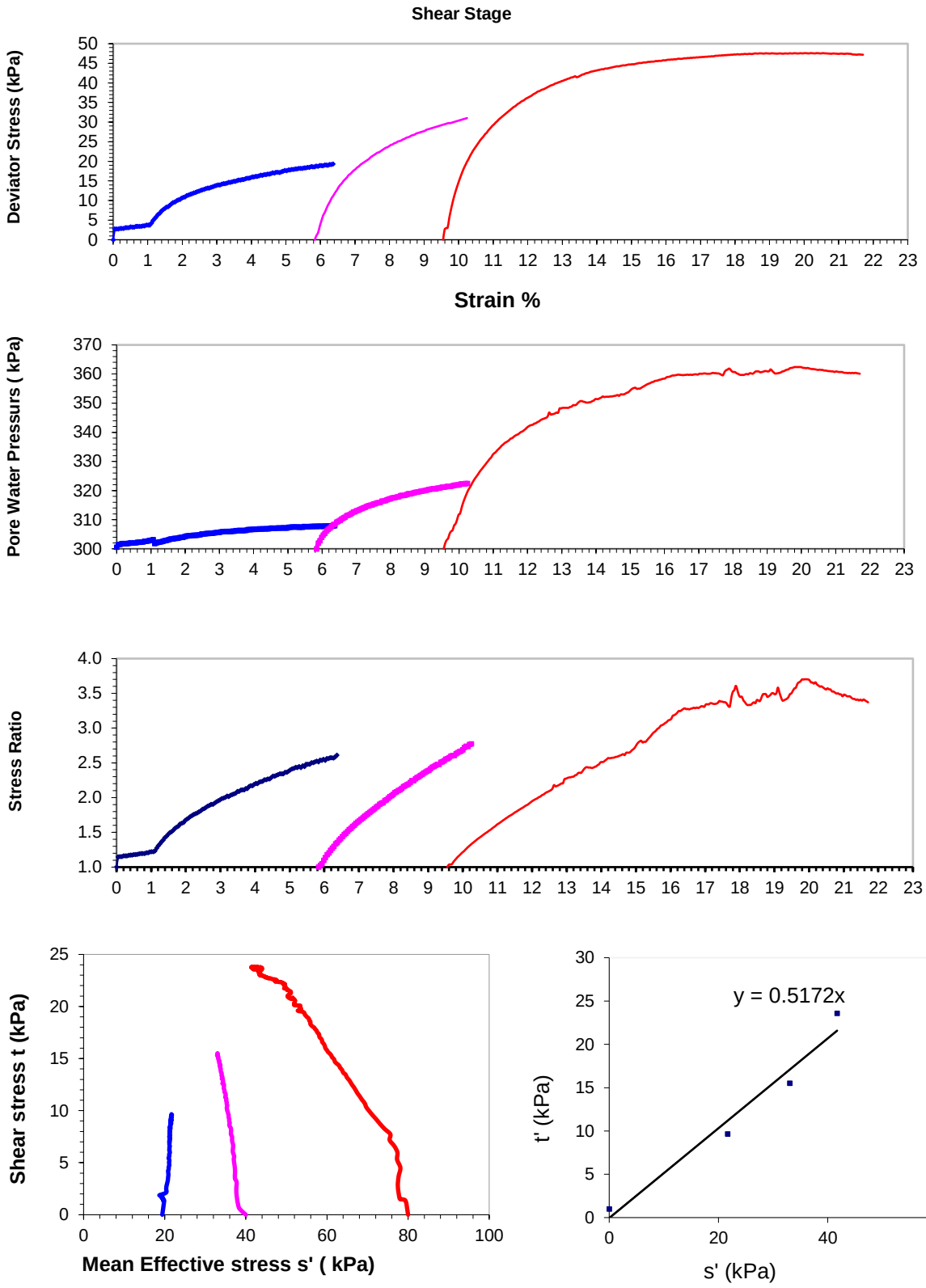
NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHSS04
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m





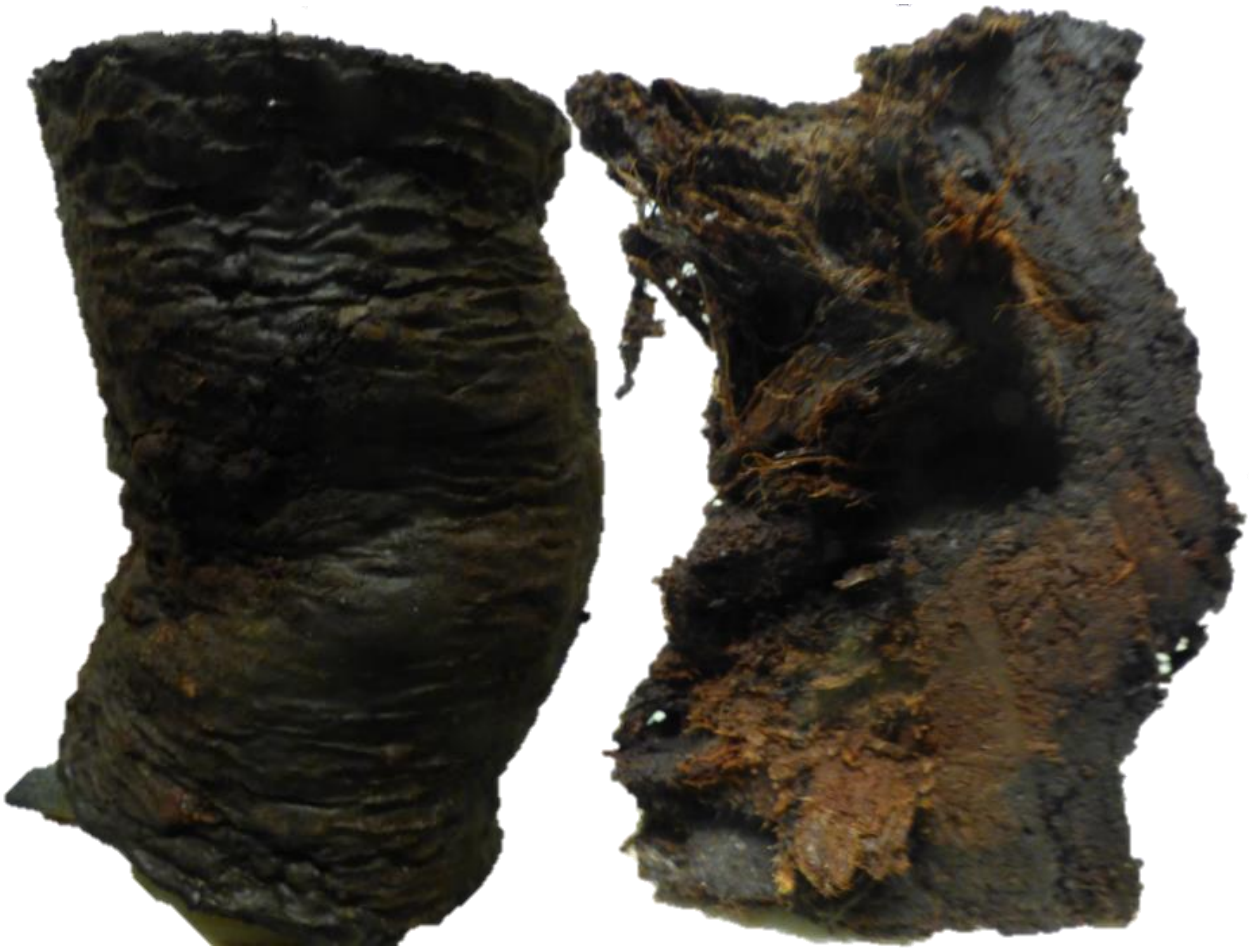


NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHSS04
	Project:	Sample No	U3
	Derrygreenagh Power	Depth.	1.00-1.45m



NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHSS04
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m

SPECIMEN AFTER TEST



Soil Description **Dark brown /black fiberous PEAT.**

NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHSS04
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown black slightly fiberous PEAT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		37.86
Bulk density (Mg/m3)		0.96
Particle density	(Assumed)	1.50

Initial conditions

Settlement Channel	1107
Moisture content (%)	611.65
Dry density (Mg/m3)	0.135
Initial Voids Ratio	10.0738
Deg of Saturation (%)	91.1
Swelling pressure (kPa)	n/a

Final conditions

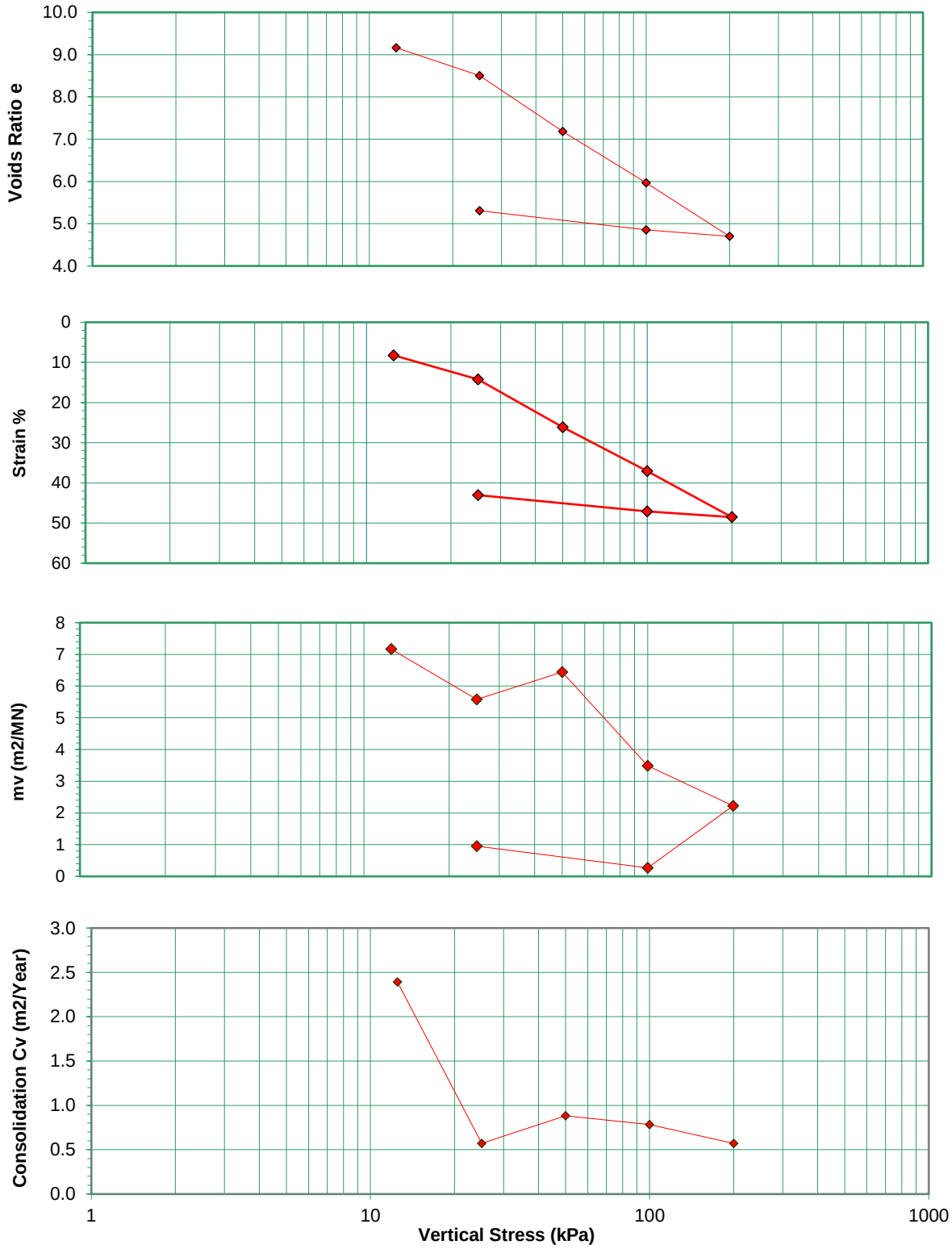
Moisture Content (%)	351.5
Dry Density (Mg/m3)	0.24
Final voids ratio	5.3087
Final degree of saturation (%)	99.3
Final settlement	8.606

Notes: **1) Log time method used for t50 time**
2) Tested at 20ºc

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHSS05
		Sample No.	U3
		Depth m.	1.0-1.45m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project Derrygreenagh Power	Job No. Borehole No. Sample No. Depth m.	NMTL-3631 BHSS05 U3 1.0-1.45m

Oedometer Test

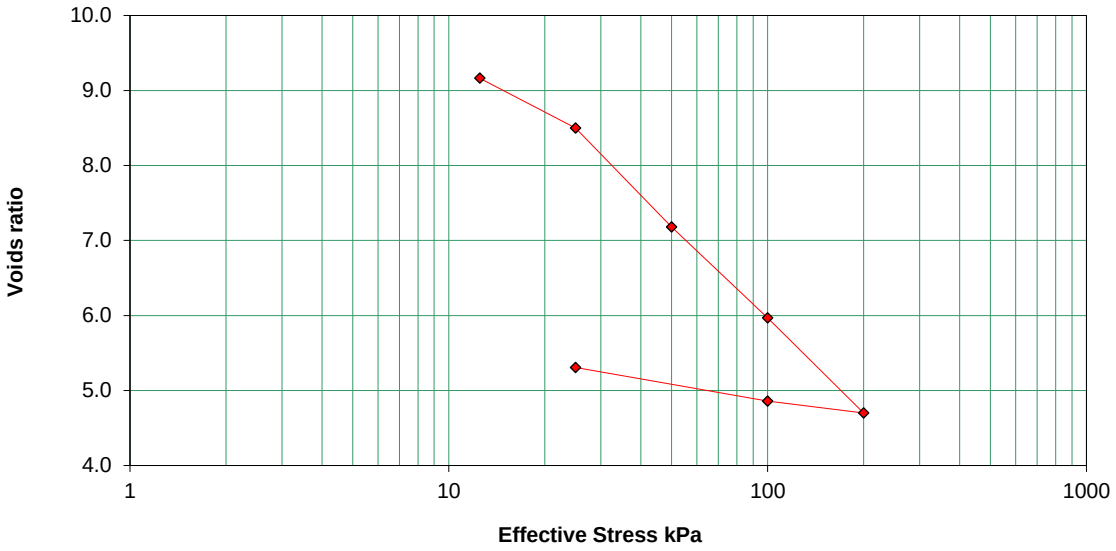
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown black slightly fiberous PEAT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		37.86
Bulk Density (mg/m3)		0.964
Particle Density	Assumed	1.50

Initial Conditions		Final Conditions	
Moisture content	611.7	351.5	%
Dry Density	0.135	0.238	Mg/m3
Initial Voids Ratio	10.0738	5.3087	
Degree of Saturation	91.08	99.32	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	8.220	9.1635	7.165	N/A	1.644
2	25	14.205	8.5007	5.581	0.572	2.841
3	50	26.110	7.1824	6.445	0.882	5.222
4	100	37.085	5.9671	3.489	0.784	7.417
5	200	48.525	4.7002	2.222	0.572	9.705
6	100	47.110	4.8569	0.268		9.422
7	25	43.030	5.3087	0.955		8.606

NM TL Ltd Standard	Project Derrygreenagh Power	Job No.	NMTL-3631
		Borehole No.	BHSS05
		Sample No.	U3
		Depth m.	1.0-1.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	0.97	0.97
Specimen Length	mm	198.50	Dry Density	Mg/m3	0.14	0.14
Specimen Diameter	mm	101.50	Moisture	%	611.16	575.73
Area	mm2	8091.37	Saturation	%	91.90	91.44
Volume	cc	1606.14	Sg(Assumed)	1.50		

Saturation Stage

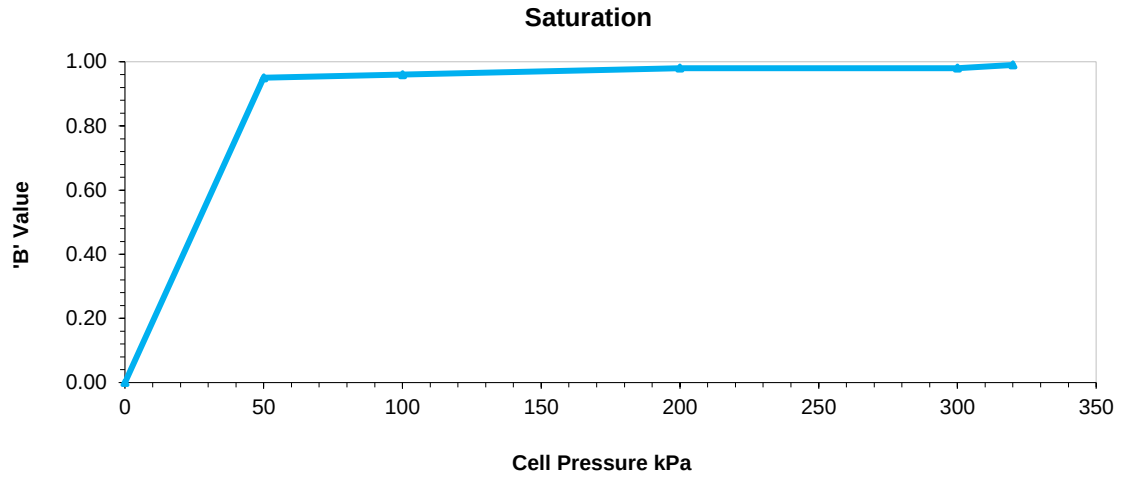
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.95
2	100	0.96
3	200	0.98
4	300	0.98
5	320	0.99

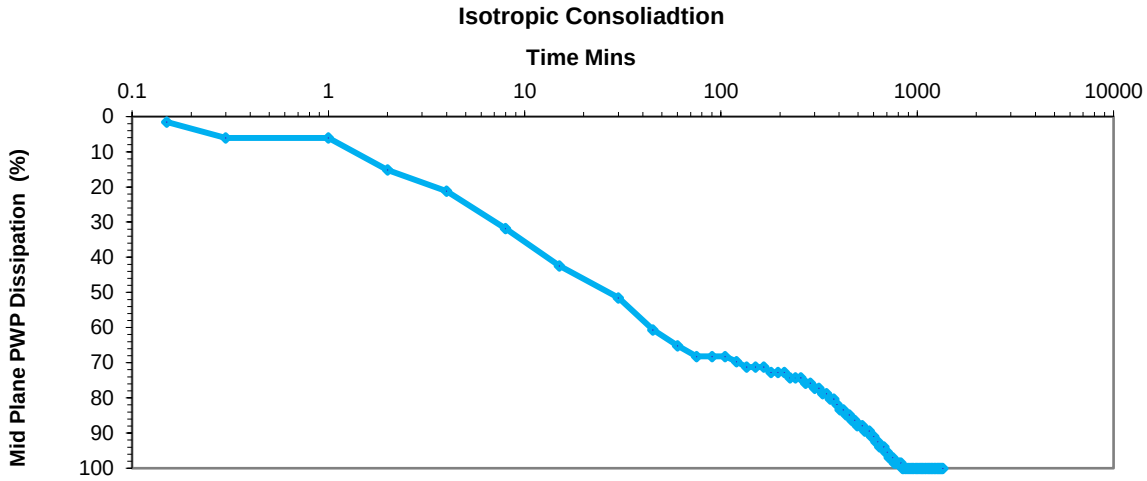
Isotropic Consolidation Stage

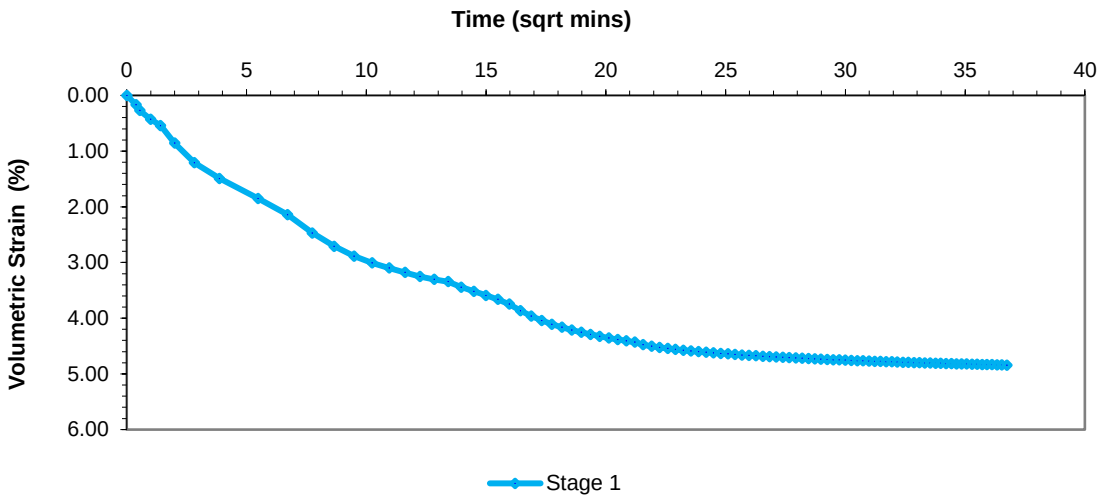
		Stage 1
Cell Pressure	kPa	320
Pore Pressure	kPa	305.7
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		249.6
Coef. Of Consolidation Cv	m2/year	0.841
Coef. Of Compressibility Mv	m2/MN	8.492
Permeability k	m/sec	2.21E-09

	Stage 1
Deviator Stress (kPa)	22.7
External Axial Strain (%)	15.67
Shear Stress (kPa)	11.3
Peak Stress Ratio	4.44
Pore Water Pressure (kPa)	13.4
Radial Effective Stress (kPa)	6.6
Axial Effective Stress (kPa)	29.3
Effective angle of friction (Degrees)	39.2
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown /black slightly fiberous PEAT, with some roots**
	Plastic Failure

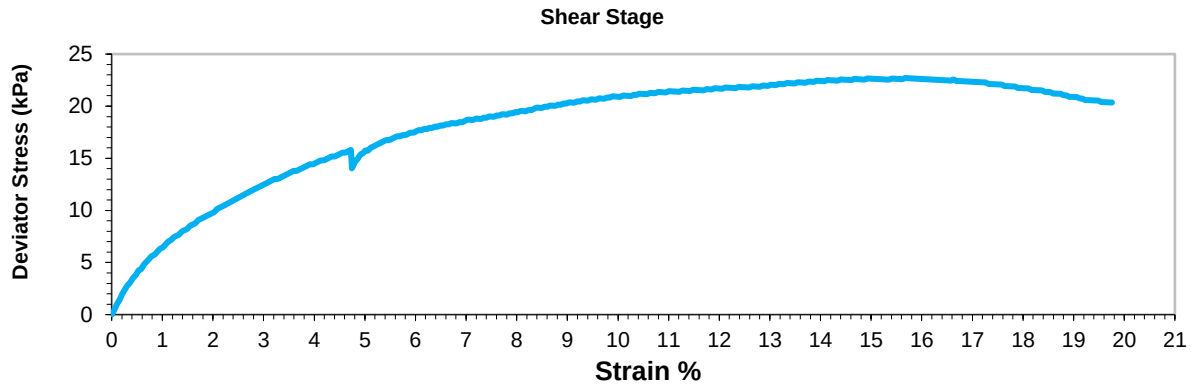
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS05
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

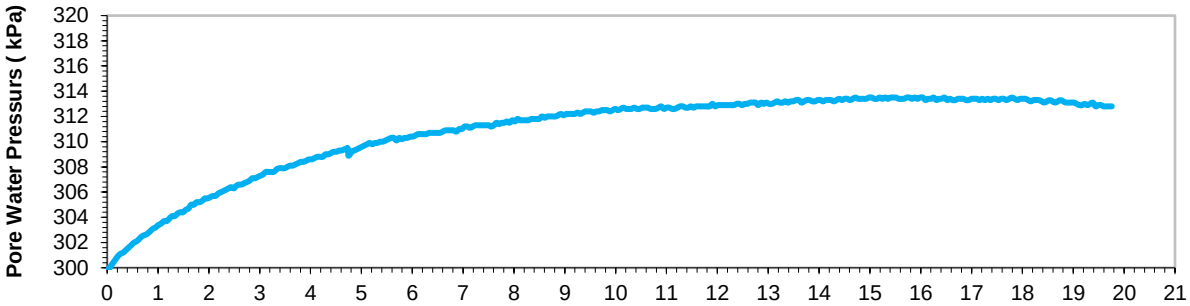


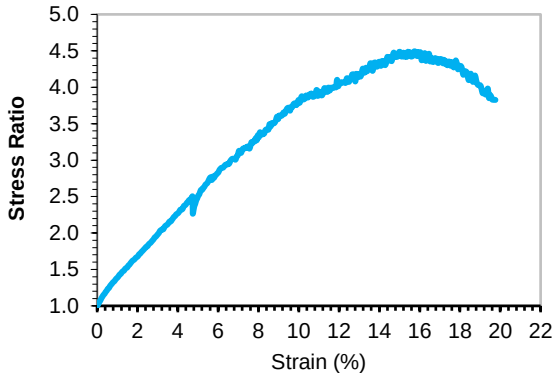


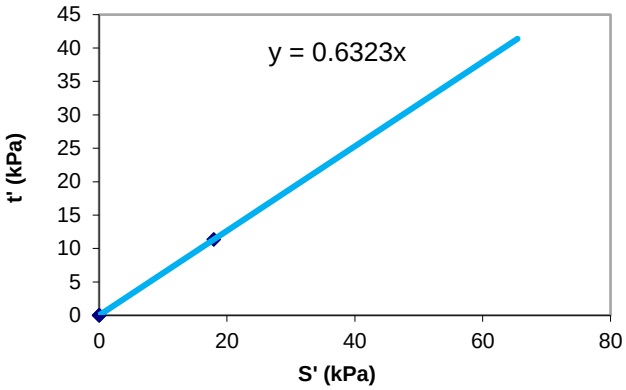


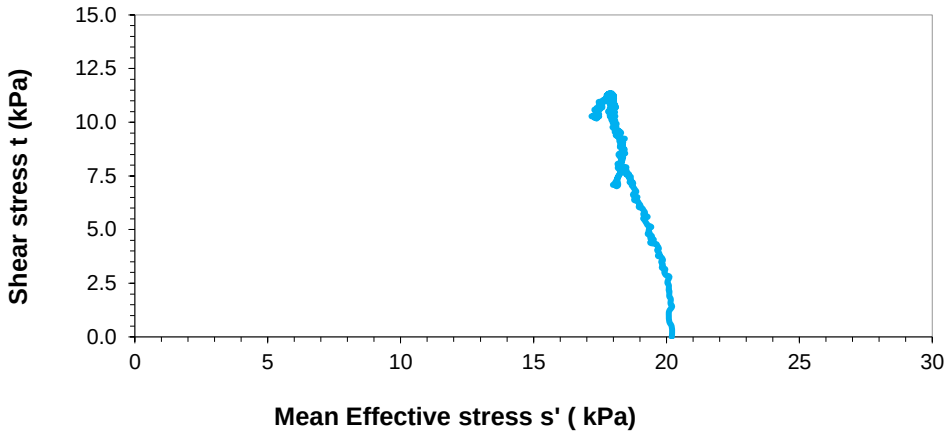
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BHSS05
	Project: Derrygreenagh Power	Sample No. U3
		Depth. 1.00-1.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS05
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown /black slightly fiberous PEAT, with some roots**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHSS05
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SUMMARY OF TEST RESULTS

		Initial			Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3	1.01	1.01
Specimen Length	mm	195.00	Dry Density	Mg/m3	0.145	0.153
Specimen Diameter	mm	103.00	Moisture	%	596.05	555.92
Area	mm2	8332.29	Saturation	%	95.72	95.01
Volume	cc	1624.80	Sg(Assumed)	1.50		

Saturation Stage

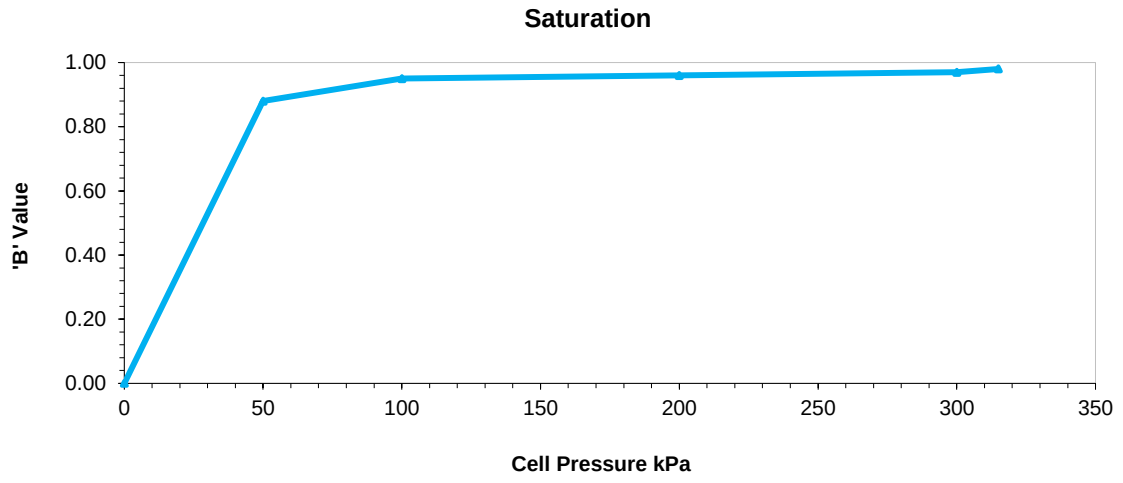
Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.88
2	100	0.95
3	200	0.96
4	300	0.97
5	315	0.98

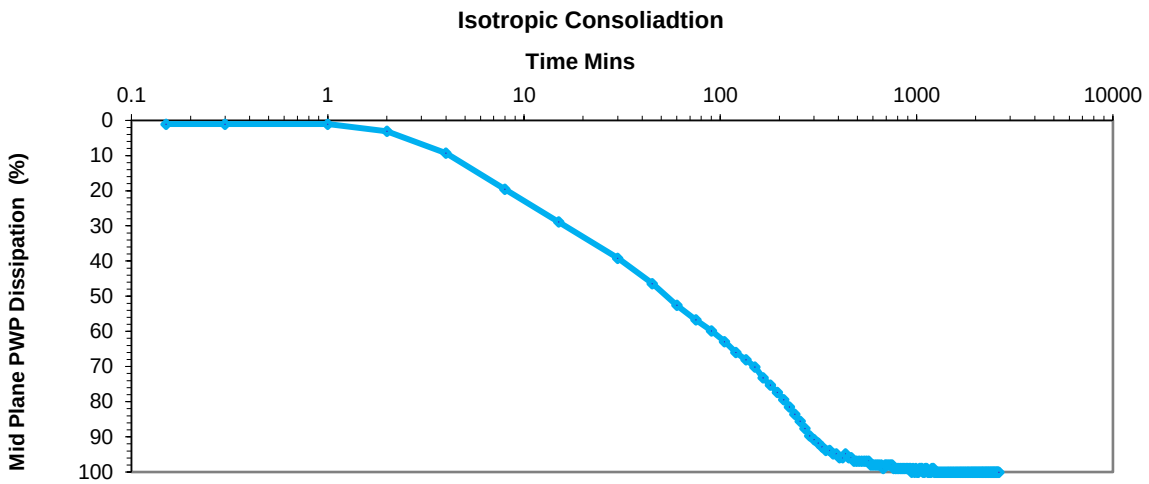
Isotropic Consolidation Stage

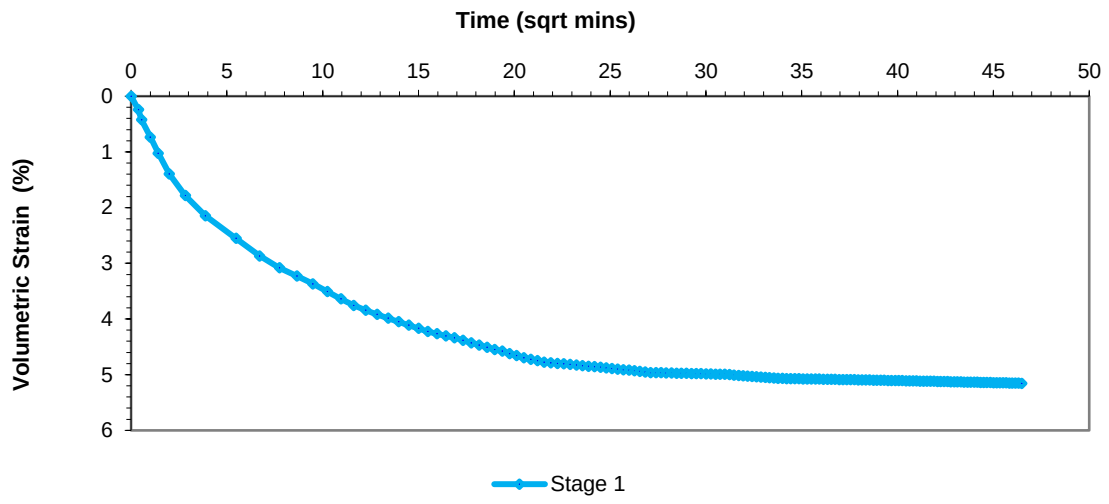
		Stage 1
Cell Pressure	kPa	315
Pore Pressure	kPa	305.7
Back Pressure	kPa	300
Drainage Method		One End & Radial Boundary
t100 (min)		84.6
Coef. Of Consolidation Cv	m2/year	2.481
Coef. Of Compressibility Mv	m2/MN	9.556
Permeability k	m/sec	7.35E-09

	Stage 1
Deviator Stress (kPa)	17.9
External Axial Strain (%)	15.12
Shear Stress (kPa)	8.9
Peak Stress Ratio	5.26
Pore Water Pressure (kPa)	10.8
Radial Effective Stress (kPa)	4.2
Axial Effective Stress (kPa)	22.1
Effective angle of friction (Degrees)	42.9°
Cohesion c' (kPa)	0
Rate of strain mm/min	0.0050
Sample Description	**Dark brown /black slightly fiberous PEAT**
	Plastic Failure

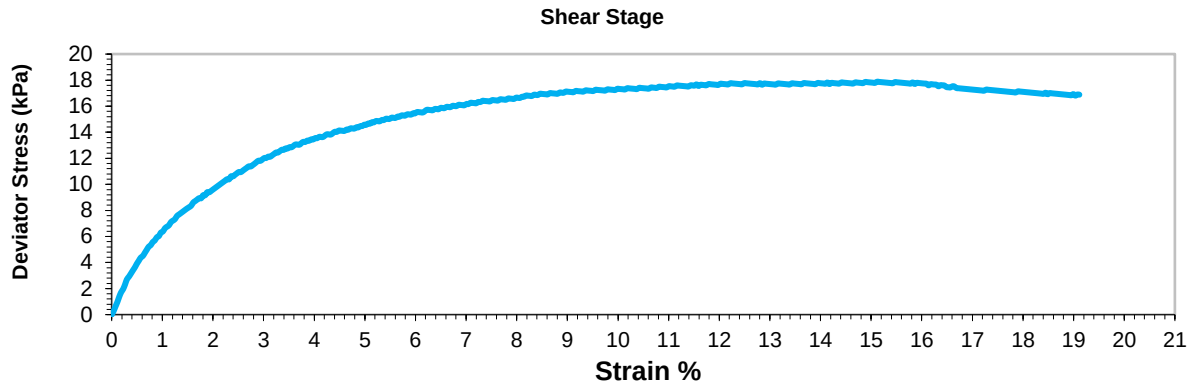
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHT03
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

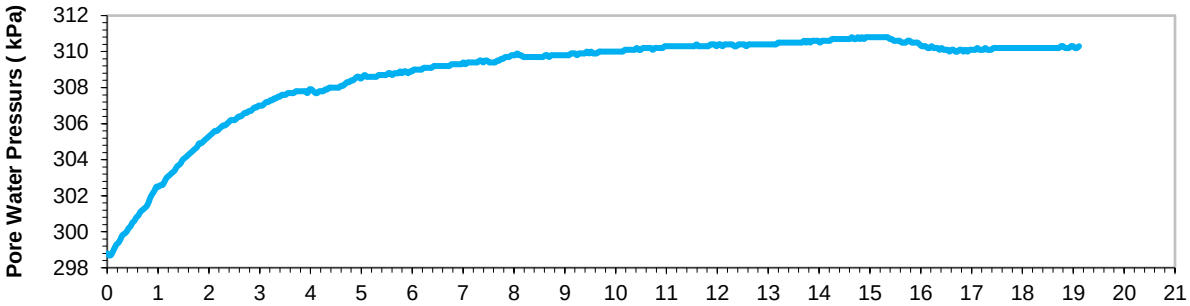


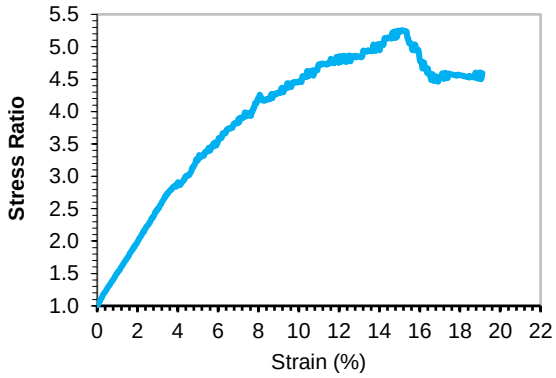


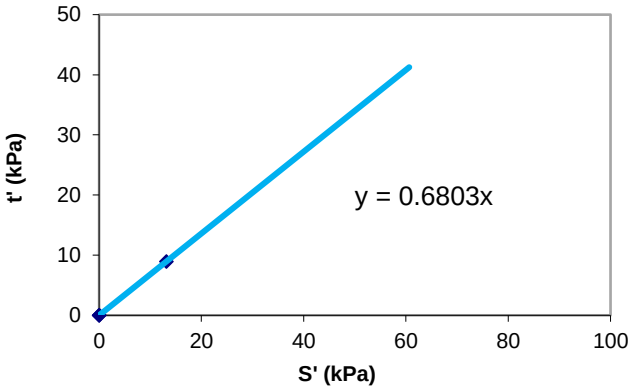


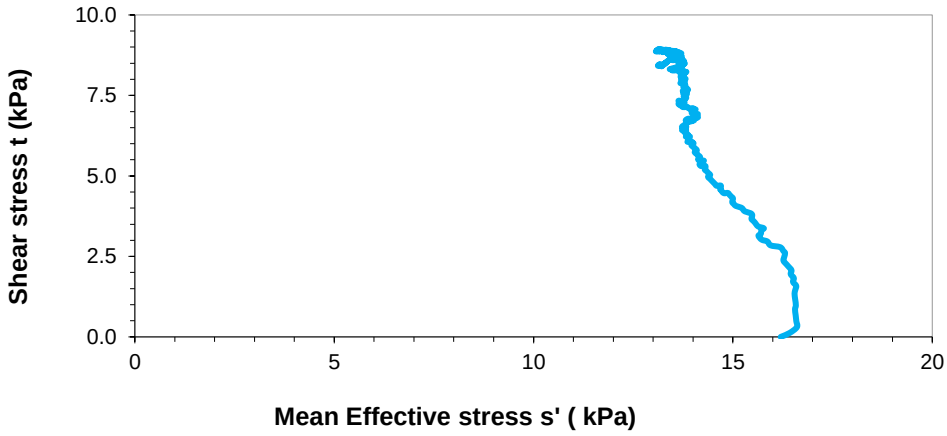
NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No. NMTL-3631
		Borehole No BHT03
	Project: Derrygreenagh Power	Sample No. U3
		Depth. 1.00-1.45m











NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement.Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHT03
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SPECIMEN AFTER TEST

Soil Description **Dark brown /black slightly fiberous PEAT**

NM TL Ltd	**Consolidated Undrained SingleTriaxial test with PWP measurement. Testesd in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		Borehole No.	BHT03
	Project: Derrygreenagh Power	Sample No.	U3
		Depth.	1.00-1.45m

SUMMARY OF TEST RESULTS

		Initial				Initial	Final
Hall Effect Gauge length	mm	n/a	Bulk Density	Mg/m3		1.04	1.05
Specimen Length	mm	206.00	Dry Density	Mg/m3		0.16	0.18
Specimen Diameter	mm	103.50	Moisture	%		551.15	479.33
Area	mm2	8413.38	Saturation	%		98.67	98.48
Volume	cc	1733.16	Sg(Assumed)	1.50			

Saturation Stage

Test Stage	Cell Pressure (kPa)	Pore Pressure Parameter 'B' Base
0	0	0
1	50	0.98
2	100	0.98
3	200	0.99
4	300	0.98
5	315	0.98

Isotropic Consolidation Stage

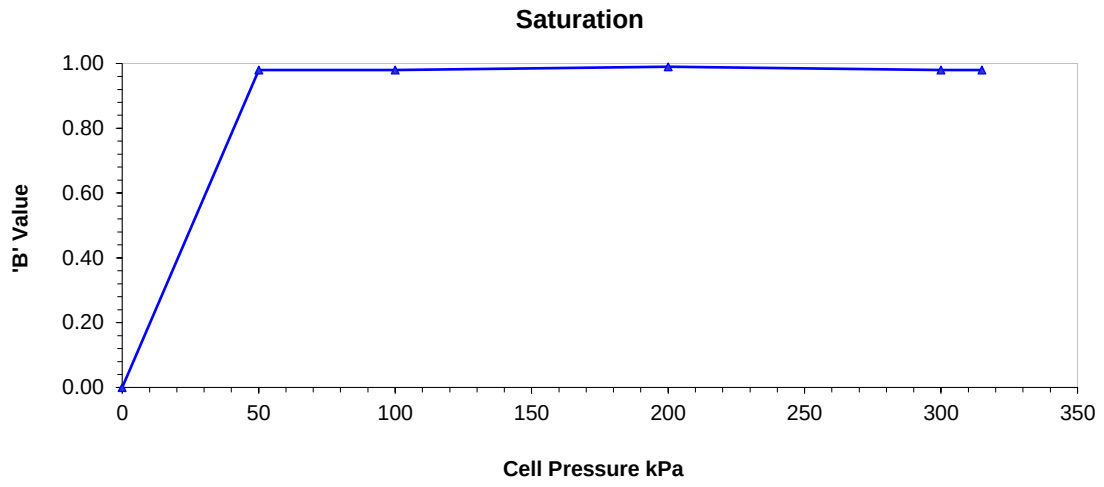
		Stage 1	Stage 2	Stage 3
Cell Pressure	kPa	315	330	360
Pore Pressure	kPa	308.2	322.6	347
Back Pressure	kPa	300	300	300
Drainage Method		One End and Radial boundary		
t100 (min)		912.0	1162.8	870.3
Coef. Of Consolidation Cv	m2/year	0.230	0.181	0.241
Coef. Of Compressibility Mv	m2/MN	2.903	1.832	1.095
Permeability K	m/Sec	2.07E-10	1.03E-10	8.19E-11

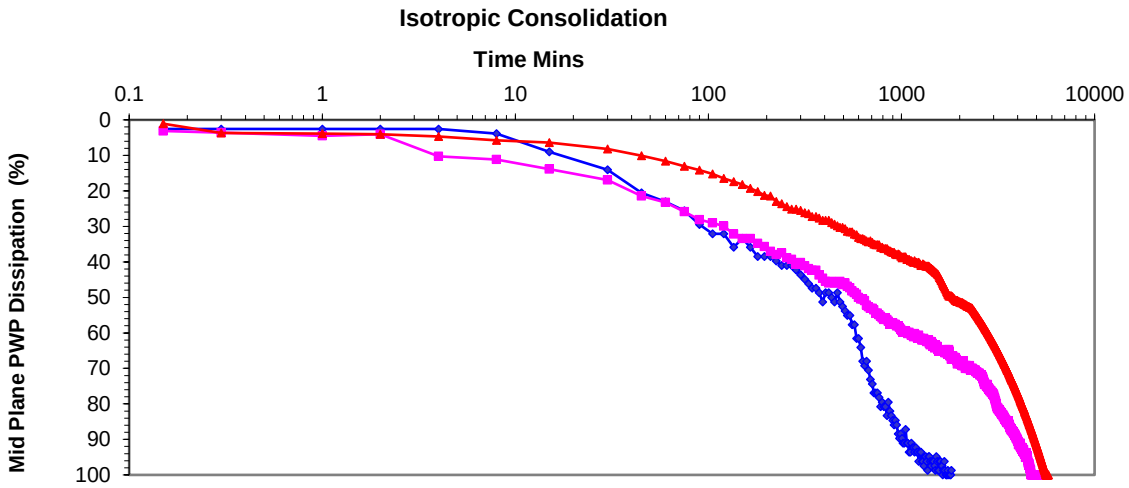
	At Peak Stress Ratio			At peak deviator stress
	Stage 1	Stage 2	Stage 3	
Deviator Stress (kPa)	26.3	40.8	55.6	61.0
External Axial Strain (%)	4.48	9.41	24.41	27.05
Shear Stress (kPa)	13.2	20.41	27.8	30.5
Peak Stress Ratio	10.08	6.44	8.72	7.62
Pore Water Pressure (kPa)	12.1	22.50	52.8	52
Radial Effective Stress (kPa)	2.9	7.5	7.2	8
Axial Effective Stress (kPa)	29.2	48.3	62.8	69.0
Effective angle of friction (Degrees)	48.0°			52.4°
Cohesion c' (kPa)	1.4			
Rate of strain mm/min	0.0060			

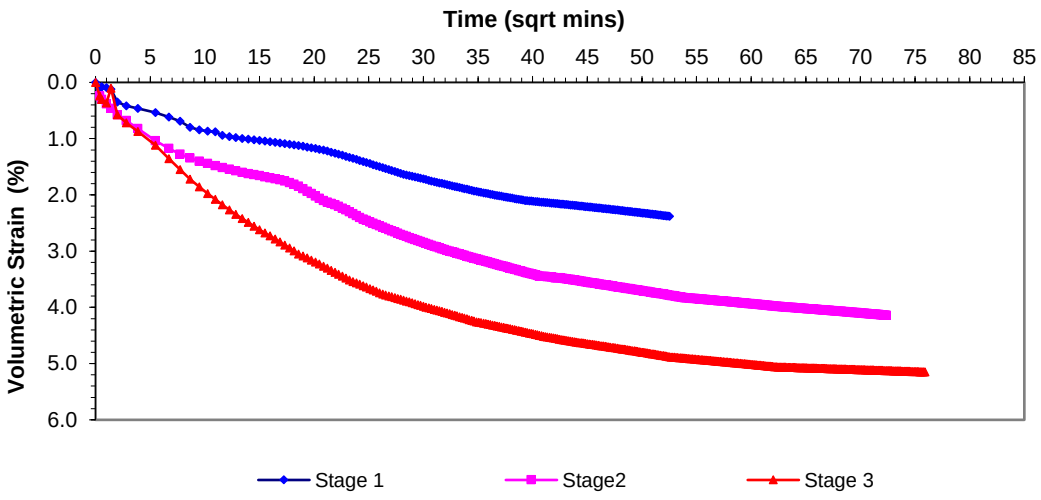
Sample Description **Dark brown /black fiberous PEAT, decomposed wood fragments**

Plastic

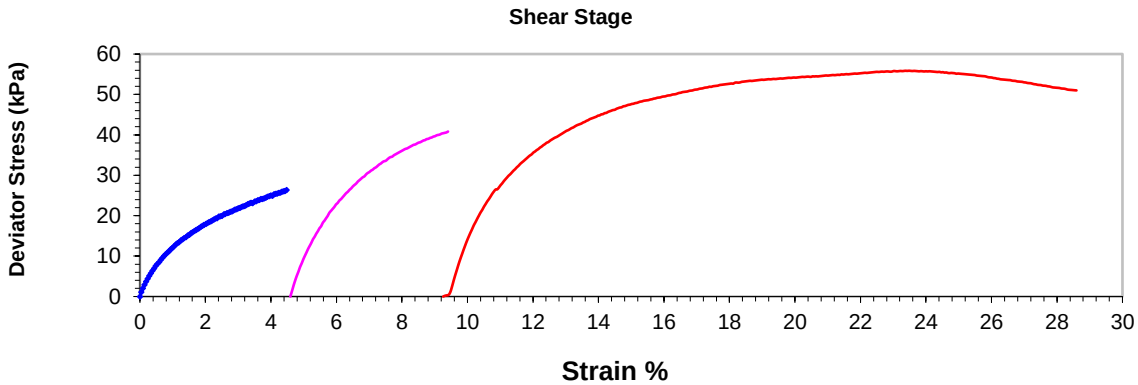
NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHT05
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m

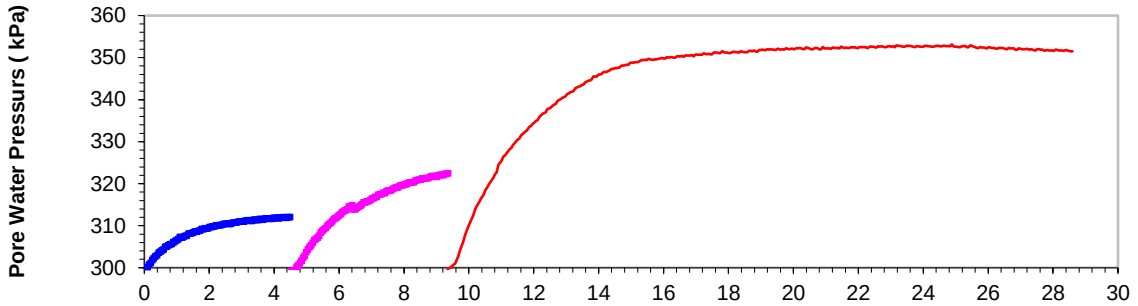


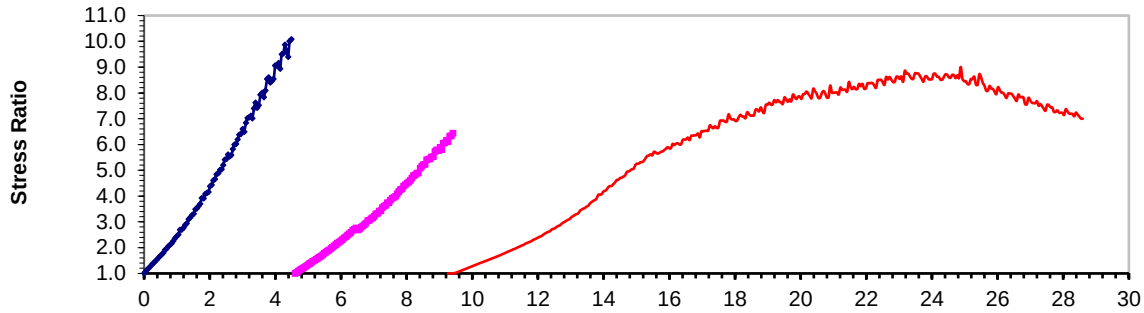


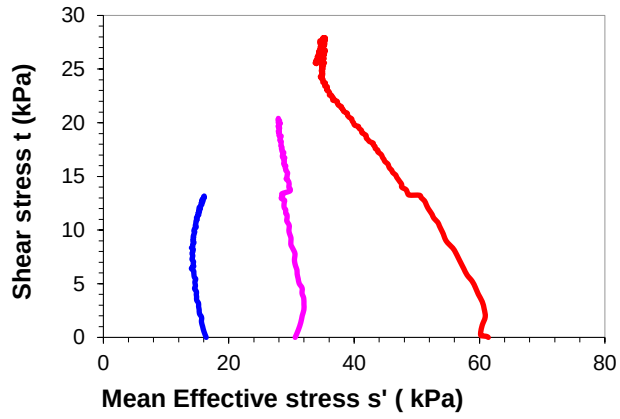


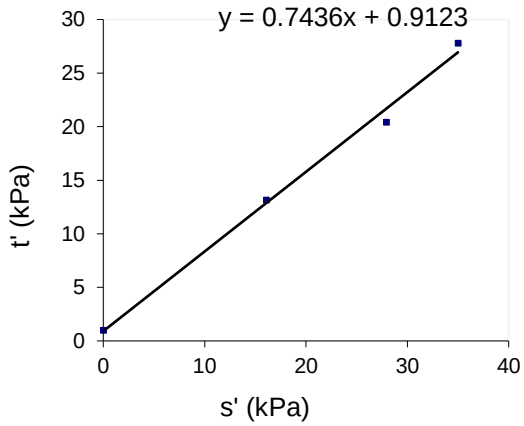
NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHT05
	Project:	Sample No	U3
	Derrygreenagh Power	Depth.	1.00-1.45m





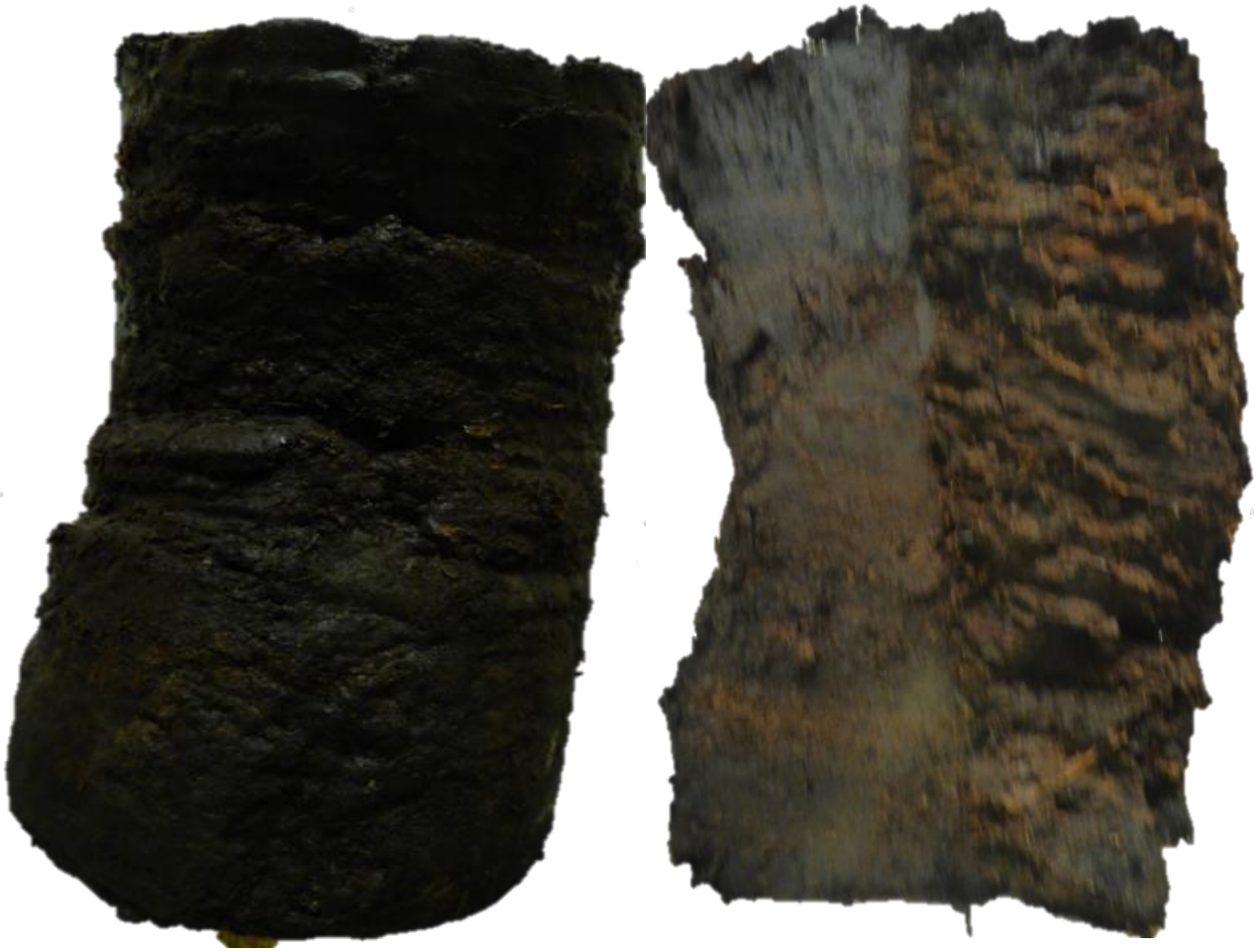






NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHT05
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m

SPECIMEN AFTER TEST



Soil Description **Dark brown /black fiberous PEAT, decomposed wood fragments**

NM TL Ltd	**Consolidated Undrained MultistageTriaxial test with PWP measurement.Tested in accordance with BS:1377 Part 8**	Project No.	NMTL-3631
		BH/TP	BHT05
	Project:	Sample No.	U3
	Derrygreenagh Power	Depth.	1.00-1.45m

IDL

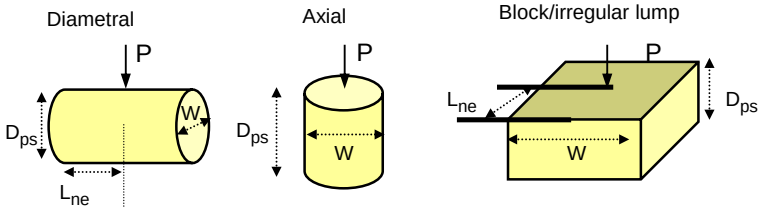
Point Load Strength Index Tests
Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Borehole No.	Sample			Specimen		Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Top Depth m	Base Depth m	Type	Ref	Top m		Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa	
BH102	38.00	40	C	39.3-39.5	39.30		D	U	YES		63.4		63.4	14.7	63.4	3.7	4.1	Very Strong
BH102	40.00	41.3	C	40.6-40.8	40.60		D	U	YES		63.4		63.4	37.7	63.4	9.4	10.4	Extremely Strong
BH102	41.30	42.5	C	41.7-42.0	41.70		D	U	YES		63.4		63.4	14.8	63.4	3.7	4.1	Very Strong
BH102	42.50	43.5	C	42.8-43.1	42.80		D	U	YES		63.4		63.4	12.4	63.4	3.1	3.4	Strong
BH102	43.50	45	C	43.7-43.8	43.70		D	U	YES		63.4		63.4	15.2	63.4	3.8	4.2	Very Strong
BH103	39.20	40.7	C	30-30.14	30.00		D	U	YES		63.4		63.4	15.3	63.4	3.8	4.2	Very Strong
BH103	40.70	41	C	40.9-41.04	40.90		D	U	YES		63.4		63.4	15.9	63.4	3.9	4.4	Very Strong
BH103	41.00	42.6	C	41.6-41.77	41.60		D	U	YES		63.4		63.4	4.8	63.4	1.2	1.3	Medium Strong
BH103	42.60	43.9	C	43.2-43.4	43.20		D	U	YES		63.4		63.4	4.8	63.4	1.2	1.3	Medium Strong
BH104	37.30	38.4	C	37.7-37.84	37.70		D	U	YES		63.4		63.4	2.0	63.4	0.5	0.5	Weak
BH104	38.40	40	C	39.26-39.45	39.26		D	U	YES		63.4		63.4	2.7	63.4	0.7	0.7	Weak
BH104	40.00	41	C	40.7-40.86	40.70		D	U	YES		63.4		63.4	5.5	63.4	1.4	1.5	Medium Strong
BH104	41.00	41.8	C	41.54-41.7	41.54		D	U	YES		63.4		63.4	10.3	63.4	2.6	2.8	Strong
BH104	41.80	42.8	C	42.1-42.31	42.10		D	U	YES		63.4		63.4	11.4	63.4	2.8	3.1	Strong
BH104	42.80	44.2	C	43.61-43.8	43.61		D	U	YES		63.4		63.4	8.4	63.4	2.1	2.3	Strong
BH104	44.20	45.5	C	44.3-44.5	44.30		D	U	YES		63.4		63.4	3.5	63.4	0.9	1.0	Medium Strong
BH104	45.50	46.8	C	46.2-46.36	46.20		D	U	YES		63.4		63.4	3.6	63.4	0.9	1.0	Medium Strong
BH104	46.80	48.3	C	46.8-47.0	46.80		D	U	YES		63.4		63.4	2.0	63.4	0.5	0.5	Weak
BH104	48.30	49.4	C	49.3-49.4	49.30		D	U	YES		63.4		63.4	1.4	63.4	0.3	0.4	Weak
BH104	49.40	50.9	C	49.8-50.0	49.80		D	U	YES		63.4		63.4	18.4	63.4	4.6	5.1	Very Strong

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise
Detailed legend for test and dimensions, based on ISRM, is shown above.
Size factor, F = (De/50)0.45 for all tests.

Date Printed	Approved By	Table
01/11/2023	DCD	1
		sheet 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL

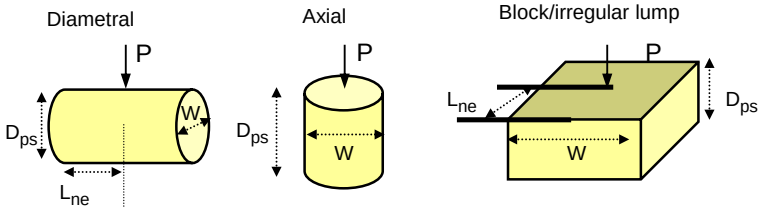
Point Load Strength Index Tests
Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Borehole No.	Sample			Specimen		Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Top Depth m	Base Depth m	Type	Ref	Top m		Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa	
BH105	37.20	38.7	C	37.6-37.8	37.60		D	U	YES		63.4		63.4	3.2	63.4	0.8	0.9	Weak
BH105	38.70	40.2	C	39.1-39.2	39.10		D	U	YES		63.4		63.4	2.7	63.4	0.7	0.7	Weak
BH105	40.20	41.3	C	41.1-41.3	41.10		D	U	YES		63.4		63.4	3.1	63.4	0.8	0.9	Weak
BH105	41.30	42	C	41.4-41.52	41.40		D	U	YES		63.4		63.4	3.3	63.4	0.8	0.9	Weak
BH105	42.00	43.5	C	42.5-42.64	42.50		D	U	YES		63.4		63.4	15.1	63.4	3.8	4.2	Very Strong
BH105	43.50	45	C	44.2-44.4	44.20		D	U	YES		63.4		63.4	19.4	63.4	4.8	5.4	Very Strong
BH108	11.90	13.4	C	12.5-12.7	12.50		D	U	YES		63.4		63.4	10.0	63.4	2.5	2.8	Strong
BH108	13.40	14.9	C	13.95-14.15	13.95		D	U	YES		63.4		63.4	17.8	63.4	4.4	4.9	Very Strong
BH108	14.90	16.3	C	15.5-15.65	15.50		D	U	YES		63.4		63.4	13.4	63.4	3.3	3.7	Strong
BH108	16.30	17.2	C	16.3-16.5	16.30		D	U	YES		63.4		63.4	14.7	63.4	3.6	4.1	Very Strong
BH110	14.70	16.2	C	15.85-16.0	15.85		D	U	YES		63.4		63.4	22.4	63.4	5.6	6.2	Very Strong
BH110	16.20	17.7	C	16.76-16.95	16.76		D	U	YES		63.4		63.4	23.3	63.4	5.8	6.4	Very Strong
BH110	17.70	18.7	C	17.77-17.90	17.77		D	U	YES		63.4		63.4	5.4	63.4	1.3	1.5	Medium Strong
BH110	18.70	19.7	C	19.1-19.2	19.10		D	U	YES		63.4		63.4	24.1	63.4	6.0	6.7	Very Strong
BH110	19.70	20.7	C	20.3-20.44	20.30		D	U	YES		63.4		63.4	4.1	63.4	1.0	1.1	Medium Strong
BH111	5.90	6.9	C	6.6-6.8	6.60		D	U	YES		63.4		63.4	13.9	63.4	3.5	3.9	Strong
BH111	6.90	8.4	C	7.6-7.84	7.60		D	U	YES		63.4		63.4	22.2	63.4	5.5	6.1	Very Strong
BH111	8.40	9.4	C	9.0-9.2	9.00		D	U	YES		63.4		63.4	21.5	63.4	5.3	5.9	Very Strong
BH111	9.40	11	C	9.9-10.03	9.90		D	U	YES		63.4		63.4	27.6	63.4	6.9	7.7	Very Strong
BH118	12.30	13.6	C	13.45-13.55	13.45		D	U	YES		63.4		63.4	12.2	63.4	3.0	3.4	Strong

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



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Date Printed	Approved By	Table
01/11/2023	DCD	1 sheet 2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL

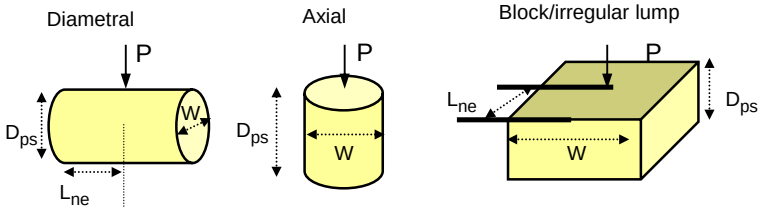
Point Load Strength Index Tests
Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Borehole No.	Sample			Specimen		Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Top Depth m	Base Depth m	Type	Ref	Top m		Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa	
BH118	13.60	14.6	C	14.5-14.6	14.50		D	U	YES		63.4		63.4	13.3	63.4	3.3	3.7	Strong
BH118	14.60	15.9	C	14.8-14.9	14.80		D	U	YES		63.4		63.4	15.6	63.4	3.9	4.3	Very Strong
BH118	16.50	17.6	C	16.6-16.7	16.60		D	U	YES		63.4		63.4	10.1	63.4	2.5	2.8	Strong
BH118	17.60	18.7	C	18.3-18.4	18.30		D	U	YES		63.4		63.4	13.0	63.4	3.2	3.6	Strong
BH118	18.70	20.3	C	19.1-19.2	19.10		D	U	YES		63.4		63.4	21.7	63.4	5.4	6.0	Very Strong
BHSS03	23.70	25.2	C	24.84-25.0	24.84		D	U	YES		63.4		63.4	5.7	63.4	1.4	1.6	Medium Strong
BHSS03	25.20	26.8	C	26.5-26.7	26.50		D	U	YES		63.4		63.4	8.3	63.4	2.1	2.3	Strong
BHSS03	26.80	28.4	C	27.6-27.76	27.60		D	U	YES		63.4		63.4	7.7	63.4	1.9	2.1	Strong
BHSS03	28.40	30	C	29.8-29.94	29.80		D	U	YES		63.4		63.4	9.1	63.4	2.3	2.5	Strong
BHT08	22.10	23.6	C	22.3-22.5	22.30		D	U	YES		63.4		63.4	21.6	63.4	5.4	6.0	Very Strong
BHT08	23.60	25.1	C	24.3-24.5	24.30		D	U	YES		63.4		63.4	26.1	63.4	6.5	7.2	Very Strong
BHT08	25.10	26.3	C	25.4-25.6	25.40		D	U	YES		63.4		63.4	20.9	63.4	5.2	5.8	Very Strong
BHT08	26.30	27.4	C	26.6-26.8	26.60		D	U	YES		63.4		63.4	19.2	63.4	4.8	5.3	Very Strong
BHT09	16.30	17.8	C	17.2-17.4	17.20		D	U	YES		63.4		63.4	23.8	63.4	5.9	6.6	Very Strong
BHT09	17.80	19.3	C	18.24-18.41	18.24		D	U	YES		63.4		63.4	15.2	63.4	3.8	4.2	Very Strong
BHT09	19.30	20.8	C	19.83-20.0	19.83		D	U	YES		63.4		63.4	17.0	63.4	4.2	4.7	Very Strong
BHT09	20.80	22.3	C	21.3-21.47	21.30		D	U	YES		63.4		63.4	22.4	63.4	5.6	6.2	Very Strong
BHT10	13.00	14	C	13.7-14.0	13.70		D	U	YES		63.4		63.4	15.3	63.4	3.8	4.2	Very Strong
BHT10	14.00	15.6	C	14.7-19.0	14.70		D	U	YES		63.4		63.4	21.5	63.4	5.4	6.0	Very Strong
BHT10	15.60	16.2	C	16.0-16.2	16.00		D	U	YES		63.4		63.4	13.6	63.4	3.4	3.8	Strong

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise
Detailed legend for test and dimensions, based on ISRM, is shown above.
Size factor, F = (De/50)0.45 for all tests.

Date Printed	Approved By	Table
01/11/2023	DCD	1 sheet 3

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL

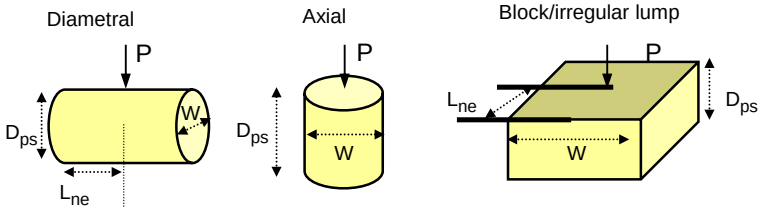
Point Load Strength Index Tests
Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Borehole No.	Sample			Specimen		Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Top Depth m	Base Depth m	Type	Ref	Top m		Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa	
BHT10	16.20	17.6	C	16.3-16.4	16.30		D	U	YES		63.4		63.4	19.7	63.4	4.9	5.5	Very Strong
BHT10	17.60	19.1	C	17.6-17.86	17.86		D	U	YES		63.4		63.4	13.1	63.4	3.3	3.6	Strong
BHT10	19.10	20.6	C	20.2-20.4	20.20		D	U	YES		63.4		63.4	16.9	63.4	4.2	4.7	Very Strong
BHT111A	7.00	8	C	7.1-7.3	7.10		D	U	YES		63.4		63.4	12.4	63.4	3.1	3.4	Strong
BHT111A	8.00	8.6	C	8.2-8.34	8.20		D	U	YES		63.4		63.4	14.8	63.4	3.7	4.1	Very Strong
BHT111A	8.60	10.2	C	9.55-9.7	9.55		D	U	YES		63.4		63.4	15.1	63.4	3.8	4.2	Very Strong
BHT111A	10.20	11.4	C	10.5-10.8	10.50		D	U	YES		63.4		63.4	13.4	63.4	3.3	3.7	Strong
BHT111A	11.40	13	C	12.0-12.2	12.00		D	U	YES		63.4		63.4	7.7	63.4	1.9	2.1	Strong
BHT111A	13.00	14	C	13.25-13.4	13.25		D	U	YES		63.4		63.4	19.2	63.4	4.8	5.3	Very Strong
BHT111A	14.00	15.6	C	14.9-15.0	14.90		D	U	YES		63.4		63.4	6.9	63.4	1.7	1.9	Medium Strong
BHT111A	15.60	16.4	C	15.7-15.9	15.70		D	U	YES		63.4		63.4	11.1	63.4	2.8	3.1	Strong
BHT111A	16.40	17.7	C	17.0-17.16	17.00		D	U	YES		63.4		63.4	20.5	63.4	5.1	5.7	Very Strong
BHT111A	17.70	19.3	C	18.9-19.14	18.90		D	U	YES		63.4		63.4	2.9	63.4	0.7	0.8	Weak
BHT111A	19.30	20.7	C	19.3-19.4	19.30		D	U	YES		63.4		63.4	14.5	63.4	3.6	4.0	Very Strong
BHT13	17.60	19.1	C	18.8-18.94	18.80		D	U	YES		63.4		63.4	17.6	63.4	4.4	4.9	Very Strong
BHT13	19.10	20.6	C	19.8-9.9	19.80		D	U	YES		63.4		63.4	6.4	63.4	1.6	1.8	Medium Strong
BHT15	20.60	22.1	C	21.9-22.1	21.90		D	U	YES		63.4		63.4	17.1	63.4	4.2	4.7	Very Strong
BHT15	22.10	23.1	C	22.9-23.1	22.29		D	U	YES		63.4		63.4	14.5	63.4	3.6	4.0	Very Strong
BHT15	23.10	23.6	C	23.3-23.5	23.30		D	U	YES		63.4		63.4	17.8	63.4	4.4	4.9	Very Strong
BHT15	23.60	24.6	C	24.16-24.4	24.16		D	U	YES		63.4		63.4	12.3	63.4	3.1	3.4	Strong

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise
Detailed legend for test and dimensions, based on ISRM, is shown above.
Size factor, F = (De/50)0.45 for all tests.

Date Printed	Approved By	Table
01/11/2023	DCD	1 sheet 4

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL

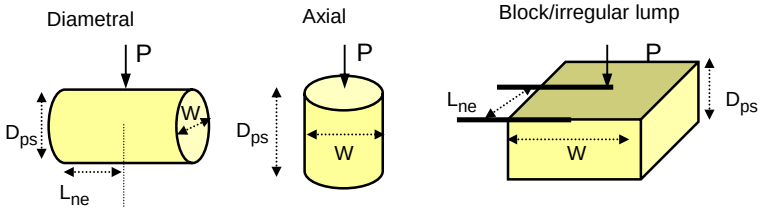
Point Load Strength Index Tests
Summary of Results

Project No.
2023OY104

Project Name
Derrygreenagh Power

Borehole No.	Sample			Specimen		Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Top Depth m	Base Depth m	Type	Ref	Top m		Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa	
BHT15	24.60	25.6	C	25.45-25.6	25.45		D	U	YES		63.4		63.4	10.7	63.4	2.7	3.0	Strong
BHT15	25.60	26.6	C	25.8-26.0	25.80		D	U	YES		63.4		63.4	17.5	63.4	4.3	4.8	Very Strong
BHT15	26.60	27.2	C	26.8-27	26.80		D	U	YES		63.4		63.4	17.1	63.4	4.3	4.7	Very Strong
BHT17	15.40	17	C	15.4-15.6	15.40		D	U	YES		63.4		63.4	8.0	63.4	2.0	2.2	Strong
BHT17	17.50	19.1	C	18.6-18.76	18.60		D	U	YES		63.4		63.4	20.0	63.4	5.0	5.5	Very Strong
BHT17	19.10	19.5	C	19.4-19.5	19.40		D	U	YES		63.4		63.4	16.7	63.4	4.2	4.6	Very Strong
BHT17	19.50	20.6	C	19.95-20.1	19.95		D	U	YES		63.4		63.4	13.7	63.4	3.4	3.8	Strong

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise
Detailed legend for test and dimensions, based on ISRM, is shown above.
Size factor, F = (De/50)0.45 for all tests.

Date Printed	Approved By	Table
01/11/2023	DCD	1
		sheet 5

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IDL

UNIAXIAL COMPRESSION TEST ON ROCK - SUMMARY OF RESULTS

Project No.
2023OY104

Project Name
Derrygreenagh Power

Hole No.	Sample				Specimen Depth (m)	Specimen Dimensions2			Bulk Density2	Water Content 1	Uniaxial Compression3				Remarks
	Ref	Top	Base	Type		Dia. mm	Length mm	H/D	Mg/m3	%	Condition	Stress Rate MPa/s	Mode of failure	UCS MPa	
BHT08		22.10	23.60	C	23.15	63.4	160.6	2.5	2.67		as received	0.5025	F	99.0	Strong
BHT08		26.30	27.40	C	26.8	63.4	161.6	2.5	2.68		as received	0.5640	F	145.0	Very Strong
BHT09		19.30	20.80	C	20.14	63.4	161.5	2.5	2.68		as received	0.5165	AC	82.6	Strong
BHT10		14.00	15.60	C	15	63.4	159.9	2.5	2.68		as received	0.1833	AC	45.6	Medium Strong
BHT10		16.20	17.60	C	17.1	63.4	159.5	2.5	2.67		as received	0.4555	AC	91.1	Strong
BHT111A		7.00	8.00	C	7.4	63.4	158.3	2.5	2.53		as received	0.1092	S	23.7	Weak
BHT111A		8.60	10.20	C	9.06	63.4	162.3	2.6	2.67		as received	0.4967	F	94.9	Strong
BHT111A		13.00	14.00	C	14	63.4	158.9	2.5	2.52		as received	0.2220	MS + AC	45.7	Medium Strong
BHT13		17.60	19.10	C	17.9	63.4	161.7	2.6	2.66		as received	0.2864	AC	88.8	Strong
BHT13		19.10	20.60	C	19.6	63.4	153.3	2.4	2.62		as received	0.2913	AC	68.2	Strong
BHT15		20.60	22.10	C	22.55	63.4	160.0	2.5	2.66		as received	0.3526	AC	115.0	Very Strong
BHT15		24.60	25.60	C	25	63.4	159.5	2.5	2.68		as received	0.5197	F	150.0	Very Strong
BHT17		15.40	17.00	C	16.2	63.4	159.9	2.5	2.72		as received	0.5951	AC	140.0	Very Strong
BHT17		19.10	19.50	C	20.1	63.4	161.2	2.5	2.68		as received	0.6615	F	232.0	Very Strong

Notes

1 ISRM p87 test 1, water content at 105 ± 3 oC, specimen as tested for UCS
2 ISRM p86 clause (vii), Caliper method used for determination of bulk volume and derivation of bulk density
3 ISRM p153 part 1, determination of Uniaxial Compressive Strength (UCS) of Rock Materials
above notes apply unless annotated otherwise in the remarks

Mode of failure :
S - Single shear MS - multiple shear
AC - Axial cleavage F - Fragmented

Test Specification	Date Printed	Approved By	Table
International Society for Rock Mechanics, The complete ISRM suggested methods for Rock Characterization Testing and Monitoring, 2007	01/11/2023	DCD	1 sheet 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Appendix 11
Environmental Laboratory Test Results

Project ID	2023OY104	2023OY104
Project Name	Derrygreenagh Power	Derrygreenagh Power
Schedule ID	2023OY104_all	2023OY104_all

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
	Total scheduled						152	155	33				
	Completed to date						152	155	33				
BH101	1	1.1	ES 1		13.4.23	Env Repo	1	1	1			230418-53	
BH102	1.00		ES		17.4.23	Env Repo	1	1	1			230421-102	
BH103	1.50		ES		17.4.23	Env Repo	1	1	1			230421-102	
BH104	1.00		ES		18.4.23	Env Repo	1	1	1			230421-103	
BH105	1.00		ES	3	19.4.23	Env Repo	1	1	1			230421-103	
BH106	4.00		ES		20.4.23	Env Repo	1	1	1			230426-63	
BH107	1.50		ES		26.4.23	Env Repo	1	1	1			230502-27	
BH108	1.00		ES		25.4.23	Env Repo	1	1	1			230502-27	
BH109	1.00		ES	3	20.4.23	Env Repo	1	1	*			230426-63	
bh110	1.00		ES	3	27.4.23	Env Repo	1	1	1			230502-30	
BH111	1.50		ES	3	2.5.23	Env Repo	1	1	1			230510-54	
BH112	0.6	0.6	ES 1		12.4.23	Env Repo	1	1	1			230418-53	
BH112	1.6	1.6	ES 2		12.4.23	Env Repo	1	1	1			230418-53	
BH113	2.00		ES		24.4.23	Env Repo	1	1	1			230502-27	
BH114	1.00		ES		24.4.23	Env Repo	1	1	1			230426-63	
BH115	3.00		ES		20.4.23	Env Repo	1	1	1			230426-63	
BH116	7	ES 1	ES 1		11.5.23	Env Repo	1	1				230518-59	
BH117	4.5	ES 1	ES 1		10.5.23	Env Repo	1	1				230515-36	
BH118	3.5	ES 1	ES 1		12.5.23	Env Repo	1	1				230518-59	
BHCC01	4.5		ES		15.6.23	Env Repo	1	1	1			230623-103	
BHCC02	3		ES		14.6.23	Env Repo	1	1	1			230623-103	
BHPW301	1.00		ES		19.4.23	Env Repo	1	1	*			230426-63	
BHSS01	7.5	ES 1	ES 1		16.5.23	Env Repo	1	1				230518-59	
BHSS02		ES 1	ES 1		5.5.23	Env Repo	1	1				230515-36	
BHSS03	4	ES 1	ES 1		9.5.23	Env Repo	1	1				230515-36	
BHSS04	3.50	3.50	ES		4.5.23	Env Repo	1	1	1			230510-54	
BHSS05	2.50		ES		3.5.23	Env Repo	1	1	1			230510-54	
BHSS06	5.5				20.6.23	Env Repo		1	1			230627-39	
BHSS101	1	1.5	es		17.7.23	Env Repo	1	1	1			230726-72	
BHSS102	3	3.8	es		18.7.23	Env Repo	1	1	1			230726-72	
BHSS103	3	3.5			17.7.23	Env Repo	1	1	1			230726-72	
BHSS104	2	2.5			19.7.23	Env Repo	1	1	1			230726-72	
BHSS105	1.00	1.50	ES	7	14.7.23	Env Repo	1	1	1			230726-72	
BHSS106	3.00	3.50	ES	16	20.7.23	Env Repo	1	1	1			230726-72	
BHSS107	2.50		ES	9	20.7.23	Env Repo	1	1	1			230726-72	
BHSS108	3	3	es		20.7.23	Env Repo	1	1	1			230726-72	
BHT01	5		ES		13.6.23	Env Repo	1	1				230615-86	
BHT02	6		ES		8.6.23	Env Repo	1	1				230615-86	
BHT03	5.5		ES		7.6.23	Env Repo	1	1				230615-86	
BHT04	4		ES		6.6.23	Env Repo	1	1				230615-86	
BHT06	5.5		ES	1	2.6.23	Env Repo	1	1				230615-86	
BHT07	5.5	5.5	ES		31.5.23	Env Repo	1	1				230605-71	
BHT08	0.50	0.80	ES	1	13.6.23	Env Repo	1	1				230615-86	
BHT08	3.5		es	2	19.6.23	Env Repo		1	1			230627-39	
BHT09	6	6	ES	1	29.5.23	Env Repo	1	1				230605-71	
BHT10	5.5	5.5	ES	1	25.5.23	Env Repo	1	1				230601-71	
BHT11	5	5	ES		24.5.23	Env Repo	1	1				230601-71	
BHT12	6	6	ES	1	24.5.23	Env Repo	1	1				230601-71	
BHT13	3	3	ES	1	24.5.23	Env Repo	1	1				230601-71	
BHT14	1.5	1.5	ES	1	19.5.23	Env Repo	1	1				230601-71	
BHT15	7	7	ES 1	1	19.5.23	Env Repo	1	1				230526-70	
BHT16	3.5		es	1	21.6.23	Env Repo		1	1			230627-39	
BHT16A	1.50		ES		1.8.23	Env Repo	1	1	1			230811-69	
BHT17	5.5	5.6	ES 1	1	17.5.23	Env Repo	1	1				230526-70	
BHT17A	3.00		ES		31.7.23	Env Repo	1	1	1			230811-69	
BHT18A	3.00		ES		3.8.23	Env Repo	1	1	1			230811-69	
TP201	2.80	3.00	ES		2.5.23	Env Repo	1	1				230510-55	
TP204	0.80	0.85	ES		2.5.23	Env Repo	1	1				230510-55	
TP205	2.45	2.55	ES		3.5.23	Env Repo	1	1				230510-55	
TP206	1	1.1	ES 1		8.5.23	Env Repo	1	1				230515-35	
TP207	1.00	1.10	ES		3.5.23	Env Repo	1	1				230510-55	
TP208	2	2.1	ES5	ES5	29.6.23	Env Repo	1	1				230705-77	
TP208	3.5	3.6	ES10	ES1(	29.6.23	Env Repo	1	1				230705-77	
TP209	1.00	1.10	ES		3.5.23	Env Repo	1	1				230510-55	
TP210	1	1.1	ES 1		8.5.23	Env Repo	1	1				230515-35	
TP211	1	1.1	ES 1		9.5.23	Env Repo	1	1				230515-35	
TP212	1.1	1.2	ES 1		9.5.23	Env Repo	1	1				230515-35	
TP213	1	1.1	ES 1		10.5.23	Env Repo	1	1				230515-35	
TP214	1	1.1	ES 1		10.5.23	Env Repo	1	1				230515-35	
TP215	1	1.1	ES 1		10.5.23	Env Repo	1	1				230515-35	
TP216	1.1	1.2	ES 1		8.5.23	Env Repo	1	1				230515-35	
tp217	1		ES		5.5.23	Env Repo	1	1				230511-90	
TP218	1.00	1.10	ES		4.5.23	Env Repo	1	1				230510-55	
TP219	1.00	1.10	ES		4.5.23	Env Repo	1	1				230510-55	

Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Env Suite A414	Env Suite A416 (minus WAC)	Env WAC	BRE SD1	Thermal Resistivity	ALS ref	Notes
TP220	1.00	1.10	ES		4.5.23	Env Repo	1	1				230510-55	
TP221	2.70	2.80	ES		14.6.23	Env Repo	1	1				230623-103	
TP222	1.50	1.70	ES		14.6.23	Env Repo	1	1				230623-103	
TP223	2.50	2.60	ES		14.6.23	Env Repo	1	1				230623-103	
TP224	0.90	1.00	ES		14.6.23	Env Repo	1	1				230623-103	
TP301	0.70	0.80	ES	5	16.5.23	Env Repo	1	1				230526-70	
TP302	0.90	1.00	ES	5	16.5.23	Env Repo	1	1				230526-70	
TP303	2.20	2.30	ES	5	16.5.23	Env Repo	1	1				230526-70	
TP304	2.30	2.40	ES	5	17.5.23	Env Repo	1	1				230526-70	
TP305	0.80	0.90	ES	3	17.5.23	Env Repo	1	1				230526-70	
TP306	1.50	1.60	ES	5	17.5.23	Env Repo	1	1				230526-70	
TP307A	1.00	1.10	ES	3	17.5.23	Env Repo	1	1				230526-70	
TP308	1.30	1.40	ES	5	22.5.23	Env Repo	1	1				230526-70	
TP309	0.30	0.40	ES	3	22.5.23	Env Repo	1	1				230526-70	
TP310	3.10	3.20	ES	7	22.5.23	Env Repo	1	1				230526-70	
TP311	3.90	4.00	ES	6	22.5.23	Env Repo	1	1				230526-70	
TP312	1.20	1.30	ES	4	31.5.23	Env Repo	1	1				230605-71	
TP313	0.50	0.60	ES	3	31.5.23	Env Repo	1	1				230605-71	
TPBP01	1.40	1.50	ES	5	23.5.23	Env Repo	1	1				230601-68	
TPBP02	0.20	0.30	ES	3	23.5.23	Env Repo	1	1				230601-68	
TPBP03	0.20	0.30	ES	2	23.5.23	Env Repo	1	1				230601-68	
TPBP04	0.50	0.60	ES	3	24.5.23	Env Repo	1	1				230601-68	
TPBP05	0.50	0.60	ES	3	23.5.23	Env Repo	1	1				230601-68	
TPBP06	0.20	0.30	ES	3	24.5.23	Env Repo	1	1				230601-68	
TPBP07	0.30	0.40	ES	3	24.5.23	Env Repo	1	1				230601-68	
TPBP08	3.20	3.30	ES	7	24.5.23	Env Repo	1	1				230601-68	
TPC01	2.60	2.70	ES	6	29.5.23	Env Repo	1	1				230605-71	
TPC02	2.50	2.60	ES	7	29.5.23	Env Repo	1	1				230605-71	
TPC03	3.20	3.30	ES	7	29.5.23	Env Repo	1	1				230605-71	
TPC04	1.60	1.70	ES	5	30.5.23	Env Repo	1	1				230605-71	
TPC05	0.50	0.60	ES	3	30.5.23	Env Repo	1	1				230605-71	
TPC06	2.50	2.60	ES	5	30.5.23	Env Repo	1	1				230605-71	
TPC07	1.40	1.50	ES		30.5.23	Env Repo	1	1				230605-71	
TPC08	0.8	0.9	ES5	ES5	28.6.23	Env Repo	1	1				230705-77	
TPC08	2.3	2.6	ES8	ES8	28.6.23	Env Repo	1	1				230705-77	
TPC09	1.4	1.4	ES5	ES5	28.6.23	Env Repo	1	1				230705-77	
TPC09	2.7	2.8	ES8	ES8	28.6.23	Env Repo	1	1				230705-77	
TPCC01	2.90	3.00	ES	7	29.5.23	Env Repo	1	1				230605-71	
TPSS01	1.00	1.10	ES 1		11.5.23	Env Repo	1	1				230518-59	
TPSS01	3.25	3.35	ES 2		11.5.23	Env Repo	1	1				230518-59	
TPSS02	1.90	2.00	ES 1		10.5.23	Env Repo	1	1				230515-35	
TPSS02	3.40	3.60	ES 1		10.5.23	Env Repo	1	1				230511-90	
TPSS03	1.10	1.20	ES 1		10.5.23	Env Repo	1	1				230515-35	
TPSS03	2.00	2.20	ES 2		10.5.23	Env Repo	1	1				230515-35	
TPSS04	2.10	2.20	ES 1		11.5.23	Env Repo	1	1				230518-59	
TPSS04	4.10	4.20	ES 2		11.5.23	Env Repo	1	1				230518-59	
TPSS05	2.60	2.70	ES 1		11.5.23	Env Repo	1	1				230518-59	
TPSS05	3.50	3.70	ES 2		11.5.23	Env Repo	1	1				230518-59	
TPSS06	1.20	1.30	ES 1		11.5.23	Env Repo	1	1				230518-59	
TPSS06	3.00	3.20	ES 2		11.5.23	Env Repo	1	1				230518-59	
TPSS101	0.4	0.5	ES3	ES3	27.6.23	Env Repo	1	1				230705-77	
TPSS101	2.4	2.5	ES8	ES8	27.6.23	Env Repo	1	1				230705-77	
TPSS102	0.4	0.5	ES3	ES3	27.6.23	Env Repo	1	1				230705-77	
TPSS102	2.4	2.5	ES8	ES8	27.6.23	Env Repo	1	1				230705-77	
TPSS103	0.4	0.5	ES3	ES3	27.6.23	Env Repo	1	1				230705-77	
TPSS103	2.4	2.5	ES8	ES8	27.6.23	Env Repo	1	1				230705-77	
TPSS104	0.7	0.8	ES5	ES5	27.6.23	Env Repo	1	1				230705-77	
TPSS104	2	2.1	ES8	ES8	27.6.23	Env Repo	1	1				230705-77	
TPSS105	0.4	0.5	ES3	ES3	27.6.23	Env Repo	1	1				230705-77	
TPSS105	2.4	2.5	ES8	ES8	27.6.23	Env Repo	1	1				230705-77	
TPSS106	0.4	0.5	ES3	ES3	27.6.23	Env Repo	1	1				230705-77	
TPSS106	2.4	2.5	ES8	ES8	27.6.23	Env Repo	1	1				230705-77	
TPSS107	0.4	0.5	ES3	ES3	28.6.23	Env Repo	1	1				230705-77	
TPSS107	1.8	1.9	ES6	ES6	28.6.23	Env Repo	1	1				230705-77	
TPT01	2.40	2.50	ES	5	26.5.23	Env Repo	1	1				230601-67	
TPT02	2.10	2.20	ES	5	26.5.23	Env Repo	1	1				230601-67	
TPT03	1.50	1.60	ES	5	26.5.23	Env Repo	1	1				230601-67	
TPT04	0.10	0.20	ES	3	26.5.23	Env Repo	1	1				230601-67	
TPT05	1.00	1.10	ES	5	25.5.23	Env Repo	1	1				230601-67	
TPT06	0.30	0.40	ES	3	25.5.23	Env Repo	1	1				230601-67	
TPT07	0.30	0.40	ES	3	25.5.23	Env Repo	1	1				230601-67	
TPT09	0.50	0.60	ES	3	25.5.23	Env Repo	1	1				230601-67	
TPT10	0.20	0.30	ES	3	25.5.23	Env Repo	1	1				230601-67	
TPT11	0.20	0.30	ES	2	24.5.23	Env Repo	1	1				230601-67	
TPT12	0.30	0.40	ES	3	23.5.23	Env Repo	1	1				230601-67	
TPT13	0.2	0.3	ES 1		16.5.23	Env Repo	1	1				230526-70	
TPT14	0.15	0.3	ES 1		16.5.23	Env Repo	1	1				230526-70	
TPT15	0.40	0.50	ES	3	16.5.23	Env Repo	1	1				230526-70	
TPT16	0.80	0.90	ES 1	5	15.5.23	Env Repo	1	1				230518-59	
TPT17	2.1	2.2	ES 1	5	15.5.23	Env Repo	1	1				230518-59	
TPT18	1.3	1.4	ES 1	5	15.5.23	Env Repo	1	1				230518-59	

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Deeside
CH5 3US
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Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230418-53
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	690922
Order Number:	12380

This report has been revised and directly supersedes 688330 in its entirety.

We received 3 samples on Tuesday April 18, 2023 and 3 of these samples were scheduled for analysis which was completed on Wednesday May 10, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27852611	BH101	ES1	1.00 - 1.00	13/04/2023
27852601	BH112	ES1	0.60 - 0.60	12/04/2023
27852606	BH112	ES2	1.60 - 1.60	12/04/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27852611			27852601			27852606		
Customer Sample Reference			BH101			BH112			BH112		
AGS Reference			ES1			ES1			ES2		
Depth (m)			1.00 - 1.00			0.60 - 0.60			1.60 - 1.60		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 3		X			X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 3	X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X		
CEN Readings	All	NDPs: 0 Tests: 3	X			X			X		
Chromium III	All	NDPs: 0 Tests: 3		X			X			X	
Coronene	All	NDPs: 0 Tests: 3		X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X			X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X			X			X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3	X			X			X		
EPH	All	NDPs: 0 Tests: 3		X			X			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3		X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
Fluoride	All	NDPs: 0 Tests: 3	X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X			X

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

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G - Gas
OTH - Other

Lab Sample No(s)					27852611			27852601			27852606
Customer Sample Reference					BH101			BH112			BH112
AGS Reference					ES1			ES1			ES2
Depth (m)					1.00 - 1.00			0.60 - 0.60			1.60 - 1.60
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3			X			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 3			X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 3			X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 3		X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 3			X			X			X	
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 3			X			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 3			X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 3			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 3			X			X			X	
pH	All	NDPs: 0 Tests: 3			X			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 3		X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3			X			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 3		X			X			X		
Sample description	All	NDPs: 0 Tests: 3			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3			X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
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RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27852611				27852601			27852606	
Customer Sample Reference			BH101				BH112			BH112	
AGS Reference			ES1				ES1			ES2	
Depth (m)			1.00 - 1.00				0.60 - 0.60			1.60 - 1.60	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Total Organic Carbon	All	NDPs: 0 Tests: 3		X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 3		X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 3			X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27852611	BH101	1.00 - 1.00	Light Brown	Sandy Silt Loam	Stones	None
27852601	BH112	0.60 - 0.60	Light Brown	Sandy Clay Loam	Stones	None
27852606	BH112	1.60 - 1.60	Light Brown	Silt Loam	Vegetation	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			.	.	.			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	15	9.4	19			
Loss on ignition	<0.7 %	TM018	2.49 M	2.66 M	4.23 M			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	0.011 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	0.044 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	0.055 M	<0.035 M			
Organic Carbon, Total	<0.2 %	TM132	0.451 M	<0.2 M	1.05 M			
Sulphur, Total	<0.02 %	TM132	0.0427 #	<0.02 #	0.0306 #			
Organic Matter, Total	<0.35 %	TM132	0.778 #	<0.35 #	1.81 #			
Sulphate, Total potential	<0.06 %	TM132	0.128	0.06	0.0918			
pH	1 pH Units	TM133	8.44 M	8.76 M	7.78 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M			
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21			
Chromium, Trivalent	<0.9 mg/kg	TM181	10.5	10.2	10.3			
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	<0.6 #			
Arsenic	<0.6 mg/kg	TM181	8.08 M	3.21 M	6.15 M			
Barium	<0.6 mg/kg	TM181	23.7 #	35.2 #	34.2 #			
Beryllium	<0.01 mg/kg	TM181	0.452 M	0.429 M	0.413 M			
Boron	<0.7 mg/kg	TM181	2.45 #	3.95 #	3.05 #			
Cadmium	<0.02 mg/kg	TM181	1.24 M	1.19 M	1.17 M			
Chromium	<0.9 mg/kg	TM181	10.5 M	10.2 M	10.3 M			
Copper	<1.4 mg/kg	TM181	14.6 M	15 M	11.4 M			
Lead	<0.7 mg/kg	TM181	12.5 M	11.4 M	13.6 M			
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M			
Molybdenum	<0.1 mg/kg	TM181	0.719 #	0.403 #	0.5 #			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			.	.	.			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
Component	**LOD/Units**	**Method**						
Nickel	<0.2 mg/kg	TM181	30.8 M	30.8 M	28.5 M			
Selenium	<1 mg/kg	TM181	1.54 #	1.03 #	<1 #			
Vanadium	<0.2 mg/kg	TM181	13.8 #	14.8 #	18.8 #			
Zinc	<1.9 mg/kg	TM181	122 M	72.1 M	72.7 M			
ANC @ pH 4	<0.03 mol/kg	TM182	0.786	1.99	0.327			
ANC @ pH 6	<0.03 mol/kg	TM182	0.0445	0.072	0.0371			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0199 M	0.032 M	<0.004 M			
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.000692	0.000378	0.00483			
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008			
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318	<318			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10			
Coronene	<200 µg/kg	TM410	<200	<200	<200			
EPH (C5-C40)	<35 mg/kg	TM415	<35	<35	67			
EPH Surrogate % recovery**	%	TM415	106	103	94.8			
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	<35 M	<35 M	67 M			
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	10.1	30.3	16.9			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			.	.	.			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	87.8	85.8	86.8			
Acenaphthene-d10 % recovery**	%	TM218	83.9	82.2	83.4			
Phenanthrene-d10 % recovery**	%	TM218	81.8	81.8	82.7			
Chrysene-d12 % recovery**	%	TM218	74.9	79.9	78.6			
Perylene-d12 % recovery**	%	TM218	83.6	86.2	83.5			
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			.	.	.			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100			
Isophorone	<100 µg/kg	TM157	<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100			
Carbazole	<100 µg/kg	TM157	<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100			
Azobenzene	<100 µg/kg	TM157	<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			-	-	-			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH101	BH112	BH112			
Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			.	.	.			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
GRO Surrogate % recovery**	%	TM089	169 4	72.1	104			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	2170 #	<1000 #	<1000 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	39400 #	63500 #	9480 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	10700	12800	<1000			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	52300	76300	10400			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	72600	83400	43200			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	1870 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	18200 #	5990 #	24200 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1470	<1000	6710			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	20400	7150	32800			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	72600	83400	43200			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 4	<50	<50			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 4	<50	<50			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 4	<20	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH101	BH112	BH112			
Depth (m)			1.00 - 1.00	0.60 - 0.60	1.60 - 1.60			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			13/04/2023	12/04/2023	12/04/2023			
Sample Time			.	.	.			
Date Received			18/04/2023	18/04/2023	18/04/2023			
SDG Ref			230418-53	230418-53	230418-53			
Lab Sample No.(s)			27852611	27852601	27852606			
AGS Reference			ES1	ES1	ES2			
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	107	116	111			
Toluene-d8**	%	TM116	81	109	84.9			
4-Bromofluorobenzene**	%	TM116	91.5	91.5	89.8			
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<100 M	<10 M			
Benzene	<1 µg/kg	TM116	<9 M	<90 M	<9 M			
Toluene	<1 µg/kg	TM116	<7 M	<70 M	<7 M			
Ethylbenzene	<1 µg/kg	TM116	<4 M	<40 M	<4 M			
p/m-Xylene	<2 µg/kg	TM116	<10 #	<100 #	<10 #			
o-Xylene	<2 µg/kg	TM116	<10 M	<100 M	<10 M			
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.2	<0.02			
Sum of BTEX	<7 µg/kg	TM116	<40	<400	<40			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH101ES1 1.00 - 1.00 SOLID 13/04/2023 00:00:00 18/04/2023 10:00:00 230418-53 27852611 TM048	20/04/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH112ES1 0.60 - 0.60 SOLID 12/04/2023 00:00:00 18/04/2023 10:00:00 230418-53 27852601 TM048	20/04/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH112ES2 1.60 - 1.60 SOLID 12/04/2023 00:00:00 18/04/2023 10:00:00 230418-53 27852606 TM048	20/04/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.114	**Natural Moisture Content (%)**	25.8
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	79.5
Particle Size <4mm	>95%		

Case	
SDG	230418-53
Lab Sample Number(s)	27852601
Sampled Date	12-Apr-2023
Customer Sample Ref.	BH112 ES1
Depth (m)	0.60 - 0.60

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	2.66	-	-	10
Sum of BTEX (mg/kg)	<0.4	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	30.3	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.76	-	>6	-
ANC to pH 6 (mol/kg)	0.072	-	-	-
ANC to pH 4 (mol/kg)	1.99	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00331	<0.0005	0.0331	<0.005	0.5	2	25
Barium	0.011	<0.0002	0.11	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00379	<0.0003	0.0379	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00476	<0.003	0.0476	<0.03	0.5	10	30
Nickel	0.00313	<0.0004	0.0313	<0.004	0.4	10	40
Lead	0.000313	<0.0002	0.00313	<0.002	0.5	10	50
Antimony	0.00131	<0.001	0.0131	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00238	<0.001	0.0238	<0.01	4	50	200
Chloride	3.8	<2	38	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	141	<10	1410	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	15.6	<3	156	<30	500	800	1000

Leach Test Information

Date Prepared	19-Apr-2023
pH (pH Units)	8.27
Conductivity (µS/cm)	189
Volume Leachant (Litres)	0.876

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 12:22:03

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.101	**Natural Moisture Content (%)**	12.7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88.7
Particle Size <4mm	>95%		

Case	
SDG	230418-53
Lab Sample Number(s)	27852606
Sampled Date	12-Apr-2023
Customer Sample Ref.	BH112 ES2
Depth (m)	1.60 - 1.60

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	1.05	3	5	6
Loss on Ignition (%)	4.23	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	16.9	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.78	-	>6	-
ANC to pH 6 (mol/kg)	0.0371	-	-	-
ANC to pH 4 (mol/kg)	0.327	-	-	-

Eluate Analysis	**C2** Concⁿ in 10:1 eluate (mg/l)		**A2** 10:1 concⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00176	<0.0005	0.0176	<0.005	0.5	2	25
Barium	0.00631	<0.0002	0.0631	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00209	<0.001	0.0209	<0.01	0.5	10	70
Copper	0.00386	<0.0003	0.0386	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00385	<0.003	0.0385	<0.03	0.5	10	30
Nickel	0.000898	<0.0004	0.00898	<0.004	0.4	10	40
Lead	0.00139	<0.0002	0.0139	<0.002	0.5	10	50
Antimony	0.00843	<0.001	0.0843	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00309	<0.001	0.0309	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	69.4	<10	694	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.91	<3	59.1	<30	500	800	1000

Leach Test Information

Date Prepared	19-Apr-2023
pH (pH Units)	8.60
Conductivity (µS/cm)	91
Volume Leachant (Litres)	0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 12:22:03

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.101	**Natural Moisture Content (%)**	11.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	89.7
Particle Size <4mm	>95%		

Case	
SDG	230418-53
Lab Sample Number(s)	27852611
Sampled Date	13-Apr-2023
Customer Sample Ref.	BH101 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.451	3	5	6
Loss on Ignition (%)	2.49	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	10.1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.44	-	>6	-
ANC to pH 6 (mol/kg)	0.0445	-	-	-
ANC to pH 4 (mol/kg)	0.786	-	-	-

Eluate Analysis	**C2** Concⁿ in 10:1 eluate (mg/l)		**A2** 10:1 concⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00165	<0.0005	0.0165	<0.005	0.5	2	25
Barium	0.00526	<0.0002	0.0526	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00129	<0.001	0.0129	<0.01	0.5	10	70
Copper	0.000978	<0.0003	0.00978	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00362	<0.003	0.0362	<0.03	0.5	10	30
Nickel	0.000794	<0.0004	0.00794	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00182	<0.001	0.0182	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	73.6	<10	736	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	19-Apr-2023
pH (pH Units)	8.69
Conductivity (µS/cm)	97
Volume Leachant (Litres)	0.890

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 12:22:03

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230418-53 **Report Number:** 690922 **Superseded Report:** 688330
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	27852611	27852601	27852606
Customer Sample Ref.	BH101	BH112	BH112
AGS Ref.	ES1	ES1	ES2
Depth	1.00 - 1.00	0.60 - 0.60	1.60 - 1.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	24-Apr-2023	24-Apr-2023	24-Apr-2023
Anions by Kone (soil)	24-Apr-2023	24-Apr-2023	24-Apr-2023
Anions by Kone (w)	24-Apr-2023	25-Apr-2023	24-Apr-2023
Asbestos ID in Solid Samples	20-Apr-2023	20-Apr-2023	20-Apr-2023
CEN 10:1 Leachate (1 Stage)	20-Apr-2023	20-Apr-2023	20-Apr-2023
CEN Readings	24-Apr-2023	24-Apr-2023	24-Apr-2023
Chromium III	25-Apr-2023	25-Apr-2023	25-Apr-2023
Coronene	20-Apr-2023	20-Apr-2023	20-Apr-2023
Cyanide Comp/Free/Total/Thiocyanate	21-Apr-2023	21-Apr-2023	21-Apr-2023
Dissolved Metals by ICP-MS	25-Apr-2023	25-Apr-2023	25-Apr-2023
Dissolved Organic/Inorganic Carbon	22-Apr-2023	22-Apr-2023	22-Apr-2023
EPH	21-Apr-2023	21-Apr-2023	21-Apr-2023
EPH by GCxGC-FID	21-Apr-2023	21-Apr-2023	21-Apr-2023
EPH CWG GC (S)	21-Apr-2023	21-Apr-2023	21-Apr-2023
Fluoride	24-Apr-2023	24-Apr-2023	24-Apr-2023
GRO by GC-FID (S)	21-Apr-2023	21-Apr-2023	21-Apr-2023
Hexavalent Chromium (s)	21-Apr-2023	21-Apr-2023	21-Apr-2023
Loss on Ignition in soils	24-Apr-2023	24-Apr-2023	24-Apr-2023
Magnesium (BRE)	05-May-2023	04-May-2023	04-May-2023
Mercury Dissolved	24-Apr-2023	24-Apr-2023	24-Apr-2023
Metals in solid samples by OES	04-May-2023	05-May-2023	05-May-2023
Moisture at 105C	19-Apr-2023	19-Apr-2023	19-Apr-2023
NO3, NO2 and TON by KONE (s)	04-May-2023	10-May-2023	10-May-2023
PAH 16 & 17 Calc	21-Apr-2023	21-Apr-2023	20-Apr-2023
PAH by GCMS	20-Apr-2023	20-Apr-2023	20-Apr-2023
PCBs by GCMS	21-Apr-2023	21-Apr-2023	21-Apr-2023
pH	21-Apr-2023	21-Apr-2023	21-Apr-2023
pH Value of Filtered Water	24-Apr-2023	24-Apr-2023	24-Apr-2023
Phenols by HPLC (S)	21-Apr-2023	21-Apr-2023	21-Apr-2023
Phenols by HPLC (W)	25-Apr-2023	25-Apr-2023	25-Apr-2023
Sample description	19-Apr-2023	19-Apr-2023	19-Apr-2023
Semi Volatile Organic Compounds	04-May-2023	04-May-2023	04-May-2023
Total Organic Carbon	25-Apr-2023	25-Apr-2023	24-Apr-2023
Total Sulphur	05-May-2023	05-May-2023	05-May-2023
TPH CWG GC (S)	21-Apr-2023	21-Apr-2023	21-Apr-2023
VOC MS (S)	20-Apr-2023	20-Apr-2023	20-Apr-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230418-53	N/A	N/A	01/06/2023	Site Reference Change	2023WH101	2023OY104	688330

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230421-102
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	690973
Order Number:	12380

This report has been revised and directly supersedes 688118 in its entirety.

We received 2 samples on Friday April 21, 2023 and 2 of these samples were scheduled for analysis which was completed on Tuesday May 09, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27873156	BH102	ES1	1.00 - 1.00	14/04/2023
27873165	BH103	ES1	1.50 - 1.50	14/04/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27873156			27873165	
Customer Sample Reference					BH102			BH103	
AGS Reference					ES1			ES1	
Depth (m)					1.00 - 1.00			1.50 - 1.50	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 2		X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 2		X			X	
Anions in soil by IC	All	NDPs: 0 Tests: 2		X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X			X		
Asbestos Quantification - Full	All	NDPs: 0 Tests: 1	X					
CEN Readings	All	NDPs: 0 Tests: 2		X			X	
Chromium III	All	NDPs: 0 Tests: 2		X			X	
Coronene	All	NDPs: 0 Tests: 2		X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2		X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2		X			X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2		X			X	
EPH	All	NDPs: 0 Tests: 2		X			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X	
Fluoride	All	NDPs: 0 Tests: 2		X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27873156			27873165		
Customer Sample Reference			BH102			BH103		
AGS Reference			ES1			ES1		
Depth (m)			1.00 - 1.00			1.50 - 1.50		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 2		X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 2		X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 2		X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 2		X			X	
PAH by GCMS	All	NDPs: 0 Tests: 2		X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 2		X			X	
pH	All	NDPs: 0 Tests: 2		X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 2		X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2		X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2		X			X	
Sample description	All	NDPs: 0 Tests: 2		X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27873156			27873165	
Customer Sample Reference					BH102			BH103	
AGS Reference					ES1			ES1	
Depth (m)					1.00 - 1.00			1.50 - 1.50	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S
Total Organic Carbon	All	NDPs: 0 Tests: 2		X			X	
Total Sulphate	All	NDPs: 0 Tests: 2		X			X	
Total Sulphur	All	NDPs: 0 Tests: 2		X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X	
VOC MS (S)	All	NDPs: 0 Tests: 2			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27873156	BH102	1.00 - 1.00	Dark Brown	Sandy Silt Loam	Stones	Vegetation
27873165	BH103	1.50 - 1.50	Dark Brown	Sandy Clay Loam	Stones	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	33	16				
Loss on ignition	<0.7 %	TM018	16.7 M	2.45 M				
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0621	0.016				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Organic Carbon, Total	<0.2 %	TM132	14.9 M	0.261 M				
Sulphur, Total	<0.02 %	TM132	0.0284 #	<0.02 #				
Organic Matter, Total	<0.35 %	TM132	25.7 #	0.45 #				
Sulphate, Total potential	<0.06 %	TM132	0.0852	0.06				
pH	1 pH Units	TM133	7.75 M	8.5 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
Chromium, Trivalent	<0.9 mg/kg	TM181	15.6	12				
Arsenic	<0.6 mg/kg	TM181	6.7 M	17.6 M				
Barium	<0.6 mg/kg	TM181	54.4 #	58.3 #				
Beryllium	<0.01 mg/kg	TM181	0.462 M	1.17 M				
Boron	<0.7 mg/kg	TM181	3.18 #	3.89 #				
Cadmium	<0.02 mg/kg	TM181	1.01 M	5.66 M				
Chromium	<0.9 mg/kg	TM181	15.6 M	12 M				
Copper	<1.4 mg/kg	TM181	27.9 M	13.6 M				
Lead	<0.7 mg/kg	TM181	70.1 M	15.4 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181	26 M	139 M				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Selenium	<1 mg/kg	TM181	<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	16.1 #	19.8 #				
Zinc	<1.9 mg/kg	TM181	112 M	248 M				
ANC @ pH 4	<0.03 mol/kg	TM182	0.265	0.813				
ANC @ pH 6	<0.03 mol/kg	TM182	<0.03	0.0574				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0465 M	0.0122 M				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304	<0.001 #					
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304	<0.001 #					
Additional Asbestos Components (Using TM048)		TM304	None #					
Analysts Comments		TM304	N/A					
Asbestos Quantification - Total - %	<0.001 %	TM304	<0.001 #					
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318				
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10				
Coronene	<200 µg/kg	TM410	<200	<200				
EPH (C5-C40)	<35 mg/kg	TM415	1040	<35				
EPH Surrogate % recovery**	%	TM415	96.7	100				
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	1040 M	<35 M				
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	337	8.98				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	87.1	92.6				
Acenaphthene-d10 % recovery**	%	TM218	96.4	89.4				
Phenanthrene-d10 % recovery**	%	TM218	111	96.6				
Chrysene-d12 % recovery**	%	TM218	92.8	93.1				
Perylene-d12 % recovery**	%	TM218	86.4	89.4				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M				
Pyrene	<15 µg/kg	TM218	25.3 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M				
Chrysene	<10 µg/kg	TM218	<10 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	62.9 4	105				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	32.8 4	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	26.8 4	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	24500 #	<1000 #				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	94300 #	<1000 #				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	322000 #	4940 #				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	127000	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	569000	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	1620000	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	17.9 4	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	9450 #	<1000 #				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	70300 #	<1000 #				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	690000 #	2140 #				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	279000	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	111000	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	1050000	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	1620000	<10000				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	59.6 4	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 4	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	59.6 4	<20				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH102	BH103				
Depth (m)			1.00 - 1.00	1.50 - 1.50				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			14/04/2023	14/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-102	230421-102				
Lab Sample No.(s)			27873156	27873165				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	109	99.9				
Toluene-d8**	%	TM116	95.6	95.6				
4-Bromofluorobenzene**	%	TM116	101	102				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<200 M	<10 M				
Benzene	<1 µg/kg	TM116	<180 M	<9 M				
Toluene	<1 µg/kg	TM116	<140 M	<7 M				
Ethylbenzene	<1 µg/kg	TM116	<80 M	<4 M				
p/m-Xylene	<2 µg/kg	TM116	<200 #	<10 #				
o-Xylene	<2 µg/kg	TM116	<200 M	<10 M				
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4	<0.02				
Sum of BTEX	<7 µg/kg	TM116	<800	<40				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH102ES1 1.00 - 1.00 SOLID 14/04/2023 00:00:00 21/04/2023 10:00:00 230421-102 27873156 TM048	26/04/2023	James Richards	Fibre bundles in soil	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH103ES1 1.50 - 1.50 SOLID 14/04/2023 00:00:00 21/04/2023 10:00:00 230421-102 27873165 TM048	25/04/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Asbestos Quantification - Full

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Additional Asbestos Components	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM	Asbestos Quantification - Total - %
Cust. Sample Ref.	BH102ES1	None (#)	N/A	<0.001 (#)	<0.001 (#)	<0.001 (#)
Depth (m)	1.00 - 1.00					
Sample Type	SOLID					
Date Sampled	14/04/2023 00:00:00					
Date Receieved	21/04/2023 10:00:00					
SDG	230421-102					
Original Sample	27873156					
Method Number	TM304					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.117	**Natural Moisture Content (%)**	30.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	76.7
Particle Size <4mm	>95%		

Case	
SDG	230421-102
Lab Sample Number(s)	27873156
Sampled Date	14-Apr-2023
Customer Sample Ref.	BH102 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	14.9	3	5	6
Loss on Ignition (%)	16.7	-	-	10
Sum of BTEX (mg/kg)	<0.8	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	337	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.75	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.265	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00159	<0.0005	0.0159	<0.005	0.5	2	25
Barium	0.0158	<0.0002	0.158	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00167	<0.0003	0.0167	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00919	<0.003	0.0919	<0.03	0.5	10	30
Nickel	0.00113	<0.0004	0.0113	<0.004	0.4	10	40
Lead	0.000353	<0.0002	0.00353	<0.002	0.5	10	50
Antimony	0.00127	<0.001	0.0127	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00931	<0.001	0.0931	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	5.8	<2	58	<20	1000	20000	50000
Total Dissolved Solids	176	<10	1760	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	10.7	<3	107	<30	500	800	1000

Leach Test Information

Date Prepared	24-Apr-2023
pH (pH Units)	8.30
Conductivity (µS/cm)	230
Volume Leachant (Litres)	0.873

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 15:47:21

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-102 **Report Number:** 690973 **Superseded Report:** 688118
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	9.25
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91.5
Particle Size <4mm	>95%		

Case	
SDG	230421-102
Lab Sample Number(s)	27873165
Sampled Date	14-Apr-2023
Customer Sample Ref.	BH103 ES1
Depth (m)	1.50 - 1.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.261	3	5	6
Loss on Ignition (%)	2.45	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	8.98	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.5	-	>6	-
ANC to pH 6 (mol/kg)	0.0574	-	-	-
ANC to pH 4 (mol/kg)	0.813	-	-	-

Eluate Analysis	**C2** Concⁿ in 10:1 eluate (mg/l)		**A2** 10:1 concⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.0041	<0.0005	0.041	<0.005	0.5	2	25
Barium	0.0186	<0.0002	0.186	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.0015	<0.0003	0.015	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00503	<0.003	0.0503	<0.03	0.5	10	30
Nickel	0.00496	<0.0004	0.0496	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00151	<0.001	0.0151	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00214	<0.001	0.0214	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	98.8	<10	988	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.53	<3	55.3	<30	500	800	1000

Leach Test Information

Date Prepared	24-Apr-2023
pH (pH Units)	8.43
Conductivity (µS/cm)	129
Volume Leachant (Litres)	0.892

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multistage	Rock Uniaxial compression	Point Load	**Env Suite A414**	**Env Suite A416 (minus WAC)**	**Env WAC**	BRE SD1	Thermal Resistivity	ALS ref	Notes
TPT03	1.50	1.60	ES	5	26.5.23	Env Repo										1	1				230601-67	
TPT04	0.10	0.20	ES	3	26.5.23	Env Repo										1	1				230601-67	
TPT05	1.00	1.10	ES	5	25.5.23	Env Repo										1	1				230601-67	
TPT06	0.30	0.40	ES	3	25.5.23	Env Repo										1	1				230601-67	
TPT07	0.30	0.40	ES	3	25.5.23	Env Repo										1	1				230601-67	
TPT09	0.50	0.60	ES	3	25.5.23	Env Repo										1	1				230601-67	
TPT10	0.20	0.30	ES	3	25.5.23	Env Repo										1	1				230601-67	
TPT11	0.20	0.30	ES	2	24.5.23	Env Repo										1	1				230601-67	
TPT12	0.30	0.40	ES	3	23.5.23	Env Repo										1	1				230601-67	
TPT13	0.2	0.3	ES 1		16.5.23	Env Repo										1	1				230526-70	
TPT14	0.15	0.3	ES 1		16.5.23	Env Repo										1	1				230526-70	
TPT15	0.40	0.50	ES	3	16.5.23	Env Repo										1	1				230526-70	
TPT16	0.80	0.90	ES 1	5	15.5.23	Env Repo										1	1				230518-59	
TPT17	2.1	2.2	ES 1	5	15.5.23	Env Repo										1	1				230518-59	
TPT18	1.3	1.4	ES 1	5	15.5.23	Env Repo										1	1				230518-59	

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM304	Asbestos Quantification in Soil: Fibres identified by morphology only
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	27873156	27873165
Customer Sample Ref.	BH102	BH103
AGS Ref.	ES1	ES1
Depth	1.00 - 1.00	1.50 - 1.50
Type	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	27-Apr-2023	27-Apr-2023
Anions by Kone (w)	27-Apr-2023	27-Apr-2023
Anions in soil by IC	28-Apr-2023	28-Apr-2023
Asbestos ID in Solid Samples	26-Apr-2023	25-Apr-2023
Asbestos Quantification - Full	27-Apr-2023	
CEN 10:1 Leachate (1 Stage)	25-Apr-2023	25-Apr-2023
CEN Readings	27-Apr-2023	27-Apr-2023
Chromium III	28-Apr-2023	28-Apr-2023
Coronene	26-Apr-2023	26-Apr-2023
Cyanide Comp/Free/Total/Thiocyanate	26-Apr-2023	26-Apr-2023
Dissolved Metals by ICP-MS	27-Apr-2023	27-Apr-2023
Dissolved Organic/Inorganic Carbon	27-Apr-2023	27-Apr-2023
EPH	26-Apr-2023	26-Apr-2023
EPH by GCxGC-FID	26-Apr-2023	26-Apr-2023
EPH CWG GC (S)	26-Apr-2023	26-Apr-2023
Fluoride	27-Apr-2023	27-Apr-2023
GRO by GC-FID (S)	25-Apr-2023	26-Apr-2023
Hexavalent Chromium (s)	26-Apr-2023	26-Apr-2023
Loss on Ignition in soils	27-Apr-2023	27-Apr-2023
Magnesium (BRE)	09-May-2023	04-May-2023
Mercury Dissolved	28-Apr-2023	28-Apr-2023
Metals in solid samples by OES	28-Apr-2023	28-Apr-2023
Moisture at 105C	24-Apr-2023	24-Apr-2023
PAH 16 & 17 Calc	26-Apr-2023	25-Apr-2023
PAH by GCMS	26-Apr-2023	26-Apr-2023
PCBs by GCMS	27-Apr-2023	27-Apr-2023
pH	25-Apr-2023	25-Apr-2023
pH Value of Filtered Water	27-Apr-2023	27-Apr-2023
Phenols by HPLC (S)	26-Apr-2023	26-Apr-2023
Phenols by HPLC (W)	27-Apr-2023	27-Apr-2023
Sample description	22-Apr-2023	23-Apr-2023
Semi Volatile Organic Compounds	27-Apr-2023	27-Apr-2023
Total Organic Carbon	28-Apr-2023	28-Apr-2023
Total Sulphate	28-Apr-2023	28-Apr-2023
Total Sulphur	28-Apr-2023	28-Apr-2023
TPH CWG GC (S)	26-Apr-2023	26-Apr-2023
VOC MS (S)	25-Apr-2023	25-Apr-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230421-102	N/A	N/A	01/06/2023	Client Reference Change	2023WH101	2023OY104	688118

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230421-103
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	690980
Order Number:	12380

This report has been revised and directly supersedes 688333 in its entirety.

We received 2 samples on Friday April 21, 2023 and 2 of these samples were scheduled for analysis which was completed on Wednesday May 10, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27873185	BH104	ES1	1.00 - 1.00	18/04/2023
27873191	BH105	ES1	1.00 - 1.00	18/04/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27873185				27873191	
Customer Sample Reference			BH104				BH105	
AGS Reference			ES1				ES1	
Depth (m)			1.00 - 1.00				1.00 - 1.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 2		X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 2	X				X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X			X		
CEN Readings	All	NDPs: 0 Tests: 2	X				X	
Chromium III	All	NDPs: 0 Tests: 2		X			X	
Coronene	All	NDPs: 0 Tests: 2		X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2		X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	X				X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2	X				X	
EPH	All	NDPs: 0 Tests: 2		X			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X	
Fluoride	All	NDPs: 0 Tests: 2	X				X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27873185			27873191	
Customer Sample Reference					BH104			BH105	
AGS Reference					ES1			ES1	
Depth (m)					1.00 - 1.00			1.00 - 1.00	
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 2			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 2			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 2		X				X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 2			X			X	
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 2			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 2			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 2			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 2			X			X	
pH	All	NDPs: 0 Tests: 2			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 2		X				X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2		X				X	
Sample description	All	NDPs: 0 Tests: 2			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)				27873185				27873191	
Customer Sample Reference				BH104				BH105	
AGS Reference				ES1				ES1	
Depth (m)				1.00 - 1.00				1.00 - 1.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S
Total Organic Carbon	All	NDPs: 0 Tests: 2		X			X	
Total Sulphur	All	NDPs: 0 Tests: 2		X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X	
VOC MS (S)	All	NDPs: 0 Tests: 2			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27873185	BH104	1.00 - 1.00	Dark Brown	Sandy Silt Loam	Stones	Vegetation
27873191	BH105	1.00 - 1.00	Dark Brown	Silty Clay	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	42	13				
Loss on ignition	<0.7 %	TM018	22.9 M	0.913 M				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Organic Carbon, Total	<0.2 %	TM132	11.6 M	<0.2 M				
Sulphur, Total	<0.02 %	TM132	0.0389 #	0.032 #				
Organic Matter, Total	<0.35 %	TM132	20 #	<0.35 #				
Sulphate, Total potential	<0.06 %	TM132	0.117	0.096				
pH	1 pH Units	TM133	8.04 M	9.01 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
Chromium, Trivalent	<0.9 mg/kg	TM181	24.8	8.76				
Antimony	<0.6 mg/kg	TM181	4.78 #	<0.6 #				
Arsenic	<0.6 mg/kg	TM181	9.73 M	6.86 M				
Barium	<0.6 mg/kg	TM181	76.5 #	31.6 #				
Beryllium	<0.01 mg/kg	TM181	0.424 M	0.451 M				
Boron	<0.7 mg/kg	TM181	4.85 #	3.14 #				
Cadmium	<0.02 mg/kg	TM181	1.79 M	1.22 M				
Chromium	<0.9 mg/kg	TM181	24.8 M	8.76 M				
Copper	<1.4 mg/kg	TM181	152 M	13.7 M				
Lead	<0.7 mg/kg	TM181	117 M	16.3 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Molybdenum	<0.1 mg/kg	TM181	2.34 #	0.433 #				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Nickel	<0.2 mg/kg	TM181	50.1 M	31.2 M				
Selenium	<1 mg/kg	TM181	1.02 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	15.1 #	14.1 #				
Zinc	<1.9 mg/kg	TM181	236 M	89.3 M				
ANC @ pH 4	<0.03 mol/kg	TM182	0.257	4.17				
ANC @ pH 6	<0.03 mol/kg	TM182	<0.03	0.0842				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0156 M	0.0113 M				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.0525	0.00376				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	794	<318				
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10				
Coronene	<200 µg/kg	TM410	<200	<200				
EPH (C5-C40)	<35 mg/kg	TM415	597	<35				
EPH Surrogate % recovery**	%	TM415	105	90.9				
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	597 M	<35 M				
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	145	<5				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	85	93.9				
Acenaphthene-d10 % recovery**	%	TM218	94.1	93.5				
Phenanthrene-d10 % recovery**	%	TM218	110	101				
Chrysene-d12 % recovery**	%	TM218	92.6	96.5				
Perylene-d12 % recovery**	%	TM218	84	100				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	46.2 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	125 M	<17 M				
Pyrene	<15 µg/kg	TM218	105 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	61.2 M	<14 M				
Chrysene	<10 µg/kg	TM218	83.8 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	114 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	40 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	59 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	70.5 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	89.4 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	794	<118				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	57.7 4	122				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	2550 #	<1000 #				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	37600 #	<1000 #				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	195000 #	<1000 #				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	45500	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	281000	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	820000	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	2750 #	<1000 #				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	28400 #	<1000 #				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	366000 #	<1000 #				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	141000	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	51900	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	539000	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	820000	<10000				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 4	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 4	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 4	<20				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH104	BH105				
Depth (m)			1.00 - 1.00	1.00 - 1.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			18/04/2023	18/04/2023				
Sample Time			.	.				
Date Received			21/04/2023	21/04/2023				
SDG Ref			230421-103	230421-103				
Lab Sample No.(s)			27873185	27873191				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	112	100				
Toluene-d8**	%	TM116	94.6	95.9				
4-Bromofluorobenzene**	%	TM116	99.8	104				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<200 M	<10 M				
Benzene	<1 µg/kg	TM116	<180 M	<9 M				
Toluene	<1 µg/kg	TM116	<140 M	<7 M				
Ethylbenzene	<1 µg/kg	TM116	<80 M	<4 M				
p/m-Xylene	<2 µg/kg	TM116	<200 #	<10 #				
o-Xylene	<2 µg/kg	TM116	<200 M	<10 M				
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4	<0.02				
Sum of BTEX	<7 µg/kg	TM116	<800	<40				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH104ES1 1.00 - 1.00 SOLID 18/04/2023 00:00:00 21/04/2023 10:00:00 230421-103 27873185 TM048	26/04/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH105ES1 1.00 - 1.00 SOLID 18/04/2023 00:00:00 21/04/2023 10:00:00 230421-103 27873191 TM048	25/04/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.177	**Natural Moisture Content (%)**	95.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	51.2
Particle Size <4mm	>95%		

Case	
SDG	230421-103
Lab Sample Number(s)	27873185
Sampled Date	18-Apr-2023
Customer Sample Ref.	BH104 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	11.6	3	5	6
Loss on Ignition (%)	22.9	-	-	10
Sum of BTEX (mg/kg)	<0.8	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	145	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.04	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.257	-	-	-

Eluate Analysis	**C2** Concⁿ in 10:1 eluate (mg/l)		**A2** 10:1 concⁿ leached (mg/kg)		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Arsenic	-	-	-	-	0.5	2	25
Barium	-	-	-	-	20	100	300
Barium	0.0405	<0.0002	0.405	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Cadmium	-	-	-	-	0.04	1	5
Chromium	-	-	-	-	0.5	10	70
Chromium	0.00321	<0.001	0.0321	<0.01	0.5	10	70
Copper	0.00522	<0.0003	0.0522	<0.003	2	50	100
Copper	-	-	-	-	2	50	100
Mercury Dissolved (CVAF)	-	-	-	-	0.01	0.2	2
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00521	<0.003	0.0521	<0.03	0.5	10	30
Molybdenum	-	-	-	-	0.5	10	30
Nickel	-	-	-	-	0.4	10	40
Nickel	0.00175	<0.0004	0.0175	<0.004	0.4	10	40
Lead	0.000719	<0.0002	0.00719	<0.002	0.5	10	50
Lead	-	-	-	-	0.5	10	50
Antimony	-	-	-	-	0.06	0.7	5
Antimony	0.00531	<0.001	0.0531	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Selenium	-	-	-	-	0.1	0.5	7

Leach Test Information

Date Prepared	24-Apr-2023
pH (pH Units)	8.28
Conductivity (µS/cm)	292
Volume Leachant (Litres)	0.814

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 15:56:17

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CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.177	**Natural Moisture Content (%)**	95.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	51.2
Particle Size <4mm	>95%		

Case	
SDG	230421-103
Lab Sample Number(s)	27873185
Sampled Date	18-Apr-2023
Customer Sample Ref.	BH104 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	11.6	3	5	6
Loss on Ignition (%)	22.9	-	-	10
Sum of BTEX (mg/kg)	<0.8	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	145	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.04	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.257	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	Limit of Detection	Result	Limit of Detection			
Zinc	-	-	-	-	4	50	200
Zinc	0.00399	<0.001	0.0399	<0.01	4	50	200
Chloride	3.8	<2	38	<20	800	15000	25000
Chloride	-	-	-	-	800	15000	25000
Fluoride	-	-	-	-	10	150	500
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Sulphate (soluble)	-	-	-	-	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Dissolved Solids	225	<10	2250	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Total Monohydric Phenols (W)	-	-	-	-	1	-	-
Dissolved Organic Carbon	-	-	-	-	500	800	1000
Dissolved Organic Carbon	13.7	<3	137	<30	500	800	1000

Leach Test Information

Date Prepared	
pH (pH Units)	8.28
Conductivity (µS/cm)	292
Volume Leachant (Litres)	0.814

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

SDG: 230421-103 **Report Number:** 690980 **Superseded Report:** 688333
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.096	**Natural Moisture Content (%)**	7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.5
Particle Size <4mm	>95%		

Case	
SDG	230421-103
Lab Sample Number(s)	27873191
Sampled Date	18-Apr-2023
Customer Sample Ref.	BH105 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	0.913	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	9.01	-	>6	-
ANC to pH 6 (mol/kg)	0.0842	-	-	-
ANC to pH 4 (mol/kg)	4.17	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00126	<0.0002	0.0126	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000589	<0.0003	0.00589	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0013	<0.001	0.013	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	51.6	<10	516	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.86	<3	38.6	<30	500	800	1000

Leach Test Information

Date Prepared	24-Apr-2023
pH (pH Units)	8.46
Conductivity (µS/cm)	67
Volume Leachant (Litres)	0.894

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	27873185	27873191
Customer Sample Ref.	BH104	BH105
AGS Ref.	ES1	ES1
Depth	1.00 - 1.00	1.00 - 1.00
Type	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	27-Apr-2023	27-Apr-2023
Anions by Kone (soil)	28-Apr-2023	28-Apr-2023
Anions by Kone (w)	27-Apr-2023	27-Apr-2023
Asbestos ID in Solid Samples	26-Apr-2023	25-Apr-2023
CEN 10:1 Leachate (1 Stage)	25-Apr-2023	25-Apr-2023
CEN Readings	27-Apr-2023	27-Apr-2023
Chromium III	28-Apr-2023	28-Apr-2023
Coronene	26-Apr-2023	26-Apr-2023
Cyanide Comp/Free/Total/Thiocyanate	26-Apr-2023	26-Apr-2023
Dissolved Metals by ICP-MS	27-Apr-2023	27-Apr-2023
Dissolved Organic/Inorganic Carbon	27-Apr-2023	27-Apr-2023
EPH	26-Apr-2023	26-Apr-2023
EPH by GCxGC-FID	26-Apr-2023	26-Apr-2023
EPH CWG GC (S)	26-Apr-2023	26-Apr-2023
Fluoride	27-Apr-2023	27-Apr-2023
GRO by GC-FID (S)	25-Apr-2023	26-Apr-2023
Hexavalent Chromium (s)	26-Apr-2023	26-Apr-2023
Loss on Ignition in soils	27-Apr-2023	27-Apr-2023
Magnesium (BRE)	09-May-2023	04-May-2023
Mercury Dissolved	28-Apr-2023	28-Apr-2023
Metals in solid samples by OES	04-May-2023	04-May-2023
Moisture at 105C	24-Apr-2023	24-Apr-2023
NO3, NO2 and TON by KONE (s)	10-May-2023	10-May-2023
PAH 16 & 17 Calc	25-Apr-2023	25-Apr-2023
PAH by GCMS	26-Apr-2023	26-Apr-2023
PCBs by GCMS	28-Apr-2023	28-Apr-2023
pH	25-Apr-2023	25-Apr-2023
pH Value of Filtered Water	27-Apr-2023	27-Apr-2023
Phenols by HPLC (S)	26-Apr-2023	26-Apr-2023
Phenols by HPLC (W)	28-Apr-2023	27-Apr-2023
Sample description	22-Apr-2023	23-Apr-2023
Semi Volatile Organic Compounds	04-May-2023	04-May-2023
Total Organic Carbon	28-Apr-2023	28-Apr-2023
Total Sulphur	05-May-2023	05-May-2023
TPH CWG GC (S)	26-Apr-2023	26-Apr-2023
VOC MS (S)	25-Apr-2023	25-Apr-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230421-103	N/A	N/A	01/06/2023	Client Reference Change	2023WH101	2023OY104	688333

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230426-63
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691206
Order Number:	12380

This report has been revised and directly supersedes 688901 in its entirety.

We received 5 samples on Wednesday April 26, 2023 and 5 of these samples were scheduled for analysis which was completed on Wednesday May 10, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27899499	BH-106	ES1	4.00 - 4.00	19/04/2023
27899513	BH-109	ES1	1.00 - 1.00	20/04/2023
27899494	BH-114	ES1	1.00 - 1.00	21/04/2023
27899504	BH-115	ES1	3.00 - 3.00	20/04/2023
27899509	BH-301	ES1	1.00 - 1.00	19/04/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)													27899499			27899513			27899494			27899504			27899509	
Customer Sample Reference													BH-106			BH-109			BH-114			BH-115			BH-301	
AGS Reference													ES1			ES1			ES1			ES1			ES1	
Depth (m)													4.00 - 4.00			1.00 - 1.00			1.00 - 1.00			3.00 - 3.00			1.00 - 1.00	
Container													1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	15ml plastic tube	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type													S	S	S	S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 5												X			X		X		X			X
Anions by Kone (soil)	All	NDPs: 0 Tests: 5												X			X		X		X			X
Anions by Kone (w)	All	NDPs: 2 Tests: 4											X			N		X		X		N		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5											X			X		X		X			X	
CEN Readings	All	NDPs: 2 Tests: 3											X			N		X		X		N		
Chromium III	All	NDPs: 0 Tests: 5												X			X		X		X			X
Coronene	All	NDPs: 0 Tests: 5												X			X		X		X			X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5												X			X		X		X			X
Dissolved Metals by ICP-MS	All	NDPs: 2 Tests: 4											X			N		X		X		N		
Dissolved Organic/Inorganic Carbon	All	NDPs: 2 Tests: 4											X			N		X		X		N		
EPH	All	NDPs: 0 Tests: 5												X			X		X		X			X
EPH by GCxGC-FID	All	NDPs: 0 Tests: 5												X			X		X		X			X
EPH CWG GC (S)	All	NDPs: 0 Tests: 5												X			X		X		X			X
Fluoride	All	NDPs: 2 Tests: 4											X			N		X		X		N		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 5													X		X	X		X				X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
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DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27899499			27899513			27899494			27899504			27899509	
Customer Sample Reference			BH-106			BH-109			BH-114			BH-115			BH-301	
AGS Reference			ES1			ES1			ES1			ES1			ES1	
Depth (m)			4.00 - 4.00			1.00 - 1.00			1.00 - 1.00			3.00 - 3.00			1.00 - 1.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	15ml plastic tube	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 5		X			X		X		X			X
Loss on Ignition in soils	All	NDPs: 0 Tests: 5		X			X		X		X			X
Magnesium (BRE)	All	NDPs: 0 Tests: 5		X			X		X		X			X
Mercury Dissolved	All	NDPs: 2 Tests: 4	X			N		X		X		N	X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 5		X			X		X		X			X
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 5		X			X		X		X			X
NRA Leachate	All	NDPs: 0 Tests: 1											X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 5		X			X		X		X			X
PAH by GCMS	All	NDPs: 0 Tests: 5		X			X		X		X			X
PCBs by GCMS	All	NDPs: 0 Tests: 5		X			X		X		X			X
pH	All	NDPs: 0 Tests: 5		X			X		X		X			X
pH Value of Filtered Water	All	NDPs: 2 Tests: 4	X			N		X		X		N	X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 5		X			X		X		X			X
Phenols by HPLC (W)	All	NDPs: 2 Tests: 4	X			N		X		X		N	X	
Sample description	All	NDPs: 0 Tests: 5		X			X		X		X			X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
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SA - Saline Water
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TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27899499			27899513			27899494			27899504			27899509	
Customer Sample Reference			BH-106			BH-109			BH-114			BH-115			BH-301	
AGS Reference			ES1			ES1			ES1			ES1			ES1	
Depth (m)			4.00 - 4.00			1.00 - 1.00			1.00 - 1.00			3.00 - 3.00			1.00 - 1.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	15ml plastic tube	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 5		X			X		X		X			X
Total Organic Carbon	All	NDPs: 0 Tests: 5		X			X		X		X			X
Total Sulphur	All	NDPs: 0 Tests: 5		X			X		X		X			X
TPH CWG GC (S)	All	NDPs: 0 Tests: 5		X			X		X		X			X
VOC MS (S)	All	NDPs: 0 Tests: 5			X		X	X		X				X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27899499	BH-106	4.00 - 4.00	Dark Brown	Sandy Clay Loam	Stones	None
27899513	BH-109	1.00 - 1.00	Dark Brown	Peat	Vegetation	None
27899494	BH-114	1.00 - 1.00	Dark Brown	Sandy Clay Loam	Stones	None
27899504	BH-115	3.00 - 3.00	Dark Brown	Sandy Clay Loam	Stones	None
27899509	BH-301	1.00 - 1.00	Dark Brown	Silt Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH-106	BH-109	BH-114	BH-115	BH-301
Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			.	.	.	.	.
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	16	84	14	13	79
Loss on ignition	<0.7 %	TM018	1.18 M	82 #	0.967 M	0.878 M	82.2 M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 #	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 #	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	0.128 #	<0.015 M	<0.015 M	0.141 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 #	<0.035 M	<0.035 M	<0.035 M
Carbon, Organic (diss.filt) NRA leach	<3 mg/l	TM090					17.7
Fluoride NRA leach	<0.5 mg/l	TM104					<0.5
Organic Carbon, Total	<0.2 %	TM132	<0.2 M	16.9 #	<0.2 M	<0.2 M	24.3 M
Sulphur, Total	<0.02 %	TM132	0.0232 #	0.06 #	<0.02 #	0.0259 #	0.0275 #
Organic Matter, Total	<0.35 %	TM132	<0.35 #	29.1 #	<0.35 #	<0.35 #	41.9 #
Sulphate, Total potential	<0.06 %	TM132	0.0696	0.18	0.06	0.0777	0.0825
pH	1 pH Units	TM133	8.45 M	5.54 #	8.63 M	8.87 M	5.08 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<1.2 #	<0.6 M	<0.6 M	<0.6 M
Antimony (diss.filt) NRA leach	<1 µg/l	TM152					<1
Arsenic (diss.filt) NRA leach	<0.5 µg/l	TM152					3.8
Barium (diss.filt) NRA leach	<0.2 µg/l	TM152					0.691
Cadmium (diss.filt) NRA leach	<0.08 µg/l	TM152					<0.08
Chromium (diss.filt) NRA leach	<1 µg/l	TM152					2.33
Copper (diss.filt) NRA leach	<0.3 µg/l	TM152					1.5
Lead (diss.filt) NRA leach	<0.2 µg/l	TM152					<0.2
Molybdenum (diss.filt) NRA leach	<3 µg/l	TM152					<3
Nickel (diss.filt) NRA leach	<0.4 µg/l	TM152					1.59
Selenium (diss.filt) NRA leach	<1 µg/l	TM152					<1
Zinc (diss.filt) NRA leach	<1 µg/l	TM152					5.11
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 #	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 #	<3 M	<3 M	<3 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			-	-	-	-	-
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21
Chromium, Trivalent	<0.9 mg/kg	TM181	17.8	3.58	8.35	14	4.07
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181	13.6 M	2.01 #	9.39 M	6.18 M	3.54 M
Barium	<0.6 mg/kg	TM181	27 #	14 #	28.7 #	13.4 #	27.8 #
Beryllium	<0.01 mg/kg	TM181	0.724 M	0.267 #	1.41 M	0.327 M	0.254 M
Boron	<0.7 mg/kg	TM181	0.989 #	2.5 #	2.34 #	1.23 #	3.97 #
Cadmium	<0.02 mg/kg	TM181	1.44 M	0.503 #	3.85 M	1.1 M	0.67 M
Chromium	<0.9 mg/kg	TM181	17.8 M	3.58 #	8.35 M	14 M	4.07 M
Copper	<1.4 mg/kg	TM181	17.9 M	8.04 #	15.9 M	11.8 M	11.7 M
Lead	<0.7 mg/kg	TM181	18.3 M	6.33 #	16 M	48 M	10 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 #	<0.1 M	<0.1 M	<0.1 M
Molybdenum	<0.1 mg/kg	TM181	0.664 #	0.639 #	0.586 #	0.592 #	0.943 #
Nickel	<0.2 mg/kg	TM181	55.7 M	15.9 #	85.2 M	29.4 M	18.6 M
Selenium	<1 mg/kg	TM181	<1 #	2.01 #	<1 #	<1 #	2.17 #
Vanadium	<0.2 mg/kg	TM181	16.9 #	3.79 #	17 #	12.2 #	4.65 #
Zinc	<1.9 mg/kg	TM181	153 M	49.9 #	180 M	94.6 M	55.7 M
ANC @ pH 4	<0.03 mol/kg	TM182	0.452	<0.03	0.5	0.265	0.114
ANC @ pH 6	<0.03 mol/kg	TM182	0.0551	<0.03	0.0513	0.0584	<0.03
Mercury (diss.filt) NRA leach	<0.01 µg/l	TM183					<0.01
Sulphate NRA leach	<2 mg/l	TM184					<2
Chloride NRA leach	<2 mg/l	TM184					3
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0514 M	0.0292 #	0.0165 M	0.0295 M	0.0371 M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0003 g/l	TM243	0.000566	0.00473	0.000319	0.000489	0.0146
Dissolved solids, Total (meter) NRA leach	<5 mg/l	TM256					18.3
Phenols, Total Detected monohydric NRA leach	<0.016 mg/l	TM259					<0.016
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318	<318	<318	<318
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10	<10	<10
Coronene	<200 µg/kg	TM410	<200	<200	<200	<200	<200
EPH (C5-C40)	<35 mg/kg	TM415	42.1	811	<35	<35	1040
EPH Surrogate % recovery**	%	TM415	104	94	105	100	102
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	42.1 M	811 #	<35 M	<35 M	1040 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
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- tot.unfilt Total / unfiltered sample.
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Component	LOD/Units	Method	BH-106	BH-109	BH-114	BH-115	BH-301
Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			-	-	-	-	-
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	39.8	192	19.1	8.65	255

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH-106	BH-109	BH-114	BH-115	BH-301
Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			.	.	.	.	.
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
Naphthalene-d8 % recovery**	%	TM218	96.4	96	89	92.9	97.8
Acenaphthene-d10 % recovery**	%	TM218	93.9	99	87.1	90.6	94
Phenanthrene-d10 % recovery**	%	TM218	97.8	106	90	93.5	92.8
Chrysene-d12 % recovery**	%	TM218	104	104	89	95.5	88.8
Perylene-d12 % recovery**	%	TM218	111	106	94.2	100	91.5
Naphthalene	<9 µg/kg	TM218	<9 M	<9 #	<9 M	<9 M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 #	<12 M	<12 M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 #	<8 M	<8 M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 M	<10 #	<10 M	<10 M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 #	<15 M	<15 M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 M	<16 #	<16 M	<16 M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 #	<17 M	<17 M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 M	<15 #	<15 M	<15 M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 #	<14 M	<14 M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 M	<10 #	<10 M	<10 M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 #	<15 M	<15 M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 #	<14 M	<14 M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 #	<15 M	<15 M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 #	<18 M	<18 M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 #	<23 M	<23 M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 #	<24 M	<24 M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			.	.	.	.	.
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301	
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00	
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023	
Sample Time			-	-	-	-	-	
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023	
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63	
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509	
AGS Reference			ES1	ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH-106	BH-109	BH-114	BH-115	BH-301
Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			.	.	.	.	.
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM089	89.8	60.5 4	113 2	95.5 2	61.6 4
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 4	33.9 2	24.2 2	<10 4
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 4	147 2	40.3 2	<10 4
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 4	1500 2	35.7 2	<10 4
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	1250 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	5390 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	26200 #	5360 #	<1000 #	14200 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	52000 #	1630000 #	<1000 #	6690 #	580000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	5060	476000	<1000	<1000	154000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	57100	2130000	12800	6690	749000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	62700	3010000	16700	<10000	986000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4	<10 2	<10 2	<10 4
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4	<10 2	<10 2	<10 4
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4	999 2	24.2 2	<10 4
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	2780 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	1290 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	24400 #	1700 #	<1000 #	9050 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	4260 #	708000 #	<1000 #	1250 #	206000 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	140000	<1000	<1000	22500
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	14200	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	5590	877000	<5000	<5000	238000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	62700	3010000	14500	<10000	986000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50 4	1680 2	100 2	<50 4
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50 4	999 2	<50 2	<50 4
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20 4	2680 2	100 2	<20 4

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH-106	BH-109	BH-114	BH-115	BH-301
Customer Sample Ref.			BH-106	BH-109	BH-114	BH-115	BH-301
Depth (m)			4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/04/2023	20/04/2023	21/04/2023	20/04/2023	19/04/2023
Sample Time			.	.	.	.	.
Date Received			26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
SDG Ref			230426-63	230426-63	230426-63	230426-63	230426-63
Lab Sample No.(s)			27899499	27899513	27899494	27899504	27899509
AGS Reference			ES1	ES1	ES1	ES1	ES1
Dibromofluoromethane**	%	TM116	103	102 2	110 2	100 2	103 2
Toluene-d8**	%	TM116	75.2	92.8 2	96.2 2	91.5 2	91.1 2
4-Bromofluorobenzene**	%	TM116	118	97.6 2	89.8 2	91.6 2	92.2 2
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<200 2 #	<10 2 M	<10 2 M	<200 2 M
Benzene	<1 µg/kg	TM116	<9 M	<180 2 #	<9 2 M	<9 2 M	<180 2 M
Toluene	<1 µg/kg	TM116	<7 M	<140 2 #	<7 2 M	<7 2 M	<140 2 M
Ethylbenzene	<1 µg/kg	TM116	<4 M	<80 2 #	<4 2 M	<4 2 M	<80 2 M
p/m-Xylene	<2 µg/kg	TM116	<10 #	<200 2 #	<10 2 #	<10 2 #	<200 2 #
o-Xylene	<2 µg/kg	TM116	<10 M	<200 2 #	<10 2 M	<10 2 M	<200 2 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.4 2	<0.02 2	<0.02 2	<0.4 2
Sum of BTEX	<7 µg/kg	TM116	<40	<800 2	<40 2	<40 2	<800 2

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend
- # ISO17025 accredited.
- M *m*CERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&♦§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH-106ES1 4.00 - 4.00 SOLID 19/04/2023 00:00:00 26/04/2023 05:00:00 230426-63 27899499 TM048	02/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH-109ES1 1.00 - 1.00 SOLID 20/04/2023 00:00:00 26/04/2023 05:00:00 230426-63 27899513 TM048	02/05/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH-114ES1 1.00 - 1.00 SOLID 21/04/2023 00:00:00 26/04/2023 05:00:00 230426-63 27899494 TM048	02/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH-115ES1 3.00 - 3.00 SOLID 20/04/2023 00:00:00 26/04/2023 05:00:00 230426-63 27899504 TM048	02/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH-301ES1 1.00 - 1.00 SOLID 19/04/2023 00:00:00 26/04/2023 05:00:00 230426-63 27899509 TM048	02/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	11.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	89.9
Particle Size <4mm	>95%		

Case	
SDG	230426-63
Lab Sample Number(s)	27899494
Sampled Date	21-Apr-2023
Customer Sample Ref.	BH-114 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	0.967	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	19.1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.63	-	>6	-
ANC to pH 6 (mol/kg)	0.0513	-	-	-
ANC to pH 4 (mol/kg)	0.5	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0011	<0.0002	0.011	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000574	<0.0003	0.00574	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000758	<0.0004	0.00758	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00133	<0.001	0.0133	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	57.3	<10	573	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.75	<3	37.5	<30	500	800	1000

Leach Test Information

Date Prepared	28-Apr-2023
pH (pH Units)	8.11
Conductivity (µS/cm)	76
Volume Leachant (Litres)	0.890

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

05/06/2023 09:24:44

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	83.6
Particle Size <4mm	>95%		

Case	
SDG	230426-63
Lab Sample Number(s)	27899499
Sampled Date	19-Apr-2023
Customer Sample Ref.	BH-106 ES1
Depth (m)	4.00 - 4.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	1.18	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	39.8	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.45	-	>6	-
ANC to pH 6 (mol/kg)	0.0551	-	-	-
ANC to pH 4 (mol/kg)	0.452	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00055	<0.0005	0.0055	<0.005	0.5	2	25
Barium	0.00405	<0.0002	0.0405	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000554	<0.0004	0.00554	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0027	<0.001	0.027	<0.01	4	50	200
Chloride	3	<2	30	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	68.6	<10	686	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.09	<3	30.9	<30	500	800	1000

Leach Test Information

Date Prepared	27-Apr-2023
pH (pH Units)	7.99
Conductivity (µS/cm)	90
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

05/06/2023 09:24:44

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.095	**Natural Moisture Content (%)**	5.41
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	94.9
Particle Size <4mm	>95%		

Case	
SDG	230426-63
Lab Sample Number(s)	27899504
Sampled Date	20-Apr-2023
Customer Sample Ref.	BH-115 ES1
Depth (m)	3.00 - 3.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	0.878	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	8.65	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.87	-	>6	-
ANC to pH 6 (mol/kg)	0.0584	-	-	-
ANC to pH 4 (mol/kg)	0.265	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00114	<0.0002	0.0114	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00042	<0.0003	0.0042	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000477	<0.0004	0.00477	<0.004	0.4	10	40
Lead	0.000334	<0.0002	0.00334	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	57.1	<10	571	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.82	<3	38.2	<30	500	800	1000

Leach Test Information

Date Prepared	28-Apr-2023
pH (pH Units)	8.19
Conductivity (µS/cm)	75
Volume Leachant (Litres)	0.895

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

05/06/2023 09:24:44

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Notification of NDPs (No determination possible)

Date Received : 26/04/2023 11:10:13

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
27899509	BH-301	1.00 - 1.00	Dissolved Organic/Inorganic Carbon	Sample moisture too high
27899509	BH-301	1.00 - 1.00	Fluoride	Sample moisture too high
27899509	BH-301	1.00 - 1.00	Mercury Dissolved	Sample moisture too high
27899509	BH-301	1.00 - 1.00	Dissolved Metals by ICP-MS	Sample moisture too high
27899509	BH-301	1.00 - 1.00	Anions by Kone (w)	Sample moisture too high
27899509	BH-301	1.00 - 1.00	Phenols by HPLC (W)	Sample moisture too high
27899509	BH-301	1.00 - 1.00	pH Value of Filtered Water	Sample moisture too high
27899513	BH-109	1.00 - 1.00	Dissolved Organic/Inorganic Carbon	Insufficient Sample
27899513	BH-109	1.00 - 1.00	Fluoride	Insufficient Sample
27899513	BH-109	1.00 - 1.00	Mercury Dissolved	Insufficient Sample
27899513	BH-109	1.00 - 1.00	Dissolved Metals by ICP-MS	Insufficient Sample
27899513	BH-109	1.00 - 1.00	Anions by Kone (w)	Insufficient Sample
27899513	BH-109	1.00 - 1.00	Phenols by HPLC (W)	Insufficient Sample
27899513	BH-109	1.00 - 1.00	pH Value of Filtered Water	Insufficient Sample
27899509	BH-301	1.00 - 1.00	CEN 10:1 Leachate (1 Stage)	Sample moisture too high
27899509	BH-301	1.00 - 1.00	CEN Readings	Sample moisture too high
27899509	BH-301	1.00 - 1.00	pH Value of Filtered Water	Sample moisture too high
27899513	BH-109	1.00 - 1.00	CEN 10:1 Leachate (1 Stage)	Insufficient Sample
27899513	BH-109	1.00 - 1.00	CEN Readings	Insufficient Sample
27899513	BH-109	1.00 - 1.00	pH Value of Filtered Water	Insufficient Sample

Table of Results - Appendix

Method No	Description
PM023	Leaching Procedure for NRA Leachates
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230426-63 **Report Number:** 691206 **Superseded Report:** 688901
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	27899499	27899513	27899494	27899504	27899509
Customer Sample Ref.	BH-106	BH-109	BH-114	BH-115	BH-301
AGS Ref.	ES1	ES1	ES1	ES1	ES1
Depth	4.00 - 4.00	1.00 - 1.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	03-May-2023	03-May-2023	03-May-2023	03-May-2023	05-May-2023
Anions by Kone (soil)	03-May-2023	03-May-2023	03-May-2023	03-May-2023	03-May-2023
Anions by Kone (w)	03-May-2023		03-May-2023	03-May-2023	04-May-2023
Asbestos ID in Solid Samples	02-May-2023	02-May-2023	02-May-2023	02-May-2023	02-May-2023
CEN 10:1 Leachate (1 Stage)	27-Apr-2023		28-Apr-2023	28-Apr-2023	
CEN Readings	04-May-2023		03-May-2023	03-May-2023	
Chromium III	04-May-2023	03-May-2023	04-May-2023	04-May-2023	03-May-2023
Coronene	02-May-2023	02-May-2023	02-May-2023	02-May-2023	02-May-2023
Cyanide Comp/Free/Total/Thiocyanate	28-Apr-2023	03-May-2023	28-Apr-2023	28-Apr-2023	03-May-2023
Dissolved Metals by ICP-MS	03-May-2023		03-May-2023	03-May-2023	05-May-2023
Dissolved Organic/Inorganic Carbon	02-May-2023		02-May-2023	02-May-2023	03-May-2023
EPH	29-Apr-2023	02-May-2023	29-Apr-2023	29-Apr-2023	02-May-2023
EPH by GCxGC-FID	29-Apr-2023	02-May-2023	29-Apr-2023	29-Apr-2023	02-May-2023
EPH CWG GC (S)	29-Apr-2023	02-May-2023	29-Apr-2023	02-May-2023	02-May-2023
Fluoride	02-May-2023		02-May-2023	02-May-2023	02-May-2023
GRO by GC-FID (S)	28-Apr-2023	02-May-2023	28-Apr-2023	28-Apr-2023	02-May-2023
Hexavalent Chromium (s)	28-Apr-2023	03-May-2023	28-Apr-2023	28-Apr-2023	03-May-2023
Loss on Ignition in soils	03-May-2023	03-May-2023	03-May-2023	03-May-2023	03-May-2023
Magnesium (BRE)	04-May-2023	05-May-2023	04-May-2023	04-May-2023	05-May-2023
Mercury Dissolved	03-May-2023		03-May-2023	03-May-2023	03-May-2023
Metals in solid samples by OES	04-May-2023	03-May-2023	04-May-2023	04-May-2023	03-May-2023
Moisture at 105C	27-Apr-2023	28-Apr-2023	28-Apr-2023	28-Apr-2023	28-Apr-2023
NO3, NO2 and TON by KONE (s)	04-May-2023	04-May-2023	04-May-2023	04-May-2023	04-May-2023
NRA Leachate					29-Apr-2023
PAH 16 & 17 Calc	02-May-2023	02-May-2023	02-May-2023	02-May-2023	04-May-2023
PAH by GCMS	02-May-2023	02-May-2023	02-May-2023	02-May-2023	04-May-2023
PCBs by GCMS	03-May-2023	03-May-2023	03-May-2023	03-May-2023	04-May-2023
pH	05-May-2023	05-May-2023	05-May-2023	05-May-2023	05-May-2023
pH Value of Filtered Water	05-May-2023		03-May-2023	03-May-2023	10-May-2023
Phenols by HPLC (S)	28-Apr-2023	02-May-2023	02-May-2023	28-Apr-2023	02-May-2023
Phenols by HPLC (W)	02-May-2023		03-May-2023	03-May-2023	03-May-2023
Sample description	27-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023
Semi Volatile Organic Compounds	04-May-2023	04-May-2023	04-May-2023	04-May-2023	04-May-2023
Total Organic Carbon	04-May-2023	05-May-2023	04-May-2023	05-May-2023	05-May-2023
Total Sulphur	03-May-2023	03-May-2023	03-May-2023	03-May-2023	03-May-2023
TPH CWG GC (S)	29-Apr-2023	02-May-2023	29-Apr-2023	02-May-2023	02-May-2023
VOC MS (S)	02-May-2023	02-May-2023	02-May-2023	02-May-2023	02-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230426-63	N/A	N/A	05/06/2023	Client Reference Change	2023WH101	2023OY104	688901

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230502-27
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	690985
Order Number:	12380

This report has been revised and directly supersedes 688434 in its entirety.

We received 3 samples on Tuesday May 02, 2023 and 3 of these samples were scheduled for analysis which was completed on Thursday May 11, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27929156	BH107	ES1	1.50 - 1.50	25/04/2023
27929162	BH108	ES1	1.00 - 1.00	25/04/2023
27929167	BH113	ES1	2.00 - 2.00	25/04/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27929156				27929162				27929167	
Customer Sample Reference			BH107				BH108				BH113	
AGS Reference			ES1				ES1				ES1	
Depth (m)			1.50 - 1.50				1.00 - 1.00				2.00 - 2.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	S	S	S	S	S	S	
Alkali Metals by iCap-OES (Soil)	All	NDPs: 0 Tests: 3		X			X			X		
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 3		X			X			X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X		
Anions by Kone (w)	All	NDPs: 0 Tests: 3	X			X			X			
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X			
CEN Readings	All	NDPs: 0 Tests: 3	X			X			X			
Chromium III	All	NDPs: 0 Tests: 3		X			X			X		
Coronene	All	NDPs: 0 Tests: 3		X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X			X			X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X			X			X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3	X			X			X			
EPH	All	NDPs: 0 Tests: 3		X			X			X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3		X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X		
Fluoride	All	NDPs: 0 Tests: 3	X			X			X			

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
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Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
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OTH - Other

Lab Sample No(s)					27929156			27929162			27929167
Customer Sample Reference					BH107			BH108			BH113
AGS Reference					ES1			ES1			ES1
Depth (m)					1.50 - 1.50			1.00 - 1.00			2.00 - 2.00
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3				X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3			X			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 3			X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 3		X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 3			X			X			X	
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 3			X			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 3			X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 3			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 3			X			X			X	
pH	All	NDPs: 0 Tests: 3			X			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 3		X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3			X			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 3		X			X			X		
Sample description	All	NDPs: 0 Tests: 3			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3			X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
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Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
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OTH - Other

Lab Sample No(s)			27929156			27929162			27929167		
Customer Sample Reference			BH107			BH108			BH113		
AGS Reference			ES1			ES1			ES1		
Depth (m)			1.50 - 1.50			1.00 - 1.00			2.00 - 2.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Total Organic Carbon	All	NDPs: 0 Tests: 3		X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 3		X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 3			X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27929156	BH107	1.50 - 1.50	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27929162	BH108	1.00 - 1.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27929167	BH113	2.00 - 2.00	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			.	.	.			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	16	20	7.7			
Loss on ignition	<0.7 %	TM018	2.31 M	2.73 M	1.45 M			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M			
Organic Carbon, Total	<0.2 %	TM132	0.285 M	0.462 M	<0.2 M			
Sulphur, Total	<0.02 %	TM132	<0.02 #	0.0227 #	0.0256 #			
Organic Matter, Total	<0.35 %	TM132	0.491 #	0.796 #	<0.35 #			
pH	1 pH Units	TM133	8.35 M	8.59 M	8.65 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M			
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21			
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36			
Chromium, Trivalent	<0.9 mg/kg	TM181	12	17.5	26.4			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			-	-	-			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	0.945 #			
Arsenic	<0.6 mg/kg	TM181	7.98 M	13.6 M	18.2 M			
Barium	<0.6 mg/kg	TM181	46.2 #	62.7 #	20.5 #			
Beryllium	<0.01 mg/kg	TM181	0.496 M	1.05 M	0.512 M			
Boron	<0.7 mg/kg	TM181	1.99 #	5.08 #	<0.7 #			
Cadmium	<0.02 mg/kg	TM181	1.16 M	2.9 M	1.53 M			
Chromium	<0.9 mg/kg	TM181	12 M	17.5 M	26.4 M			
Copper	<1.4 mg/kg	TM181	8.82 M	23.1 M	20.4 M			
Lead	<0.7 mg/kg	TM181	22.3 M	23.1 M	32.8 M			
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M			
Molybdenum	<0.1 mg/kg	TM181	0.645 #	0.936 #	1.23 #			
Nickel	<0.2 mg/kg	TM181	36 M	69.5 M	84.8 M			
Selenium	<1 mg/kg	TM181	1.24 #	1.34 #	<1 #			
Vanadium	<0.2 mg/kg	TM181	21.2 #	33 #	26.2 #			
Zinc	<1.9 mg/kg	TM181	83.6 M	164 M	181 M			
ANC @ pH 4	<0.03 mol/kg	TM182	0.0713	0.316	0.305			
ANC @ pH 6	<0.03 mol/kg	TM182	<0.03	0.0328	0.048			
Magnesium	<8 mg/kg	TM224	1260	2560	329			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.004 M	0.0118 M	0.0126 M			
Nitrate as NO3, 2:1 water soluble	<1 mg/kg	TM243	1.9	6.46	<1			
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318	<318			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10			
Coronene	<200 µg/kg	TM410	<200	<200	<200			
EPH (C5-C40)	<35 mg/kg	TM415	<35	<35	96.5			
EPH Surrogate % recovery**	%	TM415	91.7	96.4	89.9			
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	<35 M	<35 M	96.5 M			
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5	90.2			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
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- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			.	.	.			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	94.6	94.5	99.3			
Acenaphthene-d10 % recovery**	%	TM218	90.1	90.6	94.1			
Phenanthrene-d10 % recovery**	%	TM218	84.5	85.4	88.4			
Chrysene-d12 % recovery**	%	TM218	75.3	75.9	80.6			
Perylene-d12 % recovery**	%	TM218	77.8	78.2	84.5			
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	20.2 M			
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	31.5 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	18.4 M			
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	18.9 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	20.4 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
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- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			.	.	.			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100			
Isophorone	<100 µg/kg	TM157	<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100			
Carbazole	<100 µg/kg	TM157	<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100			
Azobenzene	<100 µg/kg	TM157	<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			-	-	-			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100			
Anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100	<100			
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Fluorene	<100 µg/kg	TM157	<100	<100	<100			
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100			
Pyrene	<100 µg/kg	TM157	<100	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100	<100			
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH107	BH108	BH113			
Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			.	.	.			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
GRO Surrogate % recovery**	%	TM089	101	128	99.9			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	2770 #	<1000 #	67000 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	10600			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	77900			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	81100			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	1790 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	77900			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			.	.	.			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	114	109	125			
Toluene-d8**	%	TM116	98.6	97.2	97.9			
4-Bromofluorobenzene**	%	TM116	84.9	83.9	93.1			
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #	<6 #			
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #	<7 #			
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<6 @ M			
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M			
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M			
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M			
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #	<10 #			
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M	<7 M			
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #	<10 #			
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M			
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M	<10 M			
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M	<8 M			
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M			
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10	<10			
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M			
Chloroform	<3 µg/kg	TM116	<8 M	<8 M	<8 M			
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M	<7 M			
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M			
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M			
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M	<5 M			
Benzene	<1 µg/kg	TM116	<9 M	<9 M	<9 M			
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #	<9 #			
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M			
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M	<9 M			
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M	<7 M			
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M			
Toluene	<1 µg/kg	TM116	<7 M	<7 M	<7 M			
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10	<10			
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M			
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M	<7 M			

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH107	BH108	BH113			
Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			-	-	-			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M	<5 M			
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M			
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M			
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M	<5 M			
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M			
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M	<4 M			
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #	<10 #			
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M	<10 M			
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #			
Bromoform	<2 µg/kg	TM116	<10 M	<10 M	<10 M			
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #	<5 #			
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #	<10 #			
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M	<16 M			
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M			
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M			
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M	<9 M			
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M	<8 M			
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M	<10 M			
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #	<14 #			
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #	<9 #			
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10	<10			
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10	<10			
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M	<8 M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M			
n-Butylbenzene	<3 µg/kg	TM116	<11	<11	<11			
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M	<10 M			
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M	<14 M			
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #	<10 #			
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20			
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20	<20			
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M	<13 M			
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #	<20 #			
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH107	BH108	BH113			
Customer Sample Ref.			BH107	BH108	BH113			
Depth (m)			1.50 - 1.50	1.00 - 1.00	2.00 - 2.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			25/04/2023	25/04/2023	25/04/2023			
Sample Time			-	-	-			
Date Received			02/05/2023	02/05/2023	02/05/2023			
SDG Ref			230502-27	230502-27	230502-27			
Lab Sample No.(s)			27929156	27929162	27929167			
AGS Reference			ES1	ES1	ES1			
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02			
Sum of BTEX	<7 µg/kg	TM116	<40	<40	<40			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH107ES1 1.50 - 1.50 SOLID 25/04/2023 00:00:00 02/05/2023 10:00:00 230502-27 27929156 TM048	09/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH108ES1 1.00 - 1.00 SOLID 25/04/2023 00:00:00 02/05/2023 10:00:00 230502-27 27929162 TM048	09/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH113ES1 2.00 - 2.00 SOLID 25/04/2023 00:00:00 02/05/2023 10:00:00 230502-27 27929167 TM048	09/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.108	**Natural Moisture Content (%)**	20.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	83.1
Particle Size <4mm	>95%		

Case	
SDG	230502-27
Lab Sample Number(s)	27929156
Sampled Date	25-Apr-2023
Customer Sample Ref.	BH107 ES1
Depth (m)	1.50 - 1.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.285	3	5	6
Loss on Ignition (%)	2.31	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.35	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0713	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00166	<0.0002	0.0166	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000987	<0.0003	0.00987	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000756	<0.0004	0.00756	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00147	<0.001	0.0147	<0.01	4	50	200
Chloride	2	<2	20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	70.4	<10	704	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.44	<3	54.4	<30	500	800	1000

Leach Test Information

Date Prepared	02-May-2023
pH (pH Units)	7.95
Conductivity (µS/cm)	93
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 16:06:48

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	21.1
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.6
Particle Size <4mm	>95%		

Case	
SDG	230502-27
Lab Sample Number(s)	27929162
Sampled Date	25-Apr-2023
Customer Sample Ref.	BH108 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.462	3	5	6
Loss on Ignition (%)	2.73	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.59	-	>6	-
ANC to pH 6 (mol/kg)	0.0328	-	-	-
ANC to pH 4 (mol/kg)	0.316	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00188	<0.0002	0.0188	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00102	<0.001	0.0102	<0.01	0.5	10	70
Copper	0.000567	<0.0003	0.00567	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000666	<0.0004	0.00666	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0034	<0.001	0.034	<0.01	4	50	200
Chloride	2.4	<2	24	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	87.5	<10	875	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.54	<3	45.4	<30	500	800	1000

Leach Test Information

Date Prepared	02-May-2023
pH (pH Units)	8.10
Conductivity (µS/cm)	116
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

01/06/2023 16:06:48

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-27 **Report Number:** 690985 **Superseded Report:** 688434
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	18.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84.4
Particle Size <4mm	>95%		

Case	
SDG	230502-27
Lab Sample Number(s)	27929167
Sampled Date	25-Apr-2023
Customer Sample Ref.	BH113 ES1
Depth (m)	2.00 - 2.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	1.45	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	90.2	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.65	-	>6	-
ANC to pH 6 (mol/kg)	0.048	-	-	-
ANC to pH 4 (mol/kg)	0.305	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0016	<0.0002	0.016	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000401	<0.0003	0.00401	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000136	<0.00001	0.000136	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00353	<0.001	0.0353	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	58	<10	580	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	02-May-2023
pH (pH Units)	7.97
Conductivity (µS/cm)	77
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM224	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	27929156	27929162	27929167
Customer Sample Ref.	BH107	BH108	BH113
AGS Ref.	ES1	ES1	ES1
Depth	1.50 - 1.50	1.00 - 1.00	2.00 - 2.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Alkali Metals by iCap-OES (Soil)	05-May-2023	05-May-2023	05-May-2023
ANC at pH4 and ANC at pH 6	09-May-2023	09-May-2023	09-May-2023
Anions by Kone (soil)	05-May-2023	05-May-2023	05-May-2023
Anions by Kone (w)	05-May-2023	05-May-2023	05-May-2023
Asbestos ID in Solid Samples	09-May-2023	09-May-2023	09-May-2023
CEN 10:1 Leachate (1 Stage)	03-May-2023	09-May-2023	09-May-2023
CEN Readings	11-May-2023	11-May-2023	11-May-2023
Chromium III	05-May-2023	06-May-2023	06-May-2023
Coronene	03-May-2023	03-May-2023	03-May-2023
Cyanide Comp/Free/Total/Thiocyanate	04-May-2023	04-May-2023	04-May-2023
Dissolved Metals by ICP-MS	09-May-2023	09-May-2023	09-May-2023
Dissolved Organic/Inorganic Carbon	05-May-2023	05-May-2023	05-May-2023
EPH	04-May-2023	04-May-2023	04-May-2023
EPH by GCxGC-FID	04-May-2023	04-May-2023	04-May-2023
EPH CWG GC (S)	05-May-2023	05-May-2023	05-May-2023
Fluoride	05-May-2023	05-May-2023	05-May-2023
GRO by GC-FID (S)	04-May-2023	04-May-2023	04-May-2023
Hexavalent Chromium (s)	05-May-2023	05-May-2023	05-May-2023
Loss on Ignition in soils	09-May-2023	09-May-2023	09-May-2023
Mercury Dissolved	09-May-2023	10-May-2023	10-May-2023
Metals in solid samples by OES	05-May-2023	05-May-2023	05-May-2023
Moisture at 105C	02-May-2023	02-May-2023	02-May-2023
NO3, NO2 and TON by KONE (s)	09-May-2023	09-May-2023	09-May-2023
PAH 16 & 17 Calc	03-May-2023	06-May-2023	06-May-2023
PAH by GCMS	03-May-2023	03-May-2023	03-May-2023
PCBs by GCMS	04-May-2023	04-May-2023	04-May-2023
pH	10-May-2023	10-May-2023	10-May-2023
pH Value of Filtered Water	11-May-2023	11-May-2023	11-May-2023
Phenols by HPLC (S)	04-May-2023	04-May-2023	04-May-2023
Phenols by HPLC (W)	09-May-2023	09-May-2023	09-May-2023
Sample description	02-May-2023	02-May-2023	02-May-2023
Semi Volatile Organic Compounds	10-May-2023	09-May-2023	04-May-2023
Total Organic Carbon	09-May-2023	09-May-2023	10-May-2023
Total Sulphur	05-May-2023	09-May-2023	09-May-2023
TPH CWG GC (S)	05-May-2023	05-May-2023	05-May-2023
VOC MS (S)	04-May-2023	04-May-2023	04-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230502-27	N/A	N/A	01/06/2023	Client Reference Change	2023WH101	2023OY104	688434

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230502-30
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691204
Order Number:	12380

This report has been revised and directly supersedes 691203 in its entirety.

We received 1 sample on Tuesday May 02, 2023 and 1 of these samples were scheduled for analysis which was completed on Thursday May 11, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27929291	BH110	ES1	1.00 - 1.00	27/04/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27929291		
Customer Sample Reference			BH110		
AGS Reference			ES1		
Depth (m)			1.00 - 1.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
Alkali Metals by iCap-OES (Soil)	All	NDPs: 0 Tests: 1		X	
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 1		X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X		
CEN Readings	All	NDPs: 0 Tests: 1	X		
Coronene	All	NDPs: 0 Tests: 1		X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1		X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X		
EPH	All	NDPs: 0 Tests: 1		X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
Fluoride	All	NDPs: 0 Tests: 1	X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27929291		
Customer Sample Reference			BH110		
AGS Reference			ES1		
Depth (m)			1.00 - 1.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
Loss on Ignition in soils	All	NDPs: 0 Tests: 1		X	
Mercury Dissolved	All	NDPs: 0 Tests: 1	X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X	
NO3, NO2 and TON by KONE (s)	All	NDPs: 0 Tests: 1		X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1		X	
PAH by GCMS	All	NDPs: 0 Tests: 1		X	
PCBs by GCMS	All	NDPs: 0 Tests: 1		X	
pH	All	NDPs: 0 Tests: 1		X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X		
Sample description	All	NDPs: 0 Tests: 1		X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X	
Total Organic Carbon	All	NDPs: 0 Tests: 1		X	
Total Sulphur	All	NDPs: 0 Tests: 1		X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27929291		
Customer Sample Reference			BH110		
AGS Reference			ES1		
Depth (m)			1.00 - 1.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
VOC MS (S)	All	NDPs: 0 Tests: 1			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27929291	BH110	1.00 - 1.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.	BH110
Depth (m)	1.00 - 1.00
Sample Type	Soil/Solid (S)
Date Sampled	27/04/2023
Sample Time	.
Date Received	02/05/2023
SDG Ref	230502-30
Lab Sample No.(s)	27929291
AGS Reference	ES1

Component	LOD/Units	Method	BH110
Moisture Content Ratio (% of as received sample)	%	PM024	12
Loss on ignition	<0.7 %	TM018	1.08 M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M
Organic Carbon, Total	<0.2 %	TM132	<0.2 M
Sulphur, Total	<0.02 %	TM132	0.0366 #
Organic Matter, Total	<0.35 %	TM132	<0.35 #
pH	1 pH Units	TM133	8.65 M
Cyanide, Total	<1 mg/kg	TM153	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21
PCB congener 81	<3 µg/kg	TM168	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36
Antimony	<0.6 mg/kg	TM181	<0.6 #
Arsenic	<0.6 mg/kg	TM181	5.03 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			-					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Barium	<0.6 mg/kg	TM181	23.2 #					
Beryllium	<0.01 mg/kg	TM181	0.256 M					
Boron	<0.7 mg/kg	TM181	2.46 #					
Cadmium	<0.02 mg/kg	TM181	0.961 M					
Chromium	<0.9 mg/kg	TM181	6.68 M					
Copper	<1.4 mg/kg	TM181	12.3 M					
Lead	<0.7 mg/kg	TM181	9.72 M					
Mercury	<0.1 mg/kg	TM181	<0.1 M					
Molybdenum	<0.1 mg/kg	TM181	0.401 #					
Nickel	<0.2 mg/kg	TM181	26.6 M					
Selenium	<1 mg/kg	TM181	<1 #					
Vanadium	<0.2 mg/kg	TM181	11.1 #					
Zinc	<1.9 mg/kg	TM181	61.2 M					
ANC @ pH 4	<0.03 mol/kg	TM182	1.81					
ANC @ pH 6	<0.03 mol/kg	TM182	0.088					
Magnesium	<8 mg/kg	TM224	2910					
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0114 M					
Nitrate as NO3, 2:1 water soluble	<1 mg/kg	TM243	4.2					
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318					
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10					
Coronene	<200 µg/kg	TM410	<200					
EPH (C5-C40)	<35 mg/kg	TM415	<35					
EPH Surrogate % recovery**	%	TM415	99.2					
EPH >C10-C40 (EH_2D_Total)	<35 mg/kg	TM415	<35 M					
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	90.1					
Acenaphthene-d10 % recovery**	%	TM218	87.4					
Phenanthrene-d10 % recovery**	%	TM218	83.4					
Chrysene-d12 % recovery**	%	TM218	74.5					
Perylene-d12 % recovery**	%	TM218	78					
Naphthalene	<9 µg/kg	TM218	<9 M					
Acenaphthylene	<12 µg/kg	TM218	<12 M					
Acenaphthene	<8 µg/kg	TM218	<8 M					
Fluorene	<10 µg/kg	TM218	<10 M					
Phenanthrene	<15 µg/kg	TM218	<15 M					
Anthracene	<16 µg/kg	TM218	<16 M					
Fluoranthene	<17 µg/kg	TM218	<17 M					
Pyrene	<15 µg/kg	TM218	<15 M					
Benz(a)anthracene	<14 µg/kg	TM218	<14 M					
Chrysene	<10 µg/kg	TM218	<10 M					
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M					
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M					
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M					
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M					
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M					
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M					
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100					
Pentachlorophenol	<100 µg/kg	TM157	<100					
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100					
Nitrobenzene	<100 µg/kg	TM157	<100					
Isophorone	<100 µg/kg	TM157	<100					
Hexachloroethane	<100 µg/kg	TM157	<100					
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100					
Hexachlorobutadiene	<100 µg/kg	TM157	<100					
Hexachlorobenzene	<100 µg/kg	TM157	<100					
n-Dioctyl phthalate	<100 µg/kg	TM157	<100					
Dimethyl phthalate	<100 µg/kg	TM157	<100					
Diethyl phthalate	<100 µg/kg	TM157	<100					
n-Dibutyl phthalate	<100 µg/kg	TM157	<100					
Dibenzofuran	<100 µg/kg	TM157	<100					
Carbazole	<100 µg/kg	TM157	<100					
Butylbenzyl phthalate	<100 µg/kg	TM157	<100					
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100					
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100					
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100					
Azobenzene	<100 µg/kg	TM157	<100					
4-Nitrophenol	<100 µg/kg	TM157	<100					
4-Nitroaniline	<100 µg/kg	TM157	<100					
4-Methylphenol	<100 µg/kg	TM157	<100					
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100					
4-Chloroaniline	<100 µg/kg	TM157	<100					
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100					
4-Bromophenylphenylether	<100 µg/kg	TM157	<100					
3-Nitroaniline	<100 µg/kg	TM157	<100					
2-Nitrophenol	<100 µg/kg	TM157	<100					
2-Nitroaniline	<100 µg/kg	TM157	<100					
2-Methylphenol	<100 µg/kg	TM157	<100					
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100					
2-Chlorophenol	<100 µg/kg	TM157	<100					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dimethylphenol	<100 µg/kg	TM157	<100					
2,4-Dichlorophenol	<100 µg/kg	TM157	<100					
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100					
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100					
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100					
2-Chloronaphthalene	<100 µg/kg	TM157	<100					
2-Methylnaphthalene	<100 µg/kg	TM157	<100					
Acenaphthylene	<100 µg/kg	TM157	<100					
Acenaphthene	<100 µg/kg	TM157	<100					
Anthracene	<100 µg/kg	TM157	<100					
Benzo(a)anthracene	<100 µg/kg	TM157	<100					
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100					
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100					
Benzo(a)pyrene	<100 µg/kg	TM157	<100					
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100					
Chrysene	<100 µg/kg	TM157	<100					
Fluoranthene	<100 µg/kg	TM157	<100					
Fluorene	<100 µg/kg	TM157	<100					
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100					
Phenanthrene	<100 µg/kg	TM157	<100					
Pyrene	<100 µg/kg	TM157	<100					
Naphthalene	<100 µg/kg	TM157	<100					
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100					
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	116					
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10					
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10					
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10					
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000					
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000					
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000					
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10					
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10					
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10					
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000					
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000					
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000					
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000					
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50					
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50					
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	115					
Toluene-d8**	%	TM116	100					
4-Bromofluorobenzene**	%	TM116	96.1					
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #					
Chloromethane	<2 µg/kg	TM116	<7 #					
Vinyl Chloride	<0.5 µg/kg	TM116	<6 M					
Bromomethane	<1 µg/kg	TM116	<10 M					
Chloroethane	<1 µg/kg	TM116	<10 M					
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M					
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #					
Carbon Disulphide	<1 µg/kg	TM116	<7 M					
Dichloromethane	<5 µg/kg	TM116	<10 #					
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M					
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M					
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M					
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M					
2,2-Dichloropropane	<1 µg/kg	TM116	<10					
Bromochloromethane	<2 µg/kg	TM116	<10 M					
Chloroform	<3 µg/kg	TM116	<8 M					
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M					
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M					
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M					
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M					
Benzene	<1 µg/kg	TM116	<9 M					
Trichloroethene	<1 µg/kg	TM116	<9 #					
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M					
Dibromomethane	<1 µg/kg	TM116	<9 M					
Bromodichloromethane	<2 µg/kg	TM116	<7 M					
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M					
Toluene	<1 µg/kg	TM116	<7 M					
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10					
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M					
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M					

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<5 M					
Dibromochloromethane	<2 µg/kg	TM116	<10 M					
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M					
Chlorobenzene	<2 µg/kg	TM116	<5 M					
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M					
Ethylbenzene	<1 µg/kg	TM116	<4 M					
p/m-Xylene	<2 µg/kg	TM116	<10 #					
o-Xylene	<2 µg/kg	TM116	<10 M					
Styrene	<2 µg/kg	TM116	<10 #					
Bromoform	<2 µg/kg	TM116	<10 M					
Isopropylbenzene	<2 µg/kg	TM116	<5 #					
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #					
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M					
Bromobenzene	<2 µg/kg	TM116	<10 M					
Propylbenzene	<2 µg/kg	TM116	<10 M					
2-Chlorotoluene	<3 µg/kg	TM116	<9 M					
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M					
4-Chlorotoluene	<3 µg/kg	TM116	<10 M					
tert-Butylbenzene	<2 µg/kg	TM116	<14 #					
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #					
sec-Butylbenzene	<1 µg/kg	TM116	<10					
4-Isopropyltoluene	<2 µg/kg	TM116	<10					
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M					
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M					
n-Butylbenzene	<3 µg/kg	TM116	<11					
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M					
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M					
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #					
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20					
Hexachlorobutadiene	<4 µg/kg	TM116	<20					
Naphthalene	<8 µg/kg	TM116	<13 M					
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #					
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH110					
Depth (m)			1.00 - 1.00					
Sample Type			Soil/Solid (S)					
Date Sampled			27/04/2023					
Sample Time			.					
Date Received			02/05/2023					
SDG Ref			230502-30					
Lab Sample No.(s)			27929291					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02					
Sum of BTEX	<7 µg/kg	TM116	<40					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref.	BH110ES1	09/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.00 - 1.00										
Sample Type	SOLID										
Date Sampled	27/04/2023 00:00:00										
Date Receieved	02/05/2023 10:00:00										
SDG	230502-30										
Original Sample	27929291										
Method Number	TM048										

Validated

CERTIFICATE OF ANALYSIS

SDG: 230502-30 **Report Number:** 691204 **Superseded Report:** 691203
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.102	**Natural Moisture Content (%)**	13.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88
Particle Size <4mm	>95%		

Case	
SDG	230502-30
Lab Sample Number(s)	27929291
Sampled Date	27-Apr-2023
Customer Sample Ref.	BH110 ES1
Depth (m)	1.00 - 1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	1.08	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.65	-	>6	-
ANC to pH 6 (mol/kg)	0.088	-	-	-
ANC to pH 4 (mol/kg)	1.81	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00172	<0.0002	0.0172	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000822	<0.0003	0.00822	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000651	<0.0004	0.00651	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	61.2	<10	612	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.9	<3	39	<30	500	800	1000

Leach Test Information

Date Prepared	02-May-2023
pH (pH Units)	7.91
Conductivity (µS/cm)	71
Volume Leachant (Litres)	0.888

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

05/06/2023 09:15:40

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM224	Determination of Alkaline Metals by iCap 6500 Duo ICP-OES
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	27929291
Customer Sample Ref.	BH110
AGS Ref.	ES1
Depth	1.00 - 1.00
Type	Soil/Solid (S)
Alkali Metals by iCap-OES (Soil)	05-May-2023
ANC at pH4 and ANC at pH 6	09-May-2023
Anions by Kone (soil)	05-May-2023
Anions by Kone (w)	05-May-2023
Asbestos ID in Solid Samples	09-May-2023
CEN 10:1 Leachate (1 Stage)	03-May-2023
CEN Readings	11-May-2023
Coronene	03-May-2023
Cyanide Comp/Free/Total/Thiocyanate	04-May-2023
Dissolved Metals by ICP-MS	09-May-2023
Dissolved Organic/Inorganic Carbon	05-May-2023
EPH	04-May-2023
EPH by GCxGC-FID	04-May-2023
EPH CWG GC (S)	05-May-2023
Fluoride	05-May-2023
GRO by GC-FID (S)	04-May-2023
Loss on Ignition in soils	09-May-2023
Mercury Dissolved	10-May-2023
Metals in solid samples by OES	05-May-2023
Moisture at 105C	02-May-2023
NO3, NO2 and TON by KONE (s)	09-May-2023
PAH 16 & 17 Calc	03-May-2023
PAH by GCMS	03-May-2023
PCBs by GCMS	04-May-2023
pH	10-May-2023
pH Value of Filtered Water	11-May-2023
Phenols by HPLC (S)	04-May-2023
Phenols by HPLC (W)	09-May-2023
Sample description	02-May-2023
Semi Volatile Organic Compounds	04-May-2023
Total Organic Carbon	10-May-2023
Total Sulphur	09-May-2023
TPH CWG GC (S)	05-May-2023
VOC MS (S)	04-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230502-30	N/A	N/A	05/06/2023	Client Reference Change	2023WH101	2023OY104	688435

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230510-54
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691268
Order Number:	12380

This report has been revised and directly supersedes 689213 in its entirety.

We received 3 samples on Wednesday May 10, 2023 and 3 of these samples were scheduled for analysis which was completed on Wednesday May 17, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27969487	BH111	ES1	1.50 - 1.50	27/04/2023
27969493	BHSS04	ES1	3.50 - 3.50	03/05/2023
27969498	BHSS05	ES1	2.50 - 2.50	03/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27969487			27969493			27969498	
Customer Sample Reference					BH111			BHSS04			BHSS05	
AGS Reference					ES1			ES1			ES1	
Depth (m)					1.50 - 1.50			3.50 - 3.50			2.50 - 2.50	
Container					1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type					S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 3				X			X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 3				X			X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 3			X			X			X		
Anions in soil by IC	All	NDPs: 0 Tests: 3				X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3			X			X			X		
CEN Readings	All	NDPs: 0 Tests: 3			X			X			X		
Chromium III	All	NDPs: 0 Tests: 3				X			X			X	
Coronene	All	NDPs: 0 Tests: 3				X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3				X			X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3			X			X			X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3			X			X			X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3				X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3				X			X			X	
Fluoride	All	NDPs: 0 Tests: 3			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3					X			X			X

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27969487			27969493			27969498
Customer Sample Reference					BH111			BHSS04			BHSS05
AGS Reference					ES1			ES1			ES1
Depth (m)					1.50 - 1.50			3.50 - 3.50			2.50 - 2.50
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3			X			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 3			X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 3			X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 3		X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 3			X			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 3			X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 3			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 3			X			X			X	
pH	All	NDPs: 0 Tests: 3			X			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 3		X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3			X			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 3		X			X			X		
Sample description	All	NDPs: 0 Tests: 3			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3			X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 3			X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27969487			27969493			27969498
Customer Sample Reference					BH111			BHSS04			BHSS05
AGS Reference					ES1			ES1			ES1
Depth (m)					1.50 - 1.50			3.50 - 3.50			2.50 - 2.50
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S
Total Sulphate	All	NDPs: 0 Tests: 3			X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 3			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 3				X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27969487	BH111	1.50 - 1.50	Light Brown	Sandy Clay Loam	Stones	None
27969493	BHSS04	3.50 - 3.50	Light Brown	Sandy Clay Loam	Stones	None
27969498	BHSS05	2.50 - 2.50	Grey	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			.	.	.			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	15	19	12			
Loss on ignition	<0.7 %	TM018	2.99 M	2.99 M	1.26 M			
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00465	0.000344	0.000243			
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0158	0.0129	0.0117			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 @ M	<0.015 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 @ M	<0.035 M	<0.035 M			
Organic Carbon, Total	<0.2 %	TM132	0.3 M	0.532 M	0.255 M			
Sulphur, Total	<0.02 %	TM132	<0.02 #	0.0283 #	0.0206 #			
Organic Matter, Total	<0.35 %	TM132	0.517 #	0.917 #	0.44 #			
Sulphate, Total potential	<0.06 %	TM132	0.06	0.0849	0.0618			
pH	1 pH Units	TM133	8.53 M	8.34 M	8.59 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M			
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 M	<1 M			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21			
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			-	-	-			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36			
Chromium, Trivalent	<0.9 mg/kg	TM181	19.2	11.4	8.04			
Arsenic	<0.6 mg/kg	TM181	13.9 M	3.59 M	2.45 M			
Barium	<0.6 mg/kg	TM181	44.8 #	25.1 #	18.1 #			
Beryllium	<0.01 mg/kg	TM181	0.887 M	0.469 M	0.368 M			
Cadmium	<0.02 mg/kg	TM181	2.74 M	0.834 M	1.83 M			
Chromium	<0.9 mg/kg	TM181	19.2 M	11.4 M	8.04 M			
Copper	<1.4 mg/kg	TM181	22 M	9.89 M	9.44 M			
Lead	<0.7 mg/kg	TM181	27.4 M	12.9 M	8.89 M			
Mercury	<0.1 mg/kg	TM181	<1 M	<0.1 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181	75.4 M	29.6 M	20.9 M			
Selenium	<1 mg/kg	TM181	<10 #	<1 #	<1 #			
Vanadium	<0.2 mg/kg	TM181	29.7 #	15.3 #	12 #			
Zinc	<1.9 mg/kg	TM181	157 M	76.1 M	70.4 M			
ANC @ pH 4	<0.03 mol/kg	TM182	0.0836	0.906	1.28			
ANC @ pH 6	<0.03 mol/kg	TM182	<0.03	0.0303	0.0479			
Sulphate, acid soluble (total)	<0.0048 %	TM221	<0.0048 M	0.0204 M	0.021 M			
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0038 M	0.0047 M	0.0036 M			
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10			
Coronene	<200 µg/kg	TM410	<200	<200	<200			
EPH Surrogate % recovery**	%	TM415	96.4	97.2	95.2			
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5	<5			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			.	.	.			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	107	100	103			
Acenaphthene-d10 % recovery**	%	TM218	100	99.9	103			
Phenanthrene-d10 % recovery**	%	TM218	95.1	99.5	94			
Chrysene-d12 % recovery**	%	TM218	97.7	91.1	106			
Perylene-d12 % recovery**	%	TM218	99.4	94.8	110			
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			.	.	.			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100			
Isophorone	<100 µg/kg	TM157	<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100			
Carbazole	<100 µg/kg	TM157	<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100			
Azobenzene	<100 µg/kg	TM157	<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157	<200	<200	<200			
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			-	-	-			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100			
Anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100	<100			
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Fluorene	<100 µg/kg	TM157	<100	<100	<100			
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100			
Pyrene	<100 µg/kg	TM157	<100	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100	<100			
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			.	.	.			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	106 @	107	100			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10	<10			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10	<10			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10	<10			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 #	<1000 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 #	<1000 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 #	<1000 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	3560 @ #	<1000 #	<1000 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000	<1000			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000 @	<5000	<5000			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10	<10			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10	<10			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10	<10			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 #	<1000 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 #	<1000 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 #	<1000 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1020 @ #	1410 #	1040 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000	<1000			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000	<1000			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 @	<50	<50			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 @	<50	<50			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 @	<20	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			.	.	.			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	113 @	107	108			
Toluene-d8**	%	TM116	106 @	101	99.6			
4-Bromofluorobenzene**	%	TM116	98.5 @	89.4	83.2			
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 @ #	<6 #	<6 #			
Chloromethane	<2 µg/kg	TM116	<7 @ #	<7 #	<7 #			
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<6 @ M			
Bromomethane	<1 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Chloroethane	<1 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 @ M	<6 M	<6 M			
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 @ #	<10 #	<10 #			
Carbon Disulphide	<1 µg/kg	TM116	<7 @ M	<7 M	<7 M			
Dichloromethane	<5 µg/kg	TM116	<10 @ #	<10 #	<10 #			
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 @ M	<10 M	<10 M			
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 @ M	<10 M	<10 M			
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 @ M	<8 M	<8 M			
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 @ M	<6 M	<6 M			
2,2-Dichloropropane	<1 µg/kg	TM116	<10 @	<10	<10			
Bromochloromethane	<2 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Chloroform	<3 µg/kg	TM116	<8 @ M	<8 M	<8 M			
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 @ M	<7 M	<7 M			
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Carbontetrachloride	<0.5 µg/kg	TM116	<10 @ M	<10 M	<10 M			
1,2-Dichloroethane	<1 µg/kg	TM116	<5 @ M	<5 M	<5 M			
Benzene	<1 µg/kg	TM116	<9 @ M	<9 M	<9 M			
Trichloroethene	<1 µg/kg	TM116	<9 @ #	<9 #	<9 #			
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Dibromomethane	<1 µg/kg	TM116	<9 @ M	<9 M	<9 M			
Bromodichloromethane	<2 µg/kg	TM116	<7 @ M	<7 M	<7 M			
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Toluene	<1 µg/kg	TM116	<7 @ M	<7 M	<7 M			
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10 @	<10	<10			
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 @ M	<10 M	<10 M			
1,3-Dichloropropane	<1 µg/kg	TM116	<7 @ M	<7 M	<7 M			

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			-	-	-			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<5 @ M	<5 M	<5 M			
Dibromochloromethane	<2 µg/kg	TM116	<10 @ M	<10 M	<10 M			
1,2-Dibromoethane	<1 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Chlorobenzene	<2 µg/kg	TM116	<5 @ M	<5 M	<5 M			
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Ethylbenzene	<1 µg/kg	TM116	<4 @ M	<4 M	<4 M			
p/m-Xylene	<2 µg/kg	TM116	<10 @ #	<10 #	<10 #			
o-Xylene	<2 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #			
Bromoform	<2 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Isopropylbenzene	<2 µg/kg	TM116	<5 @ #	<5 #	<5 #			
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 @ #	<10 #	<10 #			
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 @ M	<16 M	<16 M			
Bromobenzene	<2 µg/kg	TM116	<10 @ M	<10 M	<10 M			
Propylbenzene	<2 µg/kg	TM116	<10 @ M	<10 M	<10 M			
2-Chlorotoluene	<3 µg/kg	TM116	<9 @ M	<9 M	<9 M			
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 @ M	<8 M	<8 M			
4-Chlorotoluene	<3 µg/kg	TM116	<10 @ M	<10 M	<10 M			
tert-Butylbenzene	<2 µg/kg	TM116	<14 @ #	<14 #	<14 #			
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 @ #	<9 #	<9 #			
sec-Butylbenzene	<1 µg/kg	TM116	<10 @	<10	<10			
4-Isopropyltoluene	<2 µg/kg	TM116	<10 @	<10	<10			
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 @ M	<8 M	<8 M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 M	<5 M			
n-Butylbenzene	<3 µg/kg	TM116	<11 @	<11	<11			
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 @ M	<10 M	<10 M			
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 @ M	<14 M	<14 M			
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 @ #	<10 #	<10 #			
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20 @	<20	<20			
Hexachlorobutadiene	<4 µg/kg	TM116	<20 @	<20	<20			
Naphthalene	<8 µg/kg	TM116	<13 @ M	<13 M	<13 M			
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 @ #	<20 #	<20 #			
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH111	BHSS04	BHSS05			
Depth (m)			1.50 - 1.50	3.50 - 3.50	2.50 - 2.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			27/04/2023	03/05/2023	03/05/2023			
Sample Time			.	.	.			
Date Received			10/05/2023	10/05/2023	10/05/2023			
SDG Ref			230510-54	230510-54	230510-54			
Lab Sample No.(s)			27969487	27969493	27969498			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02 @	<0.02	<0.02			
Sum of BTEX	<7 µg/kg	TM116	<40 @	<40	<40			

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH111ES1 1.50 - 1.50 SOLID 27/04/2023 00:00:00 10/05/2023 09:00:00 230510-54 27969487 TM048	16/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS04ES1 3.50 - 3.50 SOLID 03/05/2023 00:00:00 10/05/2023 09:00:00 230510-54 27969493 TM048	17/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS05ES1 2.50 - 2.50 SOLID 03/05/2023 00:00:00 10/05/2023 09:00:00 230510-54 27969498 TM048	17/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	15.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86.3
Particle Size <4mm	>95%		

Case	
SDG	230510-54
Lab Sample Number(s)	27969487
Sampled Date	27-Apr-2023
Customer Sample Ref.	BH111 ES1
Depth (m)	1.50 - 1.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.3	3	5	6
Loss on Ignition (%)	2.99	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.53	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0836	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.000844	<0.0002	0.00844	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00093	<0.0004	0.0093	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00125	<0.001	0.0125	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	76	<10	760	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.69	<3	66.9	<30	500	800	1000

Leach Test Information

Date Prepared	11-May-2023
pH (pH Units)	8.12
Conductivity (µS/cm)	100
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

05/06/2023 13:11:32

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	21.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.3
Particle Size <4mm	>95%		

Case	
SDG	230510-54
Lab Sample Number(s)	27969493
Sampled Date	03-May-2023
Customer Sample Ref.	BHSS04 ES1
Depth (m)	3.50 - 3.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.532	3	5	6
Loss on Ignition (%)	2.99	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.34	-	>6	-
ANC to pH 6 (mol/kg)	0.0303	-	-	-
ANC to pH 4 (mol/kg)	0.906	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00315	<0.0005	0.0315	<0.005	0.5	2	25
Barium	0.00551	<0.0002	0.0551	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00811	<0.003	0.0811	<0.03	0.5	10	30
Nickel	0.000743	<0.0004	0.00743	<0.004	0.4	10	40
Lead	0.000201	<0.0002	0.00201	<0.002	0.5	10	50
Antimony	0.00534	<0.001	0.0534	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	138	<10	1380	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	9.05	<3	90.5	<30	500	800	1000

Leach Test Information

Date Prepared	11-May-2023
pH (pH Units)	8.28
Conductivity (µS/cm)	180
Volume Leachant (Litres)	0.880

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

05/06/2023 13:11:32

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-54 **Report Number:** 691268 **Superseded Report:** 689213
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.108	**Natural Moisture Content (%)**	19.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	83.4
Particle Size <4mm	>95%		

Case	
SDG	230510-54
Lab Sample Number(s)	27969498
Sampled Date	03-May-2023
Customer Sample Ref.	BHSS05 ES1
Depth (m)	2.50 - 2.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.255	3	5	6
Loss on Ignition (%)	1.26	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.59	-	>6	-
ANC to pH 6 (mol/kg)	0.0479	-	-	-
ANC to pH 4 (mol/kg)	1.28	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00368	<0.0005	0.0368	<0.005	0.5	2	25
Barium	0.00409	<0.0002	0.0409	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00154	<0.0003	0.0154	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.01	<0.003	0.1	<0.03	0.5	10	30
Nickel	0.002	<0.0004	0.02	<0.004	0.4	10	40
Lead	0.00111	<0.0002	0.0111	<0.002	0.5	10	50
Antimony	0.00743	<0.001	0.0743	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00255	<0.001	0.0255	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	98.8	<10	988	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	10.4	<3	104	<30	500	800	1000

Leach Test Information

Date Prepared	11-May-2023
pH (pH Units)	8.22
Conductivity (µS/cm)	130
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

05/06/2023 13:11:32

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	27969487	27969493	27969498
Customer Sample Ref.	BH111	BHSS04	BHSS05
AGS Ref.	ES1	ES1	ES1
Depth	1.50 - 1.50	3.50 - 3.50	2.50 - 2.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	15-May-2023	15-May-2023	15-May-2023
Anions by Kone (soil)	15-May-2023	15-May-2023	15-May-2023
Anions by Kone (w)	15-May-2023	15-May-2023	15-May-2023
Anions in soil by IC	16-May-2023	16-May-2023	16-May-2023
Asbestos ID in Solid Samples	16-May-2023	17-May-2023	17-May-2023
CEN 10:1 Leachate (1 Stage)	12-May-2023	12-May-2023	12-May-2023
CEN Readings	16-May-2023	16-May-2023	16-May-2023
Chromium III	15-May-2023	15-May-2023	15-May-2023
Coronene	15-May-2023	15-May-2023	16-May-2023
Cyanide Comp/Free/Total/Thiocyanate	16-May-2023	16-May-2023	16-May-2023
Dissolved Metals by ICP-MS	15-May-2023	15-May-2023	15-May-2023
Dissolved Organic/Inorganic Carbon	15-May-2023	15-May-2023	15-May-2023
EPH by GCxGC-FID	15-May-2023	15-May-2023	15-May-2023
EPH CWG GC (S)	15-May-2023	15-May-2023	15-May-2023
Fluoride	16-May-2023	16-May-2023	16-May-2023
GRO by GC-FID (S)	12-May-2023	12-May-2023	12-May-2023
Hexavalent Chromium (s)	15-May-2023	15-May-2023	15-May-2023
Loss on Ignition in soils	16-May-2023	16-May-2023	16-May-2023
Magnesium (BRE)	15-May-2023	17-May-2023	15-May-2023
Mercury Dissolved	16-May-2023	16-May-2023	16-May-2023
Metals in solid samples by OES	15-May-2023	15-May-2023	15-May-2023
Moisture at 105C	11-May-2023	11-May-2023	11-May-2023
PAH 16 & 17 Calc	16-May-2023	15-May-2023	17-May-2023
PAH by GCMS	16-May-2023	15-May-2023	17-May-2023
PCBs by GCMS	16-May-2023	16-May-2023	16-May-2023
pH	15-May-2023	15-May-2023	15-May-2023
pH Value of Filtered Water	16-May-2023	16-May-2023	16-May-2023
Phenols by HPLC (S)	15-May-2023	15-May-2023	15-May-2023
Phenols by HPLC (W)	16-May-2023	16-May-2023	16-May-2023
Sample description	11-May-2023	11-May-2023	11-May-2023
Semi Volatile Organic Compounds	17-May-2023	17-May-2023	17-May-2023
Total Organic Carbon	15-May-2023	15-May-2023	15-May-2023
Total Sulphate	16-May-2023	16-May-2023	16-May-2023
Total Sulphur	16-May-2023	16-May-2023	16-May-2023
TPH CWG GC (S)	15-May-2023	15-May-2023	15-May-2023
VOC MS (S)	12-May-2023	14-May-2023	14-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230510-54	N/A	N/A	05/06/2023	Client Reference Change	2023WH101	2023OY104	689213

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230510-55
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691272
Order Number:	12380

This report has been revised and directly supersedes 689214 in its entirety.

We received 8 samples on Wednesday May 10, 2023 and 8 of these samples were scheduled for analysis which was completed on Wednesday May 17, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27969521	TP201	ES1	2.30 - 3.00	02/05/2023
27969529	TP204	ES1	0.80 - 0.85	02/05/2023
27969533	TP205	ES1	2.45 - 2.55	03/05/2023
27969538	TP207	ES1	1.00 - 1.10	03/05/2023
27969545	TP209	ES1	1.00 - 1.10	03/05/2023
27969550	TP218	ES1	1.00 - 1.10	04/05/2023
27969555	TP219	ES1	1.00 - 1.10	03/05/2023
27969561	TP220	ES1	1.00 - 1.10	04/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27969521			27969529			27969533			27969538			27969545			27969550			27969555	
Customer Sample Reference			TP201			TP204			TP205			TP207			TP209			TP218			TP219	
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1	
Depth (m)			2.30 - 3.00			0.80 - 0.85			2.45 - 2.55			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Anions in soil by IC	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 8	X			X		X			X			X			X			X		
Asbestos Quantification - Full	All	NDPs: 0 Tests: 1				X																
Chromium III	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8			X		X			X			X			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
pH	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27969521			27969529			27969533			27969538			27969545			27969550			27969555	
Customer Sample Reference			TP201			TP204			TP205			TP207			TP209			TP218			TP219	
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1	
Depth (m)			2.30 - 3.00			0.80 - 0.85			2.45 - 2.55			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Sample description	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Total Sulphate	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X		X			X			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 8			X		X			X			X			X			X			X	

27969561	TP220	ES1	1.00 - 1.10	60g VOC (ALE215)	S																		X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		X						
				1kg TUB with Handle (ALE260)	S																		

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27969521	TP201	2.30 - 3.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27969529	TP204	0.80 - 0.85	Dark Brown	Sandy Loam	Stones	Plastic
27969533	TP205	2.45 - 2.55	Light Brown	Sandy Clay Loam	Stones	None
27969538	TP207	1.00 - 1.10	Light Brown	Sandy Clay Loam	Stones	None
27969545	TP209	1.00 - 1.10	Light Brown	Sandy Clay Loam	Stones	None
27969550	TP218	1.00 - 1.10	Light Brown	Sandy Loam	Stones	None
27969555	TP219	1.00 - 1.10	Light Brown	Sandy Clay Loam	Stones	None
27969561	TP220	1.00 - 1.10	Light Brown	Sandy Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP201	TP204	TP205	TP207	TP209	TP218
Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			.	.	.	.	.	.
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	26	21	19	19	13	11
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000681	0.00134	0.000541	0.00087	0.000585	0.00223
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0273	0.0203	0.0207	0.0113	0.00866	0.00875
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0739 #	0.059 #	0.0398 #	0.0208 #	<0.02 #	0.0236 #
Organic Matter, Total	<0.35 %	TM132	1.44 #	14.5 #	0.965 #	0.652 #	<0.35 #	<0.35 #
Sulphate, Total potential	<0.06 %	TM132	0.222	0.177	0.119	0.0624	0.06	0.0708
pH	1 pH Units	TM133	8.16 M	8.12 M	5.52 M	8.46 M	8.74 M	8.98 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP201	TP204	TP205	TP207	TP209	TP218
Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			-	-	-	-	-	-
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Chromium, Trivalent	<0.9 mg/kg	TM181	15.8	8.4	17.9	19	11.8	5.79
Arsenic	<0.6 mg/kg	TM181	10.6 M	5.73 M	8.56 M	14.2 M	11.7 M	19.1 M
Barium	<0.6 mg/kg	TM181	26.6 #	61.9 #	19.1 #	28.3 #	31.3 #	18.6 #
Beryllium	<0.01 mg/kg	TM181	0.595 M	0.295 M	0.194 M	0.832 M	0.7 M	0.882 M
Cadmium	<0.02 mg/kg	TM181	1.82 M	0.776 M	2.03 M	1.86 M	1.26 M	2.51 M
Chromium	<0.9 mg/kg	TM181	15.8 M	8.4 M	17.9 M	19 M	11.8 M	5.79 M
Copper	<1.4 mg/kg	TM181	12.1 M	15.3 M	13.6 M	21.4 M	17.3 M	14.7 M
Lead	<0.7 mg/kg	TM181	17.4 M	35.2 M	23.2 M	18.5 M	18.7 M	9.46 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	40 M	19.8 M	25.3 M	51.3 M	40.6 M	61.1 M
Selenium	<1 mg/kg	TM181	6.77 #	1.13 #	3.22 #	1.07 #	1.01 #	1.32 #
Vanadium	<0.2 mg/kg	TM181	17.4 #	8.67 #	13 #	19.6 #	17.8 #	14.8 #
Zinc	<1.9 mg/kg	TM181	105 M	58.9 M	70.5 M	94.6 M	94.7 M	135 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0384 M	0.0523 M	0.00527 M	0.00484 M	<0.0048 M	<0.0048 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0053 M	0.0098 M	0.0039 M	0.0027 M	0.0046 M	0.0026 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304		<0.001 #				
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304		<0.001 #				
Additional Asbestos Components (Using TM048)		TM304		None #				
Analysts Comments		TM304		N/A				
Asbestos Quantification - Total - %	<0.001 %	TM304		<0.001 #				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	9.4	13				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000667	0.000648				
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00812	0.00757				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Sulphur, Total	<0.02 %	TM132	0.0214 #	<0.02 #				
Organic Matter, Total	<0.35 %	TM132	<0.35 #	<0.35 #				
Sulphate, Total potential	<0.06 %	TM132	0.0642	0.06				
pH	1 pH Units	TM133	8.76 M	8.86 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP219	TP220				
Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Chromium, Trivalent	<0.9 mg/kg	TM181	8.3	9.17				
Arsenic	<0.6 mg/kg	TM181	5.76 M	5.52 M				
Barium	<0.6 mg/kg	TM181	21.8 #	22.4 #				
Beryllium	<0.01 mg/kg	TM181	0.417 M	0.479 M				
Cadmium	<0.02 mg/kg	TM181	0.938 M	1.45 M				
Chromium	<0.9 mg/kg	TM181	8.3 M	9.17 M				
Copper	<1.4 mg/kg	TM181	11.7 M	15.2 M				
Lead	<0.7 mg/kg	TM181	10.4 M	13.6 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181	30.8 M	32.4 M				
Selenium	<1 mg/kg	TM181	<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	13.3 #	14.4 #				
Zinc	<1.9 mg/kg	TM181	57.6 M	78.1 M				
Sulphate, acid soluble (total)	<0.0048 %	TM221	<0.0048 M	0.0101 M				
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0041 M	0.0028 M				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			.	.	.	.	.	.
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	110	107	108	98.9	98.7	99.9
Acenaphthene-d10 % recovery**	%	TM218	98.2	109	103	98	106	98.9
Phenanthrene-d10 % recovery**	%	TM218	93.6	117	111	99	106	98.8
Chrysene-d12 % recovery**	%	TM218	91.9	127	104	86.5	111	89
Perylene-d12 % recovery**	%	TM218	91.1	105	94.3	90	106	92.6
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	99.8	106				
Acenaphthene-d10 % recovery**	%	TM218	106	101				
Phenanthrene-d10 % recovery**	%	TM218	106	93.9				
Chrysene-d12 % recovery**	%	TM218	115	90				
Perylene-d12 % recovery**	%	TM218	108	85.5				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M				
Pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M				
Chrysene	<10 µg/kg	TM218	<10 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			.	.	.	.	.	.
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<200	<200	<200	<200	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			-	-	-	-	-	-
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Acenaphthylene	<100 µg/kg	TM157	<100	<100				
Acenaphthene	<100 µg/kg	TM157	<100	<100				
Anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Fluoranthene	<100 µg/kg	TM157	<100	<100				
Fluorene	<100 µg/kg	TM157	<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100				
Phenanthrene	<100 µg/kg	TM157	<100	<100				
Pyrene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP201	TP204	TP205	TP207	TP209	TP218
Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			.	.	.	.	.	.
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM089	96.2	66.1 4 @	104	106	110	106
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	30.5 4 @	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	52.1 4 @	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	216 4 @	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	16300 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	31800 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	80200 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	163000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	41900	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	333000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	1650000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4 @	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4 @	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	144 4 @	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	8340 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	23900 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	41200 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	2090 #	891000 #	2420 #	<1000 #	1070 #	<1000 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	348000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	88600	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	1310000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	1650000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	298 4 @	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	144 4 @	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	442 4 @	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	106	107				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP201	TP204	TP205	TP207	TP209	TP218
Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			.	.	.	.	.	.
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Dibromofluoromethane**	%	TM116	104	106 2	105	105	100	110
Toluene-d8**	%	TM116	91.2	95.7 2	100	108	99.9	101
4-Bromofluorobenzene**	%	TM116	71.4	88.7 2	92.2	100	97.5	94.6
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<120 2 #	<6 #	<6 #	<6 #	<6 #
Chloromethane	<2 µg/kg	TM116	<7 #	<140 2 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<120 2 M	<6 @ M	<6 @ M	<6 @ M	<6 @ M
Bromomethane	<1 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<1 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<120 2 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<200 2 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<140 2 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<5 µg/kg	TM116	<10 #	<200 2 #	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<160 2 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<120 2 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<200 2	<10	<10	<10	<10
Bromochloromethane	<2 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<3 µg/kg	TM116	<8 M	<160 2 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<140 2 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<100 2 M	<5 M	<5 M	<5 M	<5 M
Benzene	<1 µg/kg	TM116	<9 M	<180 2 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 #	<180 2 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 M	<180 2 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<140 2 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Toluene	<1 µg/kg	TM116	<7 M	<140 2 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<200 2	<10	<10	<10	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<140 2 M	<7 M	<7 M	<7 M	<7 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP201	TP204	TP205	TP207	TP209	TP218
Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			-	-	-	-	-	-
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<100 2 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 M	<100 2 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 M	<80 2 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 #	<200 2 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<2 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Styrene	<2 µg/kg	TM116	<10 @ #	<200 2 #	<10 @ #	<10 @ #	<10 @ #	<10 @ #
Bromoform	<2 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<100 2 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<200 2 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<320 2 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<180 2 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<160 2 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<280 2 #	<14 #	<14 #	<14 #	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<180 2 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<200 2	<10	<10	<10	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<200 2	<10	<10	<10	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<160 2 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<100 2 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11	<220 2	<11	<11	<11	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<200 2 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<280 2 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<200 2 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<400 2	<20	<20	<20	<20
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<400 2	<20	<20	<20	<20
Naphthalene	<8 µg/kg	TM116	<13 M	<260 2 M	<13 M	<13 M	<13 M	<13 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<400 2 #	<20 #	<20 #	<20 #	<20 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<400 2	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP201	TP204	TP205	TP207	TP209	TP218
Customer Sample Ref.			TP201	TP204	TP205	TP207	TP209	TP218
Depth (m)			2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023	04/05/2023
Sample Time			-	-	-	-	-	-
Date Received			10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
SDG Ref			230510-55	230510-55	230510-55	230510-55	230510-55	230510-55
Lab Sample No.(s)			27969521	27969529	27969533	27969538	27969545	27969550
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.4 2	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40	<800 2	<40	<40	<40	<40

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			.	.				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	111	104				
Toluene-d8**	%	TM116	99.6	97.4				
4-Bromofluorobenzene**	%	TM116	93.4	97.9				
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #				
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #				
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M				
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M				
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M				
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M				
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #				
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M				
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M				
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M				
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M				
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M				
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10				
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M				
Chloroform	<3 µg/kg	TM116	<8 M	<8 M				
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M				
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M				
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M				
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M				
Benzene	<1 µg/kg	TM116	<9 M	<9 M				
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #				
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M				
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M				
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M				
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M				
Toluene	<1 µg/kg	TM116	<7 M	<7 M				
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10				
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M				
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M				

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP219	TP220				
Depth (m)			1.00 - 1.10	1.00 - 1.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			03/05/2023	04/05/2023				
Sample Time			-	-				
Date Received			10/05/2023	10/05/2023				
SDG Ref			230510-55	230510-55				
Lab Sample No.(s)			27969555	27969561				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M				
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M				
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M				
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M				
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M				
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M				
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #				
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M				
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #				
Bromoform	<2 µg/kg	TM116	<10 M	<10 M				
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #				
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #				
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M				
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M				
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M				
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M				
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M				
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M				
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #				
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #				
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10				
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10				
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
n-Butylbenzene	<3 µg/kg	TM116	<11	<11				
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M				
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M				
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #				
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20				
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20				
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M				
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #				
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP219	TP220				
			Depth (m)	1.00 - 1.10	1.00 - 1.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	03/05/2023	04/05/2023				
			Sample Time	.	.				
			Date Received	10/05/2023	10/05/2023				
			SDG Ref	230510-55	230510-55				
			Lab Sample No.(s)	27969555	27969561				
			AGS Reference	ES1	ES1				
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.02	<0.02				
Sum of BTEX	<7 µg/kg	TM116		<40	<40				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP201ES1 2.30 - 3.00 SOLID 02/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969521 TM048	17/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP204ES1 0.80 - 0.85 SOLID 02/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969529 TM048	16/05/2023	Renata Bozhkov	Loose fibres in soil.	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP205ES1 2.45 - 2.55 SOLID 03/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969533 TM048	16/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP207ES1 1.00 - 1.10 SOLID 03/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969538 TM048	16/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP209ES1 1.00 - 1.10 SOLID 03/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969545 TM048	16/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP218ES1 1.00 - 1.10 SOLID 04/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969550 TM048	16/05/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP219ES1 1.00 - 1.10 SOLID 03/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969555 TM048	17/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP220ES1 1.00 - 1.10 SOLID 04/05/2023 00:00:00 10/05/2023 09:00:00 230510-55 27969561 TM048	17/05/2023	Paul Poynton	Loose fibres in soil	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Asbestos Quantification - Full

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Additional Asbestos Components	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM	Asbestos Quantification - Total - %
Cust. Sample Ref.	TP204ES1	None (#)	N/A	<0.001 (#)	<0.001 (#)	<0.001 (#)
Depth (m)	0.80 - 0.85					
Sample Type	SOLID					
Date Sampled	02/05/2023 00:00:00					
Date Receieved	10/05/2023 09:00:00					
SDG	230510-55					
Original Sample	27969529					
Method Number	TM304					

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM304	Asbestos Quantification in Soil: Fibres identified by morphology only
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230510-55 **Report Number:** 691272 **Superseded Report:** 689214
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	27969521	27969529	27969533	27969538	27969545	27969550	27969555	27969561
Customer Sample Ref.	TP201	TP204	TP205	TP207	TP209	TP218	TP219	TP220
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	2.30 - 3.00	0.80 - 0.85	2.45 - 2.55	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	15-May-2023	17-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
Anions in soil by IC	16-May-2023	17-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023
Asbestos ID in Solid Samples	17-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	17-May-2023	17-May-2023
Asbestos Quantification - Full		16-May-2023						
Chromium III	15-May-2023	16-May-2023	15-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	15-May-2023
Cyanide Comp/Free/Total/Thiocyanate	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023
EPH CWG GC (S)	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
GRO by GC-FID (S)	12-May-2023	16-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023
Hexavalent Chromium (s)	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
Magnesium (BRE)	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
Metals in solid samples by OES	15-May-2023	16-May-2023	15-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	15-May-2023
PAH by GCMS	16-May-2023	16-May-2023	16-May-2023	15-May-2023	17-May-2023	15-May-2023	17-May-2023	16-May-2023
PCBs by GCMS	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023
pH	15-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	15-May-2023	16-May-2023	15-May-2023
Phenols by HPLC (S)	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
Sample description	11-May-2023	11-May-2023	11-May-2023	11-May-2023	11-May-2023	11-May-2023	11-May-2023	11-May-2023
Semi Volatile Organic Compounds	17-May-2023	17-May-2023	17-May-2023	17-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
Total Organic Carbon	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
Total Sulphate	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023
Total Sulphur	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023	16-May-2023
TPH CWG GC (S)	15-May-2023	16-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
VOC MS (S)	16-May-2023	17-May-2023	15-May-2023	12-May-2023	16-May-2023	14-May-2023	14-May-2023	15-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230510-55	N/A	N/A	05/06/2023	Client Reference Change	2023WH101	2023OY104	689214

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230511-90
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691279
Order Number:	12380

This report has been revised and directly supersedes 689250 in its entirety.

We received 1 sample on Wednesday May 10, 2023 and 1 of these samples were scheduled for analysis which was completed on Wednesday May 17, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27976844	TP217	ES1	1.10 - 1.20	05/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27976844
Customer Sample Reference					TP217
AGS Reference					ES1
Depth (m)					1.10 - 1.20
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X	
Anions in soil by IC	All	NDPs: 0 Tests: 1		X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X		
Chromium III	All	NDPs: 0 Tests: 1		X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1		X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X	
Magnesium (BRE)	All	NDPs: 0 Tests: 1		X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X	
PAH by GCMS	All	NDPs: 0 Tests: 1		X	
PCBs by GCMS	All	NDPs: 0 Tests: 1		X	
pH	All	NDPs: 0 Tests: 1		X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X	
Sample description	All	NDPs: 0 Tests: 1		X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27976844
Customer Sample Reference					TP217
AGS Reference					ES1
Depth (m)					1.10 - 1.20
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X	
Total Organic Carbon	All	NDPs: 0 Tests: 1		X	
Total Sulphate	All	NDPs: 0 Tests: 1		X	
Total Sulphur	All	NDPs: 0 Tests: 1		X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
VOC MS (S)	All	NDPs: 0 Tests: 1			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27976844	TP217	1.10 - 1.20	Dark Brown	Silty Clay Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.	TP217
Depth (m)	1.10 - 1.20
Sample Type	Soil/Solid (S)
Date Sampled	05/05/2023
Sample Time	.
Date Received	10/05/2023
SDG Ref	230511-90
Lab Sample No.(s)	27976844
AGS Reference	ES1

Component	LOD/Units	Method	TP217
Moisture Content Ratio (% of as received sample)	%	PM024	19
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00222
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0204
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0299 #
Organic Matter, Total	<0.35 %	TM132	2.1 #
Sulphate, Total potential	<0.06 %	TM132	0.0897
pH	1 pH Units	TM133	7.61 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21
PCB congener 81	<3 µg/kg	TM168	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217					
Depth (m)			1.10 - 1.20					
Sample Type			Soil/Solid (S)					
Date Sampled			05/05/2023					
Sample Time			.					
Date Received			10/05/2023					
SDG Ref			230511-90					
Lab Sample No.(s)			27976844					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	13.9					
Arsenic	<0.6 mg/kg	TM181	8.36 M					
Barium	<0.6 mg/kg	TM181	50 #					
Beryllium	<0.01 mg/kg	TM181	0.684 M					
Cadmium	<0.02 mg/kg	TM181	1.51 M					
Chromium	<0.9 mg/kg	TM181	13.9 M					
Copper	<1.4 mg/kg	TM181	12.1 M					
Lead	<0.7 mg/kg	TM181	23.6 M					
Mercury	<0.1 mg/kg	TM181	<0.1 M					
Nickel	<0.2 mg/kg	TM181	40.7 M					
Selenium	<1 mg/kg	TM181	<1 #					
Vanadium	<0.2 mg/kg	TM181	23 #					
Zinc	<1.9 mg/kg	TM181	105 M					
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.021 M					
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0037 M					
Magnesium (BRE)	<0.008 g/l	TM282	<0.008					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217					
Depth (m)			1.10 - 1.20					
Sample Type			Soil/Solid (S)					
Date Sampled			05/05/2023					
Sample Time			.					
Date Received			10/05/2023					
SDG Ref			230511-90					
Lab Sample No.(s)			27976844					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	106					
Acenaphthene-d10 % recovery**	%	TM218	102					
Phenanthrene-d10 % recovery**	%	TM218	100					
Chrysene-d12 % recovery**	%	TM218	101					
Perylene-d12 % recovery**	%	TM218	100					
Naphthalene	<9 µg/kg	TM218	<9 M					
Acenaphthylene	<12 µg/kg	TM218	<12 M					
Acenaphthene	<8 µg/kg	TM218	<8 M					
Fluorene	<10 µg/kg	TM218	<10 M					
Phenanthrene	<15 µg/kg	TM218	<15 M					
Anthracene	<16 µg/kg	TM218	<16 M					
Fluoranthene	<17 µg/kg	TM218	<17 M					
Pyrene	<15 µg/kg	TM218	<15 M					
Benz(a)anthracene	<14 µg/kg	TM218	<14 M					
Chrysene	<10 µg/kg	TM218	<10 M					
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M					
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M					
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M					
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M					
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M					
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M					
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217					
Depth (m)			1.10 - 1.20					
Sample Type			Soil/Solid (S)					
Date Sampled			05/05/2023					
Sample Time			.					
Date Received			10/05/2023					
SDG Ref			230511-90					
Lab Sample No.(s)			27976844					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100					
Pentachlorophenol	<100 µg/kg	TM157	<100					
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100					
Nitrobenzene	<100 µg/kg	TM157	<100					
Isophorone	<100 µg/kg	TM157	<100					
Hexachloroethane	<100 µg/kg	TM157	<100					
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100					
Hexachlorobutadiene	<100 µg/kg	TM157	<100					
Hexachlorobenzene	<100 µg/kg	TM157	<100					
n-Dioctyl phthalate	<100 µg/kg	TM157	<100					
Dimethyl phthalate	<100 µg/kg	TM157	<100					
Diethyl phthalate	<100 µg/kg	TM157	<100					
n-Dibutyl phthalate	<100 µg/kg	TM157	<100					
Dibenzofuran	<100 µg/kg	TM157	<100					
Carbazole	<100 µg/kg	TM157	<100					
Butylbenzyl phthalate	<100 µg/kg	TM157	<100					
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100					
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100					
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100					
Azobenzene	<100 µg/kg	TM157	<100					
4-Nitrophenol	<100 µg/kg	TM157	<200					
4-Nitroaniline	<100 µg/kg	TM157	<100					
4-Methylphenol	<100 µg/kg	TM157	<100					
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100					
4-Chloroaniline	<100 µg/kg	TM157	<100					
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100					
4-Bromophenylphenylether	<100 µg/kg	TM157	<100					
3-Nitroaniline	<100 µg/kg	TM157	<100					
2-Nitrophenol	<100 µg/kg	TM157	<100					
2-Nitroaniline	<100 µg/kg	TM157	<100					
2-Methylphenol	<100 µg/kg	TM157	<100					
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100					
2-Chlorophenol	<100 µg/kg	TM157	<100					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217					
Depth (m)			1.10 - 1.20					
Sample Type			Soil/Solid (S)					
Date Sampled			05/05/2023					
Sample Time			.					
Date Received			10/05/2023					
SDG Ref			230511-90					
Lab Sample No.(s)			27976844					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dimethylphenol	<100 µg/kg	TM157	<100					
2,4-Dichlorophenol	<100 µg/kg	TM157	<100					
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100					
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100					
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100					
2-Chloronaphthalene	<100 µg/kg	TM157	<100					
2-Methylnaphthalene	<100 µg/kg	TM157	<100					
Acenaphthylene	<100 µg/kg	TM157	<100					
Acenaphthene	<100 µg/kg	TM157	<100					
Anthracene	<100 µg/kg	TM157	<100					
Benzo(a)anthracene	<100 µg/kg	TM157	<100					
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100					
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100					
Benzo(a)pyrene	<100 µg/kg	TM157	<100					
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100					
Chrysene	<100 µg/kg	TM157	<100					
Fluoranthene	<100 µg/kg	TM157	<100					
Fluorene	<100 µg/kg	TM157	<100					
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100					
Phenanthrene	<100 µg/kg	TM157	<100					
Pyrene	<100 µg/kg	TM157	<100					
Naphthalene	<100 µg/kg	TM157	<100					
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100					
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217					
Depth (m)			1.10 - 1.20					
Sample Type			Soil/Solid (S)					
Date Sampled			05/05/2023					
Sample Time			.					
Date Received			10/05/2023					
SDG Ref			230511-90					
Lab Sample No.(s)			27976844					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	92					
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10					
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10					
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10					
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #					
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	8010 #					
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000					
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	8570					
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	17700					
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10					
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10					
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10					
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #					
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	6950 #					
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1650					
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000					
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	9150					
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	17700					
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50					
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50					
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.	TP217
Depth (m)	1.10 - 1.20
Sample Type	Soil/Solid (S)
Date Sampled	05/05/2023
Sample Time	.
Date Received	10/05/2023
SDG Ref	230511-90
Lab Sample No.(s)	27976844
AGS Reference	ES1

Component	LOD/Units	Method	TP217
Dibromofluoromethane**	%	TM116	121
Toluene-d8**	%	TM116	96.9
4-Bromofluorobenzene**	%	TM116	85.1
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #
Chloromethane	<2 µg/kg	TM116	<7 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M
Bromomethane	<1 µg/kg	TM116	<10 M
Chloroethane	<1 µg/kg	TM116	<10 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<6 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 M
Dichloromethane	<5 µg/kg	TM116	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10
Bromochloromethane	<2 µg/kg	TM116	<10 M
Chloroform	<3 µg/kg	TM116	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M
Benzene	<1 µg/kg	TM116	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M
Toluene	<1 µg/kg	TM116	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.	TP217
Depth (m)	1.10 - 1.20
Sample Type	Soil/Solid (S)
Date Sampled	05/05/2023
Sample Time	.
Date Received	10/05/2023
SDG Ref	230511-90
Lab Sample No.(s)	27976844
AGS Reference	ES1

Component	LOD/Units	Method	TP217
Tetrachloroethene	<2 µg/kg	TM116	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 #
o-Xylene	<2 µg/kg	TM116	<10 M
Styrene	<2 µg/kg	TM116	<10 @ #
Bromoform	<2 µg/kg	TM116	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20
Hexachlorobutadiene	<4 µg/kg	TM116	<20
Naphthalene	<8 µg/kg	TM116	<13 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP217
Depth (m)			1.10 - 1.20
Sample Type			Soil/Solid (S)
Date Sampled			05/05/2023
Sample Time			.
Date Received			10/05/2023
SDG Ref			230511-90
Lab Sample No.(s)			27976844
AGS Reference			ES1
Component	**LOD/Units**	**Method**	
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40

Validated

CERTIFICATE OF ANALYSIS

SDG: 230511-90 **Report Number:** 691279 **Superseded Report:** 689250
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref.	TP217ES1	17/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.10 - 1.20										
Sample Type	SOLID										
Date Sampled	05/05/2023 00:00:00										
Date Receieved	10/05/2023 09:00:00										
SDG	230511-90										
Original Sample	27976844										
Method Number	TM048										

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	27976844
Customer Sample Ref.	TP217
AGS Ref.	ES1
Depth	1.10 - 1.20
Type	Soil/Solid (S)
Anions by Kone (soil)	16-May-2023
Anions in soil by IC	17-May-2023
Asbestos ID in Solid Samples	17-May-2023
Chromium III	17-May-2023
Cyanide Comp/Free/Total/Thiocyanate	16-May-2023
EPH CWG GC (S)	16-May-2023
GRO by GC-FID (S)	16-May-2023
Hexavalent Chromium (s)	15-May-2023
Magnesium (BRE)	17-May-2023
Metals in solid samples by OES	17-May-2023
PAH by GCMS	17-May-2023
PCBs by GCMS	17-May-2023
pH	16-May-2023
Phenols by HPLC (S)	15-May-2023
Sample description	12-May-2023
Semi Volatile Organic Compounds	17-May-2023
Total Organic Carbon	16-May-2023
Total Sulphate	17-May-2023
Total Sulphur	16-May-2023
TPH CWG GC (S)	16-May-2023
VOC MS (S)	15-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230511-90	N/A	N/A	05/06/2023	Client Reference Change	2023WH101	2023OY104	689250

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	05 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230515-35
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691283
Order Number:	12380

This report has been revised and directly supersedes 689863 in its entirety.

We received 12 samples on Monday May 15, 2023 and 12 of these samples were scheduled for analysis which was completed on Tuesday May 23, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27994031	TP206	ES1	1.00 - 1.10	08/05/2023
27994018	TP210	ES1	1.00 - 1.10	08/05/2023
27994023	TP211	ES1	1.00 - 1.10	09/05/2023
27994026	TP212	ES1	1.10 - 1.20	09/05/2023
27993982	TP213	ES1	1.00 - 1.10	10/05/2023
27993960	TP214	ES1	1.00 - 1.10	10/05/2023
27993970	TP215	ES1	1.00 - 1.10	10/05/2023
27993976	TP216	ES1	1.10 - 1.20	08/05/2023
27994007	TPSS02	ES1	1.90 - 2.00	10/05/2023
27994013	TPSS02	ES1	3.40 - 3.60	10/05/2023
27993996	TPSS03	ES1	1.10 - 1.20	10/05/2023
27994001	TPSS03	ES1	2.00 - 2.20	10/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27994031			27994018			27994023			27994026			27993982			27993960			27993970			27993976
Customer Sample Reference			TP206			TP210			TP211			TP212			TP213			TP214			TP215			TP216
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10			1.10 - 1.20			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10			1.10 - 1.20
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Anions in soil by IC	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 12	X			X			X		X			X			X		X					X
Chromium III	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
EPH CWG GC (S)	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 12			X			X		X			X			X		X			X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Magnesium (BRE)	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Metals in solid samples by OES	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
PAH by GCMS	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
PCBs by GCMS	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
pH	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Phenols by HPLC (S)	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Sample description	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27994031			27994018			27994023			27994026			27993982			27993960			27993970			27993976
Customer Sample Reference			TP206			TP210			TP211			TP212			TP213			TP214			TP215			TP216
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10			1.10 - 1.20			1.00 - 1.10			1.00 - 1.10			1.00 - 1.10			1.10 - 1.20
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Total Organic Carbon	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Total Sulphate	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
Total Sulphur	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
TPH CWG GC (S)	All	NDPs: 0 Tests: 12		X			X		X			X			X		X			X				
VOC MS (S)	All	NDPs: 0 Tests: 12			X			X		X			X			X		X			X			

27994001	TPSS03	ES1	2.00 - 2.20	60g VOC (ALE215)	S																		X
				1kg TUB with Handle (ALE260)	S		X		X		X		X		X								
27993996	TPSS03	ES1	1.10 - 1.20	60g VOC (ALE215)	S																		X
				1kg TUB with Handle (ALE260)	S		X		X		X		X		X								
27994013	TPSS02	ES1	3.40 - 3.60	60g VOC (ALE215)	S																		X
				1kg TUB with Handle (ALE260)	S		X		X		X		X		X								
27994007	TPSS02	ES1	1.90 - 2.00	60g VOC (ALE215)	S																		X
				1kg TUB with Handle (ALE260)	S		X		X		X		X		X								
27993976	TP216	ES1	1.10 - 1.20	60g VOC (ALE215)	S																		X
				250g Amber Jar (ALE210)	S		X		X		X		X		X								

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27994031	TP206	1.00 - 1.10	Dark Brown	Sandy Clay	Stones	Vegetation
27994018	TP210	1.00 - 1.10	Dark Brown	Clay Loam	Stones	None
27994023	TP211	1.00 - 1.10	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27994026	TP212	1.10 - 1.20	Dark Brown	Sandy Loam	Stones	None
27993982	TP213	1.00 - 1.10	Light Brown	Sandy Loam	Stones	None
27993960	TP214	1.00 - 1.10	Light Brown	Clay Loam	Stones	Vegetation
27993970	TP215	1.00 - 1.10	Light Brown	Sandy Clay Loam	Stones	None
27993976	TP216	1.10 - 1.20	Light Brown	Sandy Clay Loam	Stones	None
27994007	TPSS02	1.90 - 2.00	Dark Brown	Silt Loam	Stones	Vegetation
27994013	TPSS02	3.40 - 3.60	Grey	Sandy Silt Loam	Stones	None
27993996	TPSS03	1.10 - 1.20	Dark Brown	Sandy Clay	Stones	Vegetation
27994001	TPSS03	2.00 - 2.20	Grey	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP206	TP210	TP211	TP212	TP213	TP214
Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	18	15	8.1	12	7.8	19
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000264	0.00149	0.000452	0.000272	0.00216	0.000988
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0151	0.0678	0.00993	0.00867	0.0127	0.0151
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0437 #	0.039 #	0.02 #	0.0206 #	0.0368 #	0.0242 #
Organic Matter, Total	<0.35 %	TM132	1.47 #	<0.35 #	<0.35 #	<0.35 #	<0.35 #	0.921 #
Sulphate, Total potential	<0.06 %	TM132	0.131	0.117	0.06	0.0618	0.11	0.0726
pH	1 pH Units	TM133	8.32 M	8.86 M	9.06 M	8.74 M	8.89 M	5.59 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	9.66	8.24	7.8	5.84	6.75	9.18
Arsenic	<0.6 mg/kg	TM181	10 M	10.5 M	7.11 M	4.89 M	2.55 M	1.17 M
Barium	<0.6 mg/kg	TM181	44.9 #	36.4 #	23.9 #	20.9 #	16.3 #	14.6 #
Beryllium	<0.01 mg/kg	TM181	0.836 M	2.19 M	0.669 M	0.389 M	0.327 M	0.0335 M
Cadmium	<0.02 mg/kg	TM181	1.92 M	4.06 M	0.816 M	0.803 M	1.17 M	0.311 M
Chromium	<0.9 mg/kg	TM181	9.66 M	8.24 M	7.8 M	5.84 M	6.75 M	9.01 M
Copper	<1.4 mg/kg	TM181	13 M	18.5 M	13.2 M	11.7 M	8.15 M	2.69 M
Lead	<0.7 mg/kg	TM181	16.4 M	11.6 M	12.7 M	11 M	7.69 M	12.9 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	64.4 M	89.5 M	48.3 M	25.7 M	20.6 M	12.4 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	18.5 #	18.2 #	14.5 #	9.77 #	9.29 #	9.31 #
Zinc	<1.9 mg/kg	TM181	129 M	194 M	98.9 M	60.2 M	44.9 M	49.1 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.03 M	0.00839 M	0.0149 M	0.014 M	0.0208 M	0.0081 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0037 M	0.0035 M	<0.0025 M	0.0026 M	<0.0025 M	0.0026 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	9.3	6.8	29	8.9	15	10
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	<0.0002	0.000264	0.000234	0.00082	0.000428	0.000421
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00541	0.00837	0.0143	0.0129	0.0245	0.0179
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0312 #	0.0374 #	0.0271 #	0.0265 #	<0.02 #	0.0293 #
Organic Matter, Total	<0.35 %	TM132	<0.35 #	0.352 #	3.24 #	<0.35 #	0.631 #	<0.35 #
Sulphate, Total potential	<0.06 %	TM132	0.0936	0.112	0.0813	0.0795	0.06	0.0879
pH	1 pH Units	TM133	9 M	8.85 M	6.05 M	8.49 M	5.77 M	8.86 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	4.97	5.08	13.7	4.73	10.4	5.53
Arsenic	<0.6 mg/kg	TM181	4.29 M	7.94 M	1.49 M	1.24 M	1.99 M	1.44 M
Barium	<0.6 mg/kg	TM181	17.5 #	14 #	26.4 #	23.9 #	15.1 #	21.1 #
Beryllium	<0.01 mg/kg	TM181	0.271 M	0.375 M	0.182 M	0.265 M	0.125 M	0.321 M
Cadmium	<0.02 mg/kg	TM181	0.691 M	1.17 M	0.557 M	0.625 M	0.374 M	0.708 M
Chromium	<0.9 mg/kg	TM181	4.97 M	5.08 M	13.7 M	4.73 M	10.4 M	5.53 M
Copper	<1.4 mg/kg	TM181	9.25 M	12.2 M	4.7 M	8.74 M	4.3 M	9.57 M
Lead	<0.7 mg/kg	TM181	7.01 M	5.05 M	20.5 M	7.29 M	18.9 M	8.24 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	20.5 M	40 M	14.5 M	17.7 M	17 M	18.4 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	8.65 #	11.6 #	15.5 #	8.99 #	11.5 #	9.12 #
Zinc	<1.9 mg/kg	TM181	48.5 M	68.7 M	58 M	50.6 M	72.4 M	53.8 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0182 M	0.0165 M	0.0147 M	0.0191 M	0.0101 M	0.0219 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	<0.0025 M	<0.0025 M	0.0041 M	0.0033 M	0.0054 M	0.0049 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Naphthalene-d8 % recovery**	%	TM218	87	89.1	89.3	88.6	95.8	94.7
Acenaphthene-d10 % recovery**	%	TM218	88	92.2	91.9	94.2	88.6	89.2
Phenanthrene-d10 % recovery**	%	TM218	89.7	92.4	91.1	97.6	80.2	83.3
Chrysene-d12 % recovery**	%	TM218	97.7	105	100	93.3	81.4	86.8
Perylene-d12 % recovery**	%	TM218	97.9	104	98.7	91.3	81.2	82.6
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Naphthalene-d8 % recovery**	%	TM218	95.2	95.1	92.1	94.7	92.4	87.6
Acenaphthene-d10 % recovery**	%	TM218	89	88.8	89.7	87.7	86.1	90.3
Phenanthrene-d10 % recovery**	%	TM218	81.5	80.9	92.1	80.6	86.3	92.6
Chrysene-d12 % recovery**	%	TM218	83	82.7	95.5	82.1	94.7	102
Perylene-d12 % recovery**	%	TM218	82.4	81.9	93.9	82.4	94	101
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP206	TP210	TP211	TP212	TP213	TP214
Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM089	97.2	101	105	102	101	91
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	49.6	<10	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	103	<10	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	6680 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	8020 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	11500 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1090	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	27400	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	37600	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	69	<10	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1010 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	8160 #	<1000 #	<1000 #	<1000 #	<1000 #	2280 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	10200	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	37800	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	152	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	69	<50	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	221	<20	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM089	101	98	88.4	105	93.7	99.3
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	3630 #	<1000 #	1790 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	1000	<1000	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	15900	<10000	14500	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	9230 #	<1000 #	9870 #	<1000 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	1320	<1000	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	11100	<5000	12000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	11100	<10000	12000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP206	TP210	TP211	TP212	TP213	TP214
Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Dibromofluoromethane**	%	TM116	103	106	103	112	110	111
Toluene-d8**	%	TM116	98.2	102	100	100	99.8	97.8
4-Bromofluorobenzene**	%	TM116	80.9	96.7	95.3	98.4	96.6	84.9
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #	<6 #	<6 #	<6 #	<6 #
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<6 @ M	<6 @ M	<6 M	<6 M
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10	<10	<10	<10	<10
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<3 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP206	TP210	TP211	TP212	TP213	TP214
Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #	<10 #	<10 #
Bromoform	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #	<14 #	<14 #	<14 #	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10	<10	<10	<10	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20	<20	<20	<20	<20
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M	<13 M	<13 M	<13 M	<13 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #	<20 #	<20 #	<20 #	<20 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP206	TP210	TP211	TP212	TP213	TP214
Customer Sample Ref.			TP206	TP210	TP211	TP212	TP213	TP214
Depth (m)			1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			08/05/2023	08/05/2023	09/05/2023	09/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27994031	27994018	27994023	27994026	27993982	27993960
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40	<40	<40	<40	<40	<40

Validated

CERTIFICATE OF ANALYSIS

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Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
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- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			.	.	.	.	.	.
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Dibromofluoromethane**	%	TM116	105	109	115	113	107	112
Toluene-d8**	%	TM116	101	99.5	95.3	101	97.1	100
4-Bromofluorobenzene**	%	TM116	97	96.7	76.3	97.2	82.4	95.8
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #	<6 #	<6 #	<6 #	<6 #
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 M	<6 @ M	<6 M	<6 M	<6 M	<6 M
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10	<10	<10	<10	<10
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<3 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<2 µg/kg	TM116	<10 #	<10 @ #	<10 #	<10 #	<10 #	<10 #
Bromoform	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #	<14 #	<14 #	<14 #	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10	<10	<10	<10	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20	<20	<20	<20	<20
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M	<13 M	<13 M	<13 M	<13 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #	<20 #	<20 #	<20 #	<20 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP215	TP216	TPSS02	TPSS02	TPSS03	TPSS03
Depth (m)			1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60	1.10 - 1.20	2.00 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			10/05/2023	08/05/2023	10/05/2023	10/05/2023	10/05/2023	10/05/2023
Sample Time			-	-	-	-	-	-
Date Received			15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
SDG Ref			230515-35	230515-35	230515-35	230515-35	230515-35	230515-35
Lab Sample No.(s)			27993970	27993976	27994007	27994013	27993996	27994001
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40	<40	<40	<40	<40	<40

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend
- # ISO17025 accredited.
- M *m*CERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&♦§@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP206ES1 1.00 - 1.10 SOLID 08/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994031 TM048	19/05/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP210ES1 1.00 - 1.10 SOLID 08/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994018 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP211ES1 1.00 - 1.10 SOLID 09/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994023 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP212ES1 1.10 - 1.20 SOLID 09/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994026 TM048	19/05/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP213ES1 1.00 - 1.10 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27993982 TM048	19/05/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP214ES1 1.00 - 1.10 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27993960 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP215ES1 1.00 - 1.10 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27993970 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP216ES1 1.10 - 1.20 SOLID 08/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27993976 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863

Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS02ES1 1.90 - 2.00 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994007 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS02ES1 3.40 - 3.60 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994013 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS03ES1 1.10 - 1.20 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27993996 TM048	19/05/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS03ES1 2.00 - 2.20 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-35 27994001 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-35 **Report Number:** 691283 **Superseded Report:** 689863
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	27994031	27994018	27994023	27994026	27993982	27993960	27993970	27993976	27994007	27994013
Customer Sample Ref.	TP206	TP210	TP211	TP212	TP213	TP214	TP215	TP216	TPSS02	TPSS02
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.00 - 1.10	1.00 - 1.10	1.00 - 1.10	1.10 - 1.20	1.90 - 2.00	3.40 - 3.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	18-May-2023	18-May-2023	18-May-2023	18-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	18-May-2023	22-May-2023
Anions in soil by IC	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023
Asbestos ID in Solid Samples	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023
Chromium III	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023
Cyanide Comp/Free/Total/Thiocyanate	18-May-2023	18-May-2023	18-May-2023	18-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	18-May-2023	19-May-2023
EPH CWG GC (S)	18-May-2023	19-May-2023	18-May-2023	18-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	18-May-2023	19-May-2023
GRO by GC-FID (S)	19-May-2023	19-May-2023	17-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023
Hexavalent Chromium (s)	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023
Magnesium (BRE)	18-May-2023	18-May-2023	18-May-2023	18-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	18-May-2023	19-May-2023
Metals in solid samples by OES	19-May-2023	19-May-2023	19-May-2023	19-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	19-May-2023	22-May-2023
PAH by GCMS	18-May-2023	18-May-2023	18-May-2023	18-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	18-May-2023	19-May-2023
PCBs by GCMS	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023
pH	17-May-2023	17-May-2023	17-May-2023	17-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	17-May-2023	18-May-2023
Phenols by HPLC (S)	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	19-May-2023	19-May-2023	19-May-2023	18-May-2023	19-May-2023
Sample description	16-May-2023	16-May-2023	16-May-2023	16-May-2023	17-May-2023	17-May-2023	17-May-2023	17-May-2023	16-May-2023	17-May-2023
Semi Volatile Organic Compounds	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023
Total Organic Carbon	19-May-2023	19-May-2023	19-May-2023	22-May-2023	19-May-2023	22-May-2023	22-May-2023	19-May-2023	19-May-2023	19-May-2023
Total Sulphate	22-May-2023	19-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023
Total Sulphur	22-May-2023	22-May-2023	18-May-2023	18-May-2023	22-May-2023	22-May-2023	22-May-2023	22-May-2023	18-May-2023	22-May-2023
TPH CWG GC (S)	19-May-2023	19-May-2023	18-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023	19-May-2023
VOC MS (S)	17-May-2023	17-May-2023	17-May-2023	17-May-2023	18-May-2023	18-May-2023	18-May-2023	18-May-2023	17-May-2023	18-May-2023

Lab Sample No(s)	27993996	27994001
Customer Sample Ref.	TPSS03	TPSS03
AGS Ref.	ES1	ES1
Depth	1.10 - 1.20	2.00 - 2.20
Type	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	18-May-2023	18-May-2023
Anions in soil by IC	23-May-2023	23-May-2023
Asbestos ID in Solid Samples	19-May-2023	19-May-2023
Chromium III	23-May-2023	23-May-2023
Cyanide Comp/Free/Total/Thiocyanate	18-May-2023	18-May-2023
EPH CWG GC (S)	18-May-2023	18-May-2023
GRO by GC-FID (S)	19-May-2023	19-May-2023
Hexavalent Chromium (s)	23-May-2023	23-May-2023
Magnesium (BRE)	18-May-2023	18-May-2023
Metals in solid samples by OES	19-May-2023	19-May-2023
PAH by GCMS	18-May-2023	18-May-2023
PCBs by GCMS	22-May-2023	22-May-2023
pH	17-May-2023	17-May-2023
Phenols by HPLC (S)	18-May-2023	18-May-2023
Sample description	16-May-2023	16-May-2023
Semi Volatile Organic Compounds	18-May-2023	18-May-2023
Total Organic Carbon	19-May-2023	19-May-2023
Total Sulphate	22-May-2023	22-May-2023
Total Sulphur	18-May-2023	22-May-2023
TPH CWG GC (S)	19-May-2023	19-May-2023
VOC MS (S)	17-May-2023	17-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230515-35	N/A	N/A	05/06/2023	Client Reference Change	2023WH101	2023OY104	689863

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	06 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230515-36
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691427
Order Number:	12380

This report has been revised and directly supersedes 689862 in its entirety.

We received 3 samples on Monday May 15, 2023 and 3 of these samples were scheduled for analysis which was completed on Tuesday May 23, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27994045	BH117	ES1	4.50 - 4.50	10/05/2023
27994051	BHSS02	ES1	8.00 - 8.00	05/05/2023
27994040	BHSS03	ES1	4.00 - 4.00	10/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			27994045				27994051			27994040	
Customer Sample Reference			BH117				BHSS02			BHSS03	
AGS Reference			ES1				ES1			ES1	
Depth (m)			4.50 - 4.50				8.00 - 8.00			4.00 - 4.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X	
Anions in soil by IC	All	NDPs: 0 Tests: 3		X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X		
Chromium III	All	NDPs: 0 Tests: 3		X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 3		X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
pH	All	NDPs: 0 Tests: 3		X			X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3		X			X			X	
Sample description	All	NDPs: 0 Tests: 3		X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					27994045			27994051			27994040
Customer Sample Reference					BH117			BHSS02			BHSS03
AGS Reference					ES1			ES1			ES1
Depth (m)					4.50 - 4.50			8.00 - 8.00			4.00 - 4.00
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3			X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 3			X			X			X	
Total Sulphate	All	NDPs: 0 Tests: 3			X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 3			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 3				X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27994045	BH117	4.50 - 4.50	Light Brown	Sandy Silt Loam	Stones	None
27994051	BHSS02	8.00 - 8.00	Dark Brown	Sandy Silt Loam	Stones	Vegetation
27994040	BHSS03	4.00 - 4.00	Light Brown	Sandy Silt Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			.	.	.			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	13	15	9.2			
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000587	0.000298	0.000755			
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0167	0.125	0.016			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M			
Sulphur, Total	<0.02 %	TM132	<0.02 #	1.87 #	0.0265 #			
Organic Matter, Total	<0.35 %	TM132	<0.35 #	6.48 #	<0.35 #			
Sulphate, Total potential	<0.06 %	TM132	0.06	5.61	0.0795			
pH	1 pH Units	TM133	8.74 M	7.18 M	8.51 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	4.35 M	<0.6 M			
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21			
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH117	BHSS02	BHSS03			
Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			-	-	-			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Chromium, Trivalent	<0.9 mg/kg	TM181	9.62	93.2	6.29			
Arsenic	<0.6 mg/kg	TM181	1.2 M	34.6 M	1.25 M			
Barium	<0.6 mg/kg	TM181	49.7 #	20.6 #	16.4 #			
Beryllium	<0.01 mg/kg	TM181	1.18 M	0.335 M	0.274 M			
Cadmium	<0.02 mg/kg	TM181	0.853 M	67 M	0.723 M			
Chromium	<0.9 mg/kg	TM181	9.62 M	97.6 M	6.29 M			
Copper	<1.4 mg/kg	TM181	7.15 M	23.5 M	10.3 M			
Lead	<0.7 mg/kg	TM181	9.65 M	49.3 M	7.32 M			
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181	7.95 M	315 M	17.7 M			
Selenium	<1 mg/kg	TM181	<1 #	23.7 #	<1 #			
Vanadium	<0.2 mg/kg	TM181	4.87 #	246 #	9.02 #			
Zinc	<1.9 mg/kg	TM181	24.2 M	646 M	39 M			
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.00504 M	0.0318 M	0.0301 M			
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0031 M	0.0049 M	0.0035 M			
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			.	.	.			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	96	94.4	94.9			
Acenaphthene-d10 % recovery**	%	TM218	91.4	90	88.9			
Phenanthrene-d10 % recovery**	%	TM218	85	84.9	81.9			
Chrysene-d12 % recovery**	%	TM218	92.8	89	84.5			
Perylene-d12 % recovery**	%	TM218	88.1	78.6	77.5			
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
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- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
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- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			.	.	.			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100			
Isophorone	<100 µg/kg	TM157	<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100			
Carbazole	<100 µg/kg	TM157	<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100			
Azobenzene	<100 µg/kg	TM157	<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			-	-	-			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100			
Anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100	<100			
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Fluorene	<100 µg/kg	TM157	<100	<100	<100			
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100			
Pyrene	<100 µg/kg	TM157	<100	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100	<100			
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH117	BHSS02	BHSS03			
Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			.	.	.			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
GRO Surrogate % recovery**	%	TM089	107	30.9 4	98.1			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 4	<10			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 4	<10			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 4	<10			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	10200 #	<1000 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	10600	<5000			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	13200	<10000			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4	<10			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4	<10			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 4	<10			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	1530 #	<1000 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	10600	<10000			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50 4	<50			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50 4	<50			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20 4	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			.	.	.			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	104	103	123			
Toluene-d8**	%	TM116	100	99.4	101			
4-Bromofluorobenzene**	%	TM116	97.9	98	97.6			
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<1200 #	<6 #			
Chloromethane	<2 µg/kg	TM116	<7 #	<1400 #	<7 #			
Vinyl Chloride	<0.5 µg/kg	TM116	<6 M	<1200 @ M	<6 @ M			
Bromomethane	<1 µg/kg	TM116	<10 M	<2000 M	<10 M			
Chloroethane	<1 µg/kg	TM116	<10 M	<2000 M	<10 M			
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<1200 M	<6 M			
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<2000 #	<10 #			
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<1400 M	<7 M			
Dichloromethane	<5 µg/kg	TM116	<10 #	<2000 #	<10 #			
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<2000 M	<10 M			
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<2000 M	<10 M			
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<1600 M	<8 M			
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<1200 M	<6 M			
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<2000	<10			
Bromochloromethane	<2 µg/kg	TM116	<10 M	<2000 M	<10 M			
Chloroform	<3 µg/kg	TM116	<8 M	<1600 M	<8 M			
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<1400 M	<7 M			
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<2000 M	<10 M			
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<2000 M	<10 M			
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<1000 M	<5 M			
Benzene	<1 µg/kg	TM116	<9 M	<1800 M	<9 M			
Trichloroethene	<1 µg/kg	TM116	<9 #	<1800 #	<9 #			
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<2000 M	<10 M			
Dibromomethane	<1 µg/kg	TM116	<9 M	<1800 M	<9 M			
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<1400 M	<7 M			
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<2000 M	<10 M			
Toluene	<1 µg/kg	TM116	<7 M	<1400 M	<7 M			
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<2000	<10			
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<2000 M	<10 M			
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<1400 M	<7 M			

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH117	BHSS02	BHSS03			
Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			-	-	-			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<1000 M	<5 M			
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<2000 M	<10 M			
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<2000 M	<10 M			
Chlorobenzene	<2 µg/kg	TM116	<5 M	<1000 M	<5 M			
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<2000 M	<10 M			
Ethylbenzene	<1 µg/kg	TM116	<4 M	<800 M	<4 M			
p/m-Xylene	<2 µg/kg	TM116	<10 #	<2000 #	<10 #			
o-Xylene	<2 µg/kg	TM116	<10 M	<2000 M	<10 M			
Styrene	<2 µg/kg	TM116	<10 #	<2000 @ #	<10 @ #			
Bromoform	<2 µg/kg	TM116	<10 M	<2000 M	<10 M			
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<1000 #	<5 #			
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<2000 #	<10 #			
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<3200 M	<16 M			
Bromobenzene	<2 µg/kg	TM116	<10 M	<2000 M	<10 M			
Propylbenzene	<2 µg/kg	TM116	<10 M	<2000 M	<10 M			
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<1800 M	<9 M			
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<1600 M	<8 M			
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<2000 M	<10 M			
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<2800 #	<14 #			
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<1800 #	<9 #			
sec-Butylbenzene	<1 µg/kg	TM116	<10	<2000	<10			
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<2000	<10			
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<1600 M	<8 M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<1000 M	<5 M			
n-Butylbenzene	<3 µg/kg	TM116	<11	<2200	<11			
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<2000 M	<10 M			
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<2800 M	<14 M			
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<2000 #	<10 #			
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<4000	<20			
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<4000	<20			
Naphthalene	<8 µg/kg	TM116	<13 M	<2600 M	<13 M			
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<4000 #	<20 #			
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<4000	<20			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH117	BHSS02	BHSS03			
Depth (m)			4.50 - 4.50	8.00 - 8.00	4.00 - 4.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			10/05/2023	05/05/2023	10/05/2023			
Sample Time			-	-	-			
Date Received			15/05/2023	15/05/2023	15/05/2023			
SDG Ref			230515-36	230515-36	230515-36			
Lab Sample No.(s)			27994045	27994051	27994040			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<4	<0.02			
Sum of BTEX	<7 µg/kg	TM116	<40	<8000	<40			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH117ES1 4.50 - 4.50 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-36 27994045 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS02ES1 8.00 - 8.00 SOLID 05/05/2023 00:00:00 15/05/2023 10:00:00 230515-36 27994051 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS03ES1 4.00 - 4.00 SOLID 10/05/2023 00:00:00 15/05/2023 10:00:00 230515-36 27994040 TM048	19/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230515-36 **Report Number:** 691427 **Superseded Report:** 689862
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	27994045	27994051	27994040
Customer Sample Ref.	BH117	BHSS02	BHSS03
AGS Ref.	ES1	ES1	ES1
Depth	4.50 - 4.50	8.00 - 8.00	4.00 - 4.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	22-May-2023	22-May-2023	22-May-2023
Anions in soil by IC	23-May-2023	23-May-2023	23-May-2023
Asbestos ID in Solid Samples	19-May-2023	19-May-2023	19-May-2023
Chromium III	23-May-2023	23-May-2023	23-May-2023
Cyanide Comp/Free/Total/Thiocyanate	19-May-2023	19-May-2023	19-May-2023
EPH CWG GC (S)	19-May-2023	19-May-2023	19-May-2023
GRO by GC-FID (S)	19-May-2023	19-May-2023	19-May-2023
Hexavalent Chromium (s)	23-May-2023	23-May-2023	23-May-2023
Magnesium (BRE)	19-May-2023	19-May-2023	19-May-2023
Metals in solid samples by OES	22-May-2023	22-May-2023	22-May-2023
PAH by GCMS	19-May-2023	19-May-2023	19-May-2023
PCBs by GCMS	22-May-2023	22-May-2023	22-May-2023
pH	18-May-2023	18-May-2023	18-May-2023
Phenols by HPLC (S)	18-May-2023	19-May-2023	18-May-2023
Sample description	17-May-2023	17-May-2023	17-May-2023
Semi Volatile Organic Compounds	18-May-2023	18-May-2023	18-May-2023
Total Organic Carbon	22-May-2023	19-May-2023	19-May-2023
Total Sulphate	22-May-2023	22-May-2023	22-May-2023
Total Sulphur	22-May-2023	23-May-2023	22-May-2023
TPH CWG GC (S)	19-May-2023	19-May-2023	19-May-2023
VOC MS (S)	18-May-2023	18-May-2023	18-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230515-36	N/A	N/A	06/06/2023	Client Reference Change	2023WH101	2023OY104	689862

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	06 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230518-59
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	691429
Order Number:	12380

This report has been revised and directly supersedes 690424 in its entirety.

We received 14 samples on Thursday May 18, 2023 and 14 of these samples were scheduled for analysis which was completed on Friday May 26, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28014279	BH116	ES1	7.00 - 7.00	11/05/2023
28014212	BH118	ES1	3.50 - 3.50	12/05/2023
28014234	BHSS01	ES1	7.50 - 7.50	16/05/2023
28014206	TPSS01	ES1	1.00 - 1.10	11/05/2023
28014240	TPSS01	ES2	3.25 - 3.35	11/05/2023
28014246	TPSS04	ES1	2.10 - 2.20	11/05/2023
28014252	TPSS04	ES2	4.10 - 4.20	11/05/2023
28014257	TPSS05	ES1	2.60 - 2.70	11/05/2023
28014263	TPSS05	ES2	3.50 - 3.70	11/05/2023
28014269	TPSS06	ES1	1.20 - 1.30	11/05/2023
28014274	TPSS06	ES2	3.00 - 3.20	11/05/2023
28014222	TPT16	ES1	0.80 - 0.90	15/05/2023
28014229	TPT17	ES1	2.10 - 2.20	15/05/2023
28014217	TPT18	ES1	1.30 - 1.40	15/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28014279			28014212			28014234			28014206			28014240			28014246			28014252	
Customer Sample Reference			BH116			BH118			BHSS01			TPSS01			TPSS01			TPSS04			TPSS04	
AGS Reference			ES1			ES1			ES1			ES1			ES2			ES1			ES2	
Depth (m)			7.00 - 7.00			3.50 - 3.50			7.50 - 7.50			1.00 - 1.10			3.25 - 3.35			2.10 - 2.20			4.10 - 4.20	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 2 Tests: 12											N									
				X			X			X						X			X			X
Anions in soil by IC	All	NDPs: 2 Tests: 12											N									
				X			X			X						X			X			X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 14	X			X			X			X			X			X			X	
Chromium III	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
EPH CWG GC (S)	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 14																				
					X			X			X			X			X			X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
Magnesium (BRE)	All	NDPs: 2 Tests: 12											N									
				X			X			X						X			X			X
Metals in solid samples by OES	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
PAH by GCMS	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
PCBs by GCMS	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
pH	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X
Sample description	All	NDPs: 0 Tests: 14																				
				X			X			X			X			X			X			X

28014217	TPT18	ES1	1.30 - 1.40	1kg TUB with Handle (ALE260)	S			X												
28014229	TPT17	ES1	2.10 - 2.20	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28014222	TPT16	ES1	0.80 - 0.90	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28014274	TPSS06	ES2	3.00 - 3.20	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28014269	TPSS06	ES1	1.20 - 1.30	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	N	N		X	X	X		X	N	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28014263	TPSS05	ES2	3.50 - 3.70	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28014257	TPSS05	ES1	2.60 - 2.70	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28014252	TPSS04	ES2	4.10 - 4.20	60g VOC (ALE215)	S							X								

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28014279			28014212			28014234			28014206			28014240			28014246			28014252	
Customer Sample Reference			BH116			BH118			BHSS01			TPSS01			TPSS01			TPSS04			TPSS04	
AGS Reference			ES1			ES1			ES1			ES1			ES2			ES1			ES2	
Depth (m)			7.00 - 7.00			3.50 - 3.50			7.50 - 7.50			1.00 - 1.10			3.25 - 3.35			2.10 - 2.20			4.10 - 4.20	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 14		X			X			X			X			X			X			X
Total Organic Carbon	All	NDPs: 0 Tests: 14		X			X			X			X			X			X			X
Total Sulphate	All	NDPs: 0 Tests: 14		X			X			X			X			X			X			X
Total Sulphur	All	NDPs: 0 Tests: 14		X			X			X			X			X			X			X
TPH CWG GC (S)	All	NDPs: 0 Tests: 14		X			X			X			X			X			X			X
VOC MS (S)	All	NDPs: 0 Tests: 14			X			X			X			X			X			X		

28014217	TPT18	ES1	1.30 - 1.40	1kg TUB with Handle (ALE260)	S						
28014229	TPT17	ES1	2.10 - 2.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28014222	TPT16	ES1	0.80 - 0.90	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28014274	TPSS06	ES2	3.00 - 3.20	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28014269	TPSS06	ES1	1.20 - 1.30	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28014263	TPSS05	ES2	3.50 - 3.70	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28014257	TPSS05	ES1	2.60 - 2.70	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28014252	TPSS04	ES2	4.10 - 4.20	60g VOC (ALE215)	S						X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28014217	
Customer Sample Reference			TPT18	
AGS Reference			ES1	
Depth (m)			1.30 - 1.40	
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S
Anions by Kone (soil)	All	NDPs: 2 Tests: 12	X	
Anions in soil by IC	All	NDPs: 2 Tests: 12	X	
Chromium III	All	NDPs: 0 Tests: 14	X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 14	X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 14	X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 14		X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 14	X	
Magnesium (BRE)	All	NDPs: 2 Tests: 12	X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 14	X	
PAH by GCMS	All	NDPs: 0 Tests: 14	X	
PCBs by GCMS	All	NDPs: 0 Tests: 14	X	
pH	All	NDPs: 0 Tests: 14	X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 14	X	
Sample description	All	NDPs: 0 Tests: 14	X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 14	X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

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DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28014217	
Customer Sample Reference			TPT18	
AGS Reference			ES1	
Depth (m)			1.30 - 1.40	
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S
Total Organic Carbon	All	NDPs: 0 Tests: 14	X	
Total Sulphate	All	NDPs: 0 Tests: 14	X	
Total Sulphur	All	NDPs: 0 Tests: 14	X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 14	X	
VOC MS (S)	All	NDPs: 0 Tests: 14		X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28014279	BH116	7.00 - 7.00	Light Brown	Clay	None	None
28014212	BH118	3.50 - 3.50	Light Brown	Sandy Clay	Stones	Vegetation
28014234	BHSS01	7.50 - 7.50	Dark Brown	Sandy Clay Loam	Stones	None
28014206	TPSS01	1.00 - 1.10	Dark Brown	Silt Loam	Vegetation	None
28014240	TPSS01	3.25 - 3.35	Grey	Sandy Silt Loam	Stones	None
28014246	TPSS04	2.10 - 2.20	Dark Brown	Sandy Clay Loam	Stones	Vegetation
28014252	TPSS04	4.10 - 4.20	Grey	Sandy Silt Loam	Stones	None
28014257	TPSS05	2.60 - 2.70	Light Brown	Sandy Silt Loam	Stones	Vegetation
28014263	TPSS05	3.50 - 3.70	Grey	Sandy Clay Loam	Stones	None
28014269	TPSS06	1.20 - 1.30	Dark Brown	Silt Loam	Stones	Vegetation
28014274	TPSS06	3.00 - 3.20	Dark Brown	Stone/Soil	Tar	None
28014222	TPT16	0.80 - 0.90	Dark Brown	Sandy Silt Loam	Stones	None
28014229	TPT17	2.10 - 2.20	Dark Brown	Sand	Stones	Oil/Petroleum
28014217	TPT18	1.30 - 1.40	Light Brown	Sandy Silt Loam	Stones	Oil/Petroleum

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	19	18	9.1	87	19	29
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000496	0.00112	0.000331		0.000463	0.000788
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.013	0.0195	0.0194		0.0277	0.0252
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	0.115 #	0.0636 #	0.0322 #	0.0341 #
Organic Matter, Total	<0.35 %	TM132	<0.35 #	<0.35 #	0.355 #	47.8 #	<0.35 #	5.72 #
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06	0.345	0.191	0.0966	0.102
pH	1 pH Units	TM133	8.51 M	8.38 M	8.67 M	4.4 M	8.63 M	5.97 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Chromium, Trivalent	<0.9 mg/kg	TM181	35.9	16.3	11.4	<0.9	7.97	8.18
Arsenic	<0.6 mg/kg	TM181	2.62 M	13.3 M	3.7 M	<0.6 M	3.43 M	1.28 M
Barium	<0.6 mg/kg	TM181	26.4 #	13.7 #	39 #	4.22 #	17.6 #	12 #
Beryllium	<0.01 mg/kg	TM181	0.91 M	1.61 M	0.392 M	<0.01 M	0.352 M	0.0749 M
Cadmium	<0.02 mg/kg	TM181	0.425 M	3.44 M	1.27 M	<0.02 M	0.548 M	0.33 M
Chromium	<0.9 mg/kg	TM181	35.9 M	17.1 M	11.4 M	<0.9 M	7.97 M	8.18 M
Copper	<1.4 mg/kg	TM181	23.4 M	46.1 M	15 M	<1.4 M	7.64 M	3.17 M
Lead	<0.7 mg/kg	TM181	20.3 M	84.4 M	8.76 M	<0.7 M	10.4 M	10.4 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	10.5 M	124 M	39.5 M	0.498 M	21.5 M	9.41 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	1.34 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	16.9 #	19.6 #	17.7 #	0.591 #	10.3 #	8.98 #
Zinc	<1.9 mg/kg	TM181	20.4 M	328 M	89.3 M	4.66 M	42.3 M	30.9 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	<0.0048 M	0.00514 M	0.0314 M	0.0412 M	0.0461 M	0.0206 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0028 M	0.0039 M	0.0037 M		0.0051 M	0.0057 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008		<0.008	<0.008

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	11	22	10	79	13	41
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0005	0.0015	0.000562		0.000334	0.0231
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0145	0.0251	0.0218		0.0151	0.0587
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 #	0.0169 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 #	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 #	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 #	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0239 #	0.0378 #	0.032 #	0.0343 #	0.138 #	0.0715 #
Organic Matter, Total	<0.35 %	TM132	<0.35 #	0.969 #	<0.35 #	70 #	1.17 #	6.84 #
Sulphate, Total potential	<0.06 %	TM132	0.0717	0.113	0.096	0.103	0.414	0.215
pH	1 pH Units	TM133	8.82 M	7.78 M	8.58 M	4.93 M	7.62 #	6.82 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 #	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 #	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 #	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Chromium, Trivalent	<0.9 mg/kg	TM181	4.73	17.6	14.2	<0.9	104	15.1
Arsenic	<0.6 mg/kg	TM181	1.18 M	4.69 M	1.44 M	8.36 M	14.1 #	4.47 M
Barium	<0.6 mg/kg	TM181	19 #	35.8 #	27.6 #	21.1 #	7.61 #	41.1 #
Beryllium	<0.01 mg/kg	TM181	0.259 M	0.647 M	0.38 M	0.0436 M	0.0457 #	0.529 M
Cadmium	<0.02 mg/kg	TM181	0.653 M	0.769 M	0.922 M	0.239 M	2.76 #	0.93 M
Chromium	<0.9 mg/kg	TM181	4.73 M	17.6 M	14.2 M	<0.9 M	100 #	15.1 M
Copper	<1.4 mg/kg	TM181	9.28 M	10.2 M	13.9 M	5.04 M	27.5 #	11.5 M
Lead	<0.7 mg/kg	TM181	7.31 M	17.8 M	7.12 M	1.65 M	45.1 #	17.9 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 #	<0.1 M
Nickel	<0.2 mg/kg	TM181	17.6 M	35.9 M	34 M	3.99 M	8.6 #	27.3 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	4.82 #	<1 #
Vanadium	<0.2 mg/kg	TM181	8.54 #	22 #	18.5 #	1.22 #	158 #	18.9 #
Zinc	<1.9 mg/kg	TM181	47.2 M	105 M	59.5 M	3.35 M	33 #	51.5 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0267 M	0.0391 M	0.0375 M	0.0516 M	0.00674 #	0.0505 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0028 M	0.0061 M	0.0032 M		0.0051 #	0.0048 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008		<0.008	<0.008

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	18	27				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000257	0.000573				
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0217	0.021				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Sulphur, Total	<0.02 %	TM132	0.0354 #	0.0273 #				
Organic Matter, Total	<0.35 %	TM132	<0.35 #	1.2 #				
Sulphate, Total potential	<0.06 %	TM132	0.106	0.0819				
pH	1 pH Units	TM133	8.46 M	7.62 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	2.57	14.7				
Arsenic	<0.6 mg/kg	TM181	2.89 M	4.11 M				
Barium	<0.6 mg/kg	TM181	13.6 #	58.5 #				
Beryllium	<0.01 mg/kg	TM181	0.132 M	0.496 M				
Cadmium	<0.02 mg/kg	TM181	0.379 M	0.85 M				
Chromium	<0.9 mg/kg	TM181	2.57 M	14.7 M				
Copper	<1.4 mg/kg	TM181	3.53 M	6.47 M				
Lead	<0.7 mg/kg	TM181	4.46 M	16.5 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181	7.81 M	32.1 M				
Selenium	<1 mg/kg	TM181	<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	3.94 #	19.7 #				
Zinc	<1.9 mg/kg	TM181	24.3 M	83 M				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.042 M	0.0101 M				
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0071 M	0.004 M				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	93.2	93.3	90.4	94.4	96.4	93.4
Acenaphthene-d10 % recovery**	%	TM218	94	91.4	93.9	102	98.8	90.8
Phenanthrene-d10 % recovery**	%	TM218	93.5	86.3	93.8	114	103	93
Chrysene-d12 % recovery**	%	TM218	101	79.3	95.8	111	112	98.8
Perylene-d12 % recovery**	%	TM218	93.1	86.1	83.7	92.3	102	92
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Naphthalene-d8 % recovery**	%	TM218	93.2	93.7	91.3	93.3	93.1	91.9
Acenaphthene-d10 % recovery**	%	TM218	94.3	94.8	94.7	98.3	91.9	94.9
Phenanthrene-d10 % recovery**	%	TM218	94	91.4	91.1	104	86.5	98.9
Chrysene-d12 % recovery**	%	TM218	100	87.8	99.2	109	80.2	106
Perylene-d12 % recovery**	%	TM218	96.7	95	95.7	87.6	87.6	91.4
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 #	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 #	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 #	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 #	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 #	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 #	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 #	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 #	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 #	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 #	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 #	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 #	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 #	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 #	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 #	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 #	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	92.3	93.3				
Acenaphthene-d10 % recovery**	%	TM218	94.2	91.3				
Phenanthrene-d10 % recovery**	%	TM218	94.7	86				
Chrysene-d12 % recovery**	%	TM218	101	76.7				
Perylene-d12 % recovery**	%	TM218	91.2	81.7				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M				
Pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M				
Chrysene	<10 µg/kg	TM218	<10 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Acenaphthylene	<100 µg/kg	TM157	<100	<100				
Acenaphthene	<100 µg/kg	TM157	<100	<100				
Anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Fluoranthene	<100 µg/kg	TM157	<100	<100				
Fluorene	<100 µg/kg	TM157	<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100				
Phenanthrene	<100 µg/kg	TM157	<100	<100				
Pyrene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424

Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
GRO Surrogate % recovery**	%	TM089	108	104	122	67.2	148	142
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	1880 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	10800 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	20000 #	158000 #	<1000 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	3230	57100	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	23300	228000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	26300	1070000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	2110 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	4570 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	1650 #	656000 #	<1000 #	3880 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	182000	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	101000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	845000	<5000	5780
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	23300	1070000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424

Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
GRO Surrogate % recovery**	%	TM089	133	103	103	61.3	95.4	88.7
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	7730 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	154000 #	<1000 #	6050 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	23700	<1000	1290
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	186000	<5000	7340
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	524000	<10000	23700
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	26300 #	<1000 #	1650 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	1190 #	<1000 #	247000 #	<1000 #	9970 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	65600	<1000	4770
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	3660	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	339000	<5000	16400
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	524000	<10000	23700
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.						
			TPT17	TPT18					
		Depth (m)	2.10 - 2.20	1.30 - 1.40					
		Sample Type	Soil/Solid (S)	Soil/Solid (S)					
		Date Sampled	15/05/2023	15/05/2023					
		Sample Time	.	.					
		Date Received	18/05/2023	18/05/2023					
		SDG Ref	230518-59	230518-59					
		Lab Sample No.(s)	28014229	28014217					
		AGS Reference	ES1	ES1					
GRO Surrogate % recovery**	%	TM089	105	106					
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10					
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10					
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10					
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000					
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000					
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000					
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10					
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10					
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10					
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #					
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1070 #	<1000 #					
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000					
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000					
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000					
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000					
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50					
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50					
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Dibromofluoromethane**	%	TM116	98.8	104	96.1	103	100	102
Toluene-d8**	%	TM116	101	99.9	94.8	96.1	99.5	89.2
4-Bromofluorobenzene**	%	TM116	98.6	99.5	72.4	85.9	88.8	70.1
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #	<6 #	<120 #	<6 #	<6 #
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #	<7 #	<140 #	<7 #	<7 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 M	<6 M	<120 @ M	<6 @ M	<6 @ M
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<120 M	<6 M	<6 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<7 M
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 M	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<120 M	<6 M	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10	<10	<200	<10	<10
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Chloroform	<3 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 M	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 M	<5 M
Benzene	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 M	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #	<9 #	<180 #	<9 #	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 M	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Toluene	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10	<10	<200	<10	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<7 M

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 M	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M	<4 M	<80 M	<4 M	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Styrene	<2 µg/kg	TM116	<10 @ #	<10 #	<10 #	<200 @ #	<10 @ #	<10 @ #
Bromoform	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #	<5 #	<100 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M	<16 M	<320 M	<16 M	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 M	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #	<14 #	<280 #	<14 #	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #	<9 #	<180 #	<9 #	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10	<10	<200	<10	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10	<10	<200	<10	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11	<11	<11	<220	<11	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M	<14 M	<280 M	<14 M	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<400	<20	<200
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20	<20	<400	<20	<20
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M	<13 M	<260 M	<13 M	<130 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #	<20 #	<400 #	<20 #	<200 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<400	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424

Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Customer Sample Ref.			BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04
Depth (m)			7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	12/05/2023	16/05/2023	11/05/2023	11/05/2023	11/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014279	28014212	28014234	28014206	28014240	28014246
AGS Reference			ES1	ES1	ES1	ES1	ES2	ES1
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.4	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40	<40	<40	<800	<40	<40

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			.	.	.	.	.	.
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	114	97.8	102	104	96.3	106
Toluene-d8**	%	TM116	100	99.3	100	95.4	93.1	95.8
4-Bromofluorobenzene**	%	TM116	98.1	90.8	96.4	87.5	70.3	70.6
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #	<6 #	<120 #	<6 #	<6 #
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #	<7 #	<140 #	<7 #	<7 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<6 @ M	<120 @ M	<6 @ #	<6 M
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<120 M	<6 #	<6 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 #	<7 M
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 #	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M	<6 M	<120 M	<6 #	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10	<10	<200	<10	<10
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Chloroform	<3 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 #	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 #	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 #	<5 M
Benzene	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 #	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #	<9 #	<180 #	<9 #	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 #	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 #	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Toluene	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 #	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10	<10	<200	<10	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 #	<7 M

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 #	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 #	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M	<4 M	<80 M	<4 #	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<200 @ #	<10 @ #	<10 #
Bromoform	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #	<5 #	<100 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M	<16 M	<320 M	<16 #	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 #	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 #	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #	<14 #	<280 #	<14 #	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #	<9 #	<180 #	<9 #	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10	<10	<200	<10	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10	<10	<200	<10	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 #	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 #	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11	<11	<11	<220	<11	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 #	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M	<14 M	<280 M	<14 #	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<400	<20	<20
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20	<20	<400	<20	<20
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M	<13 M	<260 M	<13 #	<13 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #	<20 #	<400 #	<20 #	<20 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<400	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424

Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS04	TPSS05	TPSS05	TPSS06	TPSS06	TPT16
Depth (m)			4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30	3.00 - 3.20	0.80 - 0.90
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			11/05/2023	11/05/2023	11/05/2023	11/05/2023	11/05/2023	15/05/2023
Sample Time			-	-	-	-	-	-
Date Received			18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023	18/05/2023
SDG Ref			230518-59	230518-59	230518-59	230518-59	230518-59	230518-59
Lab Sample No.(s)			28014252	28014257	28014263	28014269	28014274	28014222
AGS Reference			ES2	ES1	ES2	ES1	ES2	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.4	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40	<40	<40	<800	<40	<40

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4◆§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	99.8	98.6				
Toluene-d8**	%	TM116	99.5	98.9				
4-Bromofluorobenzene**	%	TM116	88.9	86				
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 #	<6 #				
Chloromethane	<2 µg/kg	TM116	<7 #	<7 #				
Vinyl Chloride	<0.5 µg/kg	TM116	<6 M	<6 M				
Bromomethane	<1 µg/kg	TM116	<10 M	<10 M				
Chloroethane	<1 µg/kg	TM116	<10 M	<10 M				
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 M	<6 M				
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<10 #				
Carbon Disulphide	<1 µg/kg	TM116	<7 M	<7 M				
Dichloromethane	<5 µg/kg	TM116	<10 #	<10 #				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<10 M				
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<10 M				
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 M	<8 M				
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 M	<6 M				
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<10				
Bromochloromethane	<2 µg/kg	TM116	<10 M	<10 M				
Chloroform	<3 µg/kg	TM116	<8 M	<8 M				
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 M	<7 M				
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M				
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<10 M				
1,2-Dichloroethane	<1 µg/kg	TM116	<5 M	<5 M				
Benzene	<1 µg/kg	TM116	<9 M	<9 M				
Trichloroethene	<1 µg/kg	TM116	<9 #	<9 #				
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<10 M				
Dibromomethane	<1 µg/kg	TM116	<9 M	<9 M				
Bromodichloromethane	<2 µg/kg	TM116	<7 M	<7 M				
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<10 M				
Toluene	<1 µg/kg	TM116	<7 M	<7 M				
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<10				
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<10 M				
1,3-Dichloropropane	<1 µg/kg	TM116	<7 M	<7 M				

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			-	-				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<5 M	<5 M				
Dibromochloromethane	<2 µg/kg	TM116	<10 M	<10 M				
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<10 M				
Chlorobenzene	<2 µg/kg	TM116	<5 M	<5 M				
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<10 M				
Ethylbenzene	<1 µg/kg	TM116	<4 M	<4 M				
p/m-Xylene	<2 µg/kg	TM116	<10 #	<10 #				
o-Xylene	<2 µg/kg	TM116	<10 M	<10 M				
Styrene	<2 µg/kg	TM116	<10 #	<10 #				
Bromoform	<2 µg/kg	TM116	<10 M	<10 M				
Isopropylbenzene	<2 µg/kg	TM116	<5 #	<5 #				
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 #	<10 #				
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 M	<16 M				
Bromobenzene	<2 µg/kg	TM116	<10 M	<10 M				
Propylbenzene	<2 µg/kg	TM116	<10 M	<10 M				
2-Chlorotoluene	<3 µg/kg	TM116	<9 M	<9 M				
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 M	<8 M				
4-Chlorotoluene	<3 µg/kg	TM116	<10 M	<10 M				
tert-Butylbenzene	<2 µg/kg	TM116	<14 #	<14 #				
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 #	<9 #				
sec-Butylbenzene	<1 µg/kg	TM116	<10	<10				
4-Isopropyltoluene	<2 µg/kg	TM116	<10	<10				
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 M	<8 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
n-Butylbenzene	<3 µg/kg	TM116	<11	<11				
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 M	<10 M				
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 M	<14 M				
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<10 #				
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20	<20				
Hexachlorobutadiene	<4 µg/kg	TM116	<20	<20				
Naphthalene	<8 µg/kg	TM116	<13 M	<13 M				
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 #	<20 #				
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT17	TPT18				
Depth (m)			2.10 - 2.20	1.30 - 1.40				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			15/05/2023	15/05/2023				
Sample Time			.	.				
Date Received			18/05/2023	18/05/2023				
SDG Ref			230518-59	230518-59				
Lab Sample No.(s)			28014229	28014217				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02				
Sum of BTEX	<7 µg/kg	TM116	<40	<40				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend
- # ISO17025 accredited.
- M *m*CERTS accredited.
- * Subcontracted test.
- (F) Trigger breach confirmed
- 1-5&♦§@ Sample deviation (see appendix)

Cust. Sample Ref. / Depth (m) / Sample Type / Date Sampled / Date Receieved / SDG / Original Sample / Method Number	Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
BH116ES1 7.00 - 7.00 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014279 TM048	24/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
BH118ES1 3.50 - 3.50 SOLID 12/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014212 TM048	24/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
BHSS01ES1 7.50 - 7.50 SOLID 16/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014234 TM048	24/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
TPSS01ES1 1.00 - 1.10 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014206 TM048	24/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
TPSS01ES2 3.25 - 3.35 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014240 TM048	24/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
TPSS04ES1 2.10 - 2.20 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014246 TM048	24/05/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
TPSS04ES2 4.10 - 4.20 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014252 TM048	24/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
TPSS05ES1 2.60 - 2.70 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014257 TM048	24/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424

Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS05ES2 3.50 - 3.70 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014263 TM048	24/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS06ES1 1.20 - 1.30 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014269 TM048	25/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS06ES2 3.00 - 3.20 SOLID 11/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014274 TM048	24/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT16ES1 0.80 - 0.90 SOLID 15/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014222 TM048	24/05/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT17ES1 2.10 - 2.20 SOLID 15/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014229 TM048	24/05/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT18ES1 1.30 - 1.40 SOLID 15/05/2023 00:00:00 18/05/2023 10:00:00 230518-59 28014217 TM048	24/05/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Notification of NDPs (No determination possible)

Date Received : 18/05/2023 10:49:17

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
28014206	TPSS01	1.00 - 1.10	Magnesium (BRE)	Sample unsuitable for extraction
28014206	TPSS01 ES1	1.00 - 1.10	Anions in soil by IC	Sample unsuitable for extraction
28014206	TPSS01 ES1	1.00 - 1.10	Anions by Kone (soil)	Sample unsuitable for extraction
28014269	TPSS06	1.20 - 1.30	Magnesium (BRE)	Sample unsuitable for extraction
28014269	TPSS06 ES1	1.20 - 1.30	Anions in soil by IC	Sample unsuitable for extraction
28014269	TPSS06 ES1	1.20 - 1.30	Anions by Kone (soil)	Sample unsuitable for extraction

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230518-59 **Report Number:** 691429 **Superseded Report:** 690424
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	28014279	28014212	28014234	28014206	28014240	28014246	28014252	28014257	28014263	28014269
Customer Sample Ref.	BH116	BH118	BHSS01	TPSS01	TPSS01	TPSS04	TPSS04	TPSS05	TPSS05	TPSS06
AGS Ref.	ES1	ES1	ES1	ES1	ES2	ES1	ES2	ES1	ES2	ES1
Depth	7.00 - 7.00	3.50 - 3.50	7.50 - 7.50	1.00 - 1.10	3.25 - 3.35	2.10 - 2.20	4.10 - 4.20	2.60 - 2.70	3.50 - 3.70	1.20 - 1.30
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	23-May-2023	24-May-2023	24-May-2023		24-May-2023	24-May-2023	23-May-2023	24-May-2023	24-May-2023	
Anions in soil by IC	26-May-2023	26-May-2023	26-May-2023		26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	
Asbestos ID in Solid Samples	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	25-May-2023
Chromium III	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	24-May-2023	25-May-2023
Cyanide Comp/Free/Total/Thiocyanate	25-May-2023	24-May-2023	24-May-2023	25-May-2023	25-May-2023	24-May-2023	25-May-2023	25-May-2023	24-May-2023	25-May-2023
EPH CWG GC (S)	25-May-2023	23-May-2023	22-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023
GRO by GC-FID (S)	25-May-2023	22-May-2023	22-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	22-May-2023	22-May-2023	26-May-2023
Hexavalent Chromium (s)	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	23-May-2023	25-May-2023
Magnesium (BRE)	24-May-2023	24-May-2023	24-May-2023		24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	
Metals in solid samples by OES	24-May-2023	23-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023
PAH by GCMS	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	24-May-2023	25-May-2023	24-May-2023	25-May-2023
PCBs by GCMS	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023	25-May-2023
pH	23-May-2023	23-May-2023	19-May-2023	23-May-2023	23-May-2023	23-May-2023	23-May-2023	19-May-2023	23-May-2023	23-May-2023
Phenols by HPLC (S)	25-May-2023	23-May-2023	24-May-2023	25-May-2023	24-May-2023	23-May-2023	24-May-2023	24-May-2023	23-May-2023	24-May-2023
Sample description	18-May-2023	19-May-2023	18-May-2023	18-May-2023	18-May-2023	19-May-2023	18-May-2023	18-May-2023	19-May-2023	18-May-2023
Semi Volatile Organic Compounds	25-May-2023	23-May-2023	24-May-2023	24-May-2023	23-May-2023	23-May-2023	22-May-2023	23-May-2023	23-May-2023	23-May-2023
Total Organic Carbon	24-May-2023	24-May-2023	25-May-2023	25-May-2023	25-May-2023	24-May-2023	24-May-2023	25-May-2023	25-May-2023	26-May-2023
Total Sulphate	24-May-2023	23-May-2023	24-May-2023	24-May-2023	24-May-2023	23-May-2023	24-May-2023	24-May-2023	24-May-2023	24-May-2023
Total Sulphur	25-May-2023	25-May-2023	23-May-2023	25-May-2023	23-May-2023	23-May-2023	25-May-2023	23-May-2023	25-May-2023	25-May-2023
TPH CWG GC (S)	25-May-2023	23-May-2023	22-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	23-May-2023	23-May-2023	26-May-2023
VOC MS (S)	25-May-2023	22-May-2023	19-May-2023	23-May-2023	19-May-2023	23-May-2023	19-May-2023	19-May-2023	22-May-2023	23-May-2023

Lab Sample No(s)	28014274	28014222	28014229	28014217
Customer Sample Ref.	TPSS06	TPT16	TPT17	TPT18
AGS Ref.	ES2	ES1	ES1	ES1
Depth	3.00 - 3.20	0.80 - 0.90	2.10 - 2.20	1.30 - 1.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	24-May-2023	23-May-2023	23-May-2023	24-May-2023
Anions in soil by IC	26-May-2023	26-May-2023	26-May-2023	26-May-2023
Asbestos ID in Solid Samples	24-May-2023	24-May-2023	24-May-2023	24-May-2023
Chromium III	23-May-2023	25-May-2023	25-May-2023	25-May-2023
Cyanide Comp/Free/Total/Thiocyanate	24-May-2023	24-May-2023	25-May-2023	24-May-2023
EPH CWG GC (S)	23-May-2023	23-May-2023	22-May-2023	22-May-2023
GRO by GC-FID (S)	22-May-2023	22-May-2023	22-May-2023	22-May-2023
Hexavalent Chromium (s)	23-May-2023	25-May-2023	25-May-2023	25-May-2023
Magnesium (BRE)	24-May-2023	25-May-2023	24-May-2023	24-May-2023
Metals in solid samples by OES	23-May-2023	24-May-2023	24-May-2023	24-May-2023
PAH by GCMS	25-May-2023	25-May-2023	25-May-2023	25-May-2023
PCBs by GCMS	25-May-2023	25-May-2023	25-May-2023	25-May-2023
pH	23-May-2023	19-May-2023	19-May-2023	19-May-2023
Phenols by HPLC (S)	23-May-2023	24-May-2023	24-May-2023	24-May-2023
Sample description	19-May-2023	18-May-2023	18-May-2023	18-May-2023
Semi Volatile Organic Compounds	23-May-2023	23-May-2023	23-May-2023	23-May-2023
Total Organic Carbon	25-May-2023	24-May-2023	25-May-2023	25-May-2023
Total Sulphate	24-May-2023	24-May-2023	24-May-2023	23-May-2023
Total Sulphur	23-May-2023	23-May-2023	23-May-2023	25-May-2023
TPH CWG GC (S)	23-May-2023	23-May-2023	22-May-2023	22-May-2023
VOC MS (S)	22-May-2023	22-May-2023	19-May-2023	19-May-2023

ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
230518-59	N/A	N/A	06/06/2023	Client Reference Change	2023WH101	2023OY104	690424

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	12 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230526-70
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	692165
Order Number:	12380

We received 16 samples on Friday May 26, 2023 and 16 of these samples were scheduled for analysis which was completed on Monday June 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28060279	BHT15	ES1	7.00 - 7.00	19/05/2023
28060350	BHT17	ES1	5.50 - 5.50	17/05/2023
28060320	TP301	ES1	0.70 - 0.80	16/05/2023
28060331	TP302	ES1	0.90 - 1.00	16/05/2023
28060259	TP303	ES1	2.20 - 2.30	16/05/2023
28060270	TP304	ES1	2.30 - 2.40	17/05/2023
28060265	TP305	ES1	0.80 - 0.90	17/05/2023
28060344	TP306	ES1	1.50 - 1.60	17/05/2023
28060300	TP308	ES1	1.30 - 1.40	22/05/2023
28060284	TP309	ES1	0.30 - 0.40	22/05/2023
28060294	TP310	ES1	3.10 - 3.20	22/05/2023
28060289	TP311	ES1	3.90 - 4.00	22/05/2023
28060337	TP307A	ES1	1.00 - 1.10	17/05/2023
28060315	TPT13	ES1	0.20 - 0.30	16/05/2023
28060326	TPT14	ES1	0.15 - 0.30	16/05/2023
28060307	TPT15	ES1	0.40 - 0.50	16/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28060279			28060350			28060320			28060331			28060259			28060270			28060265
Customer Sample Reference			BHT15			BHT17			TP301			TP302			TP303			TP304			TP305
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			7.00 - 7.00			5.50 - 5.50			0.70 - 0.80			0.90 - 1.00			2.20 - 2.30			2.30 - 2.40			0.80 - 0.90
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Anions in soil by IC	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 16	X			X			X			X			X			X			X
Chromium III	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 16			X			X			X			X			X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Magnesium (BRE)	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Sample description	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		

12:33:26 12/06/2023

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28060279			28060350			28060320			28060331			28060259			28060270			28060265
Customer Sample Reference			BHT15			BHT17			TP301			TP302			TP303			TP304			TP305
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			7.00 - 7.00			5.50 - 5.50			0.70 - 0.80			0.90 - 1.00			2.20 - 2.30			2.30 - 2.40			0.80 - 0.90
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 16		X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 16			X			X			X			X			X			X	

28060315	TPT13	ES1	0.20 - 0.30	1kg TUB with Handle (ALE260)	S							
28060337	TP307A	ES1	1.00 - 1.10	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28060289	TP311	ES1	3.90 - 4.00	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28060294	TP310	ES1	3.10 - 3.20	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28060284	TP309	ES1	0.30 - 0.40	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28060300	TP308	ES1	1.30 - 1.40	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28060344	TP306	ES1	1.50 - 1.60	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28060265	TP305	ES1	0.80 - 0.90	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28060315			28060326			28060307	
Customer Sample Reference			TPT13			TPT14			TPT15	
AGS Reference			ES1			ES1			ES1	
Depth (m)			0.20 - 0.30			0.15 - 0.30			0.40 - 0.50	
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 16	X			X			X	
Anions in soil by IC	All	NDPs: 0 Tests: 16	X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 16			X			X		
Chromium III	All	NDPs: 0 Tests: 16	X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 16	X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 16	X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 16		X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 16	X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 16	X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 16	X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 16	X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 16	X			X			X	
pH	All	NDPs: 0 Tests: 16	X			X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 16	X			X			X	
Sample description	All	NDPs: 0 Tests: 16	X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28060315			28060326			28060307		
Customer Sample Reference			TPT13			TPT14			TPT15		
AGS Reference			ES1			ES1			ES1		
Depth (m)			0.20 - 0.30			0.15 - 0.30			0.40 - 0.50		
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	S	S	S	S	S	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 16	X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 16	X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 16	X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 16	X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 16	X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 16		X			X			X	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28060279	BHT15	7.00 - 7.00	Grey	Sandy Silt Loam	Stones	None
28060350	BHT17	5.50 - 5.50	Grey	Sandy Silt Loam	Stones	None
28060320	TP301	0.70 - 0.80	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28060331	TP302	0.90 - 1.00	Dark Brown	Sandy Loam	Stones	Vegetation
28060259	TP303	2.20 - 2.30	Dark Brown	Silt Loam	Vegetation	None
28060270	TP304	2.30 - 2.40	Dark Brown	Sandy Silt Loam	Stones	None
28060265	TP305	0.80 - 0.90	Dark Brown	Sandy Clay Loam	Stones	None
28060344	TP306	1.50 - 1.60	Light Brown	Sandy Clay Loam	Stones	None
28060300	TP308	1.30 - 1.40	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28060284	TP309	0.30 - 0.40	Light Brown	Sandy Loam	Stones	None
28060294	TP310	3.10 - 3.20	Dark Brown	Sandy Clay Loam	Stones	None
28060289	TP311	3.90 - 4.00	Dark Brown	Sandy Silt Loam	Stones	None
28060337	TP307A	1.00 - 1.10	Light Brown	Sandy Silt Loam	Stones	None
28060315	TPT13	0.20 - 0.30	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28060326	TPT14	0.15 - 0.30	Light Brown	Sandy Silt Loam	Stones	Vegetation
28060307	TPT15	0.40 - 0.50	Dark Brown	Sandy Silt Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	9.3	11	17	52	54	19
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	<0.0002	<0.0002	0.000799	0.000838	0.000296	<0.0002
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.011	0.0112	0.0199	0.0654	0.376	0.0308
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0494 #	0.034 #	<0.02 #	0.0688 #	0.567 #	0.0261 #
Organic Matter, Total	<0.35 %	TM132	8.57 #	<0.35 #	7.22 #	10.9 #	14.5 #	6.88 #
Sulphate, Total potential	<0.06 %	TM132	0.148	0.102	0.06	0.206	1.7	0.0783
pH	1 pH Units	TM133	8.61 M	8.77 M	8.27 M	5.5 M	6.19 M	8.32 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 @ M	<1 @ M	<1 @ M	<1 @ M	<1 @ M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	4.5	4.95	9.9	31.8	27.1	6.54
Arsenic	<0.6 mg/kg	TM181	2.04 M	1.13 M	2.78 M	4.28 M	7.09 M	2.41 M
Barium	<0.6 mg/kg	TM181	38 #	20.9 #	47.1 #	137 #	62.7 #	25.9 #
Beryllium	<0.01 mg/kg	TM181	0.331 M	0.262 M	0.48 M	0.582 M	0.689 M	0.289 M
Cadmium	<0.02 mg/kg	TM181	0.696 M	0.618 M	0.569 M	1.01 M	2.01 M	0.483 M
Chromium	<0.9 mg/kg	TM181	4.5 M	4.95 M	9.9 M	31.8 M	27.1 M	6.54 M
Copper	<1.4 mg/kg	TM181	9.17 M	7.52 M	8.09 M	3.7 M	25.5 M	5.14 M
Lead	<0.7 mg/kg	TM181	6.87 M	4.69 M	8.9 M	25 M	15.3 M	6.08 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	18.1 M	14.7 M	17.9 M	24.5 M	43 M	10.9 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	1.89 #	<1 #
Vanadium	<0.2 mg/kg	TM181	9.33 #	8.45 #	15.3 #	30.2 #	22.5 #	8.24 #
Zinc	<1.9 mg/kg	TM181	49.4 M	37.3 M	33.5 M	109 M	117 M	27 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0242 M	0.0318 M	0.0259 M	0.0428 M	0.264 M	0.028 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	<0.0025 M	0.0033 M	0.0031 M	0.0526 M	0.0461 M	0.0091 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

12:33:26 12/06/2023

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	23	17	28	9.5	25	21
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0226	0.000341	<0.0002	<0.0002	0.000676	0.000316
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.015	0.014	0.0319	0.0118	0.0146	0.0331
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	0.0506 #	<0.02 #	<0.02 #	0.0386 #
Organic Matter, Total	<0.35 %	TM132	1.62 #	0.755 #	3.6 #	3.22 #	2.34 #	2.59 #
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06	0.152	0.06	0.06	0.116
pH	1 pH Units	TM133	8.3 M	8.25 M	8.15 M	8.88 M	7.09 M	7.08 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	27.5	2.96	6.85	7.43	29.8	15.8
Arsenic	<0.6 mg/kg	TM181	4.96 M	13.6 M	2.89 M	2.07 M	3.81 M	9.13 M
Barium	<0.6 mg/kg	TM181	130 #	49 #	32.2 #	22.5 #	40.3 #	29.7 #
Beryllium	<0.01 mg/kg	TM181	0.789 M	0.478 M	0.312 M	0.331 M	0.765 M	1.42 M
Cadmium	<0.02 mg/kg	TM181	0.499 M	0.385 M	0.488 M	0.795 M	0.728 M	3.54 M
Chromium	<0.9 mg/kg	TM181	27.5 M	2.96 M	6.85 M	7.43 M	29.8 M	15.8 M
Copper	<1.4 mg/kg	TM181	5.73 M	5.22 M	8.03 M	10.4 M	13.8 M	14.3 M
Lead	<0.7 mg/kg	TM181	16.2 M	5.53 M	11.4 M	6.94 M	19.4 M	17.8 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	34.8 M	10.9 M	14.6 M	20.7 M	54 M	92.7 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	27.8 #	11.3 #	8.19 #	9.72 #	33.9 #	15.8 #
Zinc	<1.9 mg/kg	TM181	52.9 M	24.2 M	38.8 M	49.5 M	127 M	265 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0152 M	0.0142 M	0.0358 M	0.0216 M	0.0128 M	0.03 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.004 M	0.0036 M	0.0037 M	0.0028 M	0.0053 M	0.0051 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			-	-	-	-		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	24	14	15	23		
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	<0.0002	0.00317	0.000714	<0.0002		
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0389	0.013	0.0135	0.0217		
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	<0.01 @ M	<0.01 @ M		
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	<0.01 @ M	<0.01 @ M		
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 @ M	<0.015 @ M	<0.015 @ M		
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 @ M	<0.035 @ M	<0.035 @ M		
Sulphur, Total	<0.02 %	TM132	<0.02 #	0.0272 #	<0.02 #	<0.02 #		
Organic Matter, Total	<0.35 %	TM132	1.14 #	3.09 #	1.59 #	3.74 #		
Sulphate, Total potential	<0.06 %	TM132	0.06	0.0816	0.06	0.06		
pH	1 pH Units	TM133	8.33 M	8.57 M	8.55 M	8.45 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M		
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 @ M	<1 @ M		
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21		
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M		
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			.	.	.	.		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	12.4	4.57	9.74	6.17		
Arsenic	<0.6 mg/kg	TM181	2.25 M	2.31 M	2.44 M	1.12 M		
Barium	<0.6 mg/kg	TM181	46.4 #	19.6 #	41.4 #	23.4 #		
Beryllium	<0.01 mg/kg	TM181	0.456 M	0.242 M	0.442 M	0.3 M		
Cadmium	<0.02 mg/kg	TM181	0.444 M	0.483 M	0.567 M	0.382 M		
Chromium	<0.9 mg/kg	TM181	12.4 M	4.57 M	9.74 M	6.17 M		
Copper	<1.4 mg/kg	TM181	3.97 M	3.71 M	6.63 M	4.86 M		
Lead	<0.7 mg/kg	TM181	8.29 M	4.19 M	7.18 M	5.34 M		
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M		
Nickel	<0.2 mg/kg	TM181	15.6 M	8.85 M	16.9 M	10.5 M		
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #		
Vanadium	<0.2 mg/kg	TM181	12 #	6.44 #	12.9 #	7.85 #		
Zinc	<1.9 mg/kg	TM181	29.8 M	26.1 M	32.3 M	25 M		
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0305 M	0.0245 M	0.0228 M	0.0277 M		
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0035 M	0.0059 M	0.0031 M	0.0031 M		
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008		

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	96.2	96.9	94.6	92.4	95.3	96.3
Acenaphthene-d10 % recovery**	%	TM218	90.9	92.6	96.4	94.5	96.8	91.3
Phenanthrene-d10 % recovery**	%	TM218	83.5	87.5	97.8	95.4	98	84.9
Chrysene-d12 % recovery**	%	TM218	76.6	78.4	97.7	94.6	91.1	77.4
Perylene-d12 % recovery**	%	TM218	76.3	80.2	97.4	92.3	87.9	79.7
Naphthalene	<9 µg/kg	TM218	<9 M	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 M	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	88.2	95	98.1	98.3	101	92.3
Acenaphthene-d10 % recovery**	%	TM218	87.1	96.7	94.4	93.1	95.8	94.1
Phenanthrene-d10 % recovery**	%	TM218	87.9	98	90.2	86.9	90	96.1
Chrysene-d12 % recovery**	%	TM218	84	93.2	83	77.4	96.2	92
Perylene-d12 % recovery**	%	TM218	79.5	90.7	84.5	80.9	95	87
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			-	-	-	-		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	93.7	96.8	93.8	94.4		
Acenaphthene-d10 % recovery**	%	TM218	94.5	91.8	94.3	97.9		
Phenanthrene-d10 % recovery**	%	TM218	94.5	86.4	95	99.6		
Chrysene-d12 % recovery**	%	TM218	91	74.9	91	93.1		
Perylene-d12 % recovery**	%	TM218	88.4	76.3	87.5	86.4		
Naphthalene	<9 µg/kg	TM218	<9 M	<9 @ M	<9 @ M	<9 @ M		
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 @ M	<12 @ M	<12 @ M		
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 @ M	<8 @ M	<8 @ M		
Fluorene	<10 µg/kg	TM218	<10 M	<10 @ M	<10 @ M	<10 @ M		
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M		
Anthracene	<16 µg/kg	TM218	<16 M	<16 @ M	<16 @ M	<16 @ M		
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 @ M	<17 @ M	<17 @ M		
Pyrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M		
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 @ M	<14 @ M	<14 @ M		
Chrysene	<10 µg/kg	TM218	<10 M	<10 @ M	<10 @ M	<10 @ M		
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M		
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 @ M	<14 @ M	<14 @ M		
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 @ M	<15 @ M		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 @ M	<18 @ M	<18 @ M		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 @ M	<23 @ M	<23 @ M		
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 @ M	<24 @ M	<24 @ M		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<200	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<200	<100	<100	<200
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

12:33:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			-	-	-	-		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100		
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100		
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100		
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100		
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<200	<200	<100	<100		
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100		
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100		
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100		
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100		
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100		
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100		
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100		
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100		
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100		
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

		Customer Sample Ref.	TP307A	TPT13	TPT14	TPT15		
		Depth (m)	1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
		Date Sampled	17/05/2023	16/05/2023	16/05/2023	16/05/2023		
		Sample Time	.	.	.	.		
		Date Received	26/05/2023	26/05/2023	26/05/2023	26/05/2023		
		SDG Ref	230526-70	230526-70	230526-70	230526-70		
		Lab Sample No.(s)	28060337	28060315	28060326	28060307		
		AGS Reference	ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100		
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100		
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100		
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100		
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100		
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100		
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100		
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100		
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100		
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100		
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100		
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100		
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100		
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100		
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100		
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100		
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100		
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100		
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100		
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100		
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100		
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100		
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100		

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	79.4	80.7 @	103 @	82.9 @	70.1 @	96.8 @
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10 @	<10 @	<10 @	<10 @
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10 @	<10 @	<10 @	<10 @
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10 @	<10 @	<10 @	<10 @
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	1390 @ #	1180 @ #	9060 @ #	<1000 @ #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	2540 @ #	24600 @ #	46700 @ #	<1000 @ #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000 @	1290 @	6130 @	14800 @	<1000 @
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000 @	5220 @	32300 @	70500 @	<5000 @
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	29400	111000	250000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	4140 @ #	1100 @ #	19700 @ #	<1000 @ #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	17800 @ #	66000 @ #	134000 @ #	1630 @ #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000 @	2290 @	12000 @	24900 @	<1000 @
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000 @	1160 @	<1000 @	6430 @	<1000 @
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	24200	79100	179000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	29400	111000	250000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50 @	<50 @	<50 @	<50 @	<50 @
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50 @	<50 @	<50 @	<50 @	<50 @
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20 @	<20 @	<20 @	<20 @	<20 @

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	86.8 @	96.8 @	105	111	88	92.1
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	2560 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	8880 #	<1000 #	<1000 #	1100 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	3320	<1000	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	14800	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	53200	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	6720 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	1230 #	23400 #	<1000 #	2250 #	3620 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	8280	<1000	<1000	1460
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	2200	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	38400	<5000	<5000	5620
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	53200	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 @	<20 @	<20	<20	<20	<20

12:33:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			-	-	-	-		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	88.3 @	91.7 @	97.3 @	109 @		
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @		
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @		
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @		
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #		
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #		
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #		
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	3910 @ #	3820 @ #	<1000 @ #	2130 @ #		
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @		
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000 @	<5000 @	<5000 @	<5000 @		
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	16800	12600	<10000	23800		
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @		
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @		
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @		
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #		
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #		
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1260 @ #	1050 @ #	<1000 @ #	<1000 @ #		
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	9350 @ #	5410 @ #	1630 @ #	16000 @ #		
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	1140 @	<1000 @	4100 @		
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @		
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	11900	7750	<5000	20800		
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	11900	<10000	<10000	20800		
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50 @		
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50 @		
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 @	<20 @	<20 @	<20 @		

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	129 @	97.5 @	114 @	113 @	106 @	97.1 @
Toluene-d8**	%	TM116	98.6 @	95.1 @	101 @	92.1 @	99.4 @	97.8 @
4-Bromofluorobenzene**	%	TM116	100 @	72.2 @	87.9 @	70.6 @	98.1 @	83.9 @
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<10 @ #	<6 @ #	<6 @ #	<6 @ #	<10 @ #	<6 @ #
Chloromethane	<2 µg/kg	TM116	<40 @ #	<7 3 @ #	<7 @ #	<7 3 @ #	<40 @ #	<7 3 @ #
Vinyl Chloride	<0.5 µg/kg	TM116	<10 @ M	<6 @ M	<6 @ M	<6 @ M	<10 @ M	<6 @ M
Bromomethane	<1 µg/kg	TM116	<20 @ M	<10 @ M	<10 @ M	<10 @ M	<20 @ M	<10 @ M
Chloroethane	<1 µg/kg	TM116	<20 @ M	<10 @ M	<10 @ M	<10 @ M	<20 @ M	<10 @ M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<10 @ M	<6 3 @ M	<6 @ M	<6 3 @ M	<10 @ M	<6 3 @ M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #	<10 @ #	<10 @ #
Carbon Disulphide	<1 µg/kg	TM116	<20 @ M	<7 @ M	<7 @ M	<7 @ M	103 @ M	<7 @ M
Dichloromethane	<5 µg/kg	TM116	<100 @ #	<10 @ #	<10 @ #	<10 @ #	<100 @ #	<10 @ #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<20 @ M	<10 @ M	<10 @ M	<10 @ M	<20 @ M	<10 @ M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<10 @ M	<8 @ M	<8 @ M	<8 @ M	<10 @ M	<8 @ M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<10 @ M	<6 @ M	<6 @ M	<6 @ M	<10 @ M	<6 @ M
2,2-Dichloropropane	<1 µg/kg	TM116	<20 @	<10 @	<10 3 @	<10 @	<20 @	<10 @
Bromochloromethane	<2 µg/kg	TM116	<40 @ M	<10 @ M	<10 @ M	<10 @ M	<40 @ M	<10 @ M
Chloroform	<3 µg/kg	TM116	<60 @ M	<8 @ M	<8 @ M	<8 @ M	<60 @ M	<8 @ M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<10 @ M	<7 @ M	<7 @ M	<7 @ M	<10 @ M	<7 @ M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
1,2-Dichloroethane	<1 µg/kg	TM116	<20 @ M	<5 @ M	<5 3 @ M	<5 @ M	<20 @ M	<5 @ M
Benzene	<1 µg/kg	TM116	<20 @ M	<9 @ M	<9 @ M	<9 @ M	<20 @ M	<9 @ M
Trichloroethene	<1 µg/kg	TM116	<20 @ #	<9 @ #	<9 @ #	<9 @ #	<20 @ #	<9 @ #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Dibromomethane	<1 µg/kg	TM116	<20 @ M	<9 @ M	<9 @ M	<9 @ M	<20 @ M	<9 @ M
Bromodichloromethane	<2 µg/kg	TM116	<40 @ M	<7 @ M	<7 @ M	<7 @ M	<40 @ M	<7 @ M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 3 @ M	<10 @ M	<10 @ M	<10 @ M
Toluene	<1 µg/kg	TM116	<20 @ M	<7 @ M	<7 @ M	<7 @ M	<20 @ M	<7 @ M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<20 @	<10 @	<10 3 @	<10 @	<20 @	<10 @
1,1,2-Trichloroethane	<1 µg/kg	TM116	<20 @ M	<10 @ M	<10 @ M	<10 @ M	<20 @ M	<10 @ M
1,3-Dichloropropane	<1 µg/kg	TM116	<20 @ M	<7 @ M	<7 @ M	<7 @ M	<20 @ M	<7 @ M

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT15	BHT17	TP301	TP302	TP303	TP304
Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<40 @ M	<5 @ M	<5 @ M	<5 @ M	<40 @ M	<5 @ M
Dibromochloromethane	<2 µg/kg	TM116	<40 @ M	<10 @ M	<10 @ M	<10 @ M	<40 @ M	<10 @ M
1,2-Dibromoethane	<1 µg/kg	TM116	<20 @ M	<10 @ M	<10 @ M	<10 @ M	<20 @ M	<10 @ M
Chlorobenzene	<2 µg/kg	TM116	<40 @ M	<5 @ M	<5 @ M	<5 @ M	<40 @ M	<5 @ M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<20 @ M	<10 @ M	<10 @ M	<10 @ M	<20 @ M	<10 @ M
Ethylbenzene	<1 µg/kg	TM116	<20 @ M	<4 @ M	<4 @ M	<4 @ M	<20 @ M	<4 @ M
p/m-Xylene	<2 µg/kg	TM116	<40 @ #	<10 @ #	<10 @ #	<10 @ #	<40 @ #	<10 @ #
o-Xylene	<2 µg/kg	TM116	<40 @ M	<10 @ M	<10 @ M	<10 @ M	<40 @ M	<10 @ M
Styrene	<2 µg/kg	TM116	<40 @ #	<10 @ #	<10 @ #	<10 @ #	<40 @ #	<10 @ #
Bromoform	<2 µg/kg	TM116	<40 @ M	<10 @ M	<10 @ M	<10 @ M	<40 @ M	<10 @ M
Isopropylbenzene	<2 µg/kg	TM116	<40 @ #	<5 @ #	<5 @ #	<5 @ #	<40 @ #	<5 @ #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<40 @ #	<10 @ #	<10 @ #	<10 @ #	<40 @ #	<10 @ #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<40 @ M	<16 @ M	<16 @ M	<16 @ M	<40 @ M	<16 @ M
Bromobenzene	<2 µg/kg	TM116	<40 @ M	<10 @ M	<10 @ M	<10 @ M	<40 @ M	<10 @ M
Propylbenzene	<2 µg/kg	TM116	<40 @ M	<10 @ M	<10 @ M	<10 @ M	<40 @ M	<10 @ M
2-Chlorotoluene	<3 µg/kg	TM116	<60 @ M	<9 @ M	<9 @ M	<9 @ M	<60 @ M	<9 @ M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<40 @ M	<8 @ M	<8 @ M	<8 @ M	<40 @ M	<8 @ M
4-Chlorotoluene	<3 µg/kg	TM116	<60 @ M	<10 @ M	<10 @ M	<10 @ M	<60 @ M	<10 @ M
tert-Butylbenzene	<2 µg/kg	TM116	<40 @ #	<14 @ #	<14 @ #	<14 @ #	<40 @ #	<14 @ #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<60 @ #	<9 @ #	<9 @ #	<9 @ #	<60 @ #	<9 @ #
sec-Butylbenzene	<1 µg/kg	TM116	<20 @	<10 @	<10 @	<10 @	<20 @	<10 @
4-Isopropyltoluene	<2 µg/kg	TM116	<40 @	<10 @	<10 @	<10 @	<40 @	<10 @
1,3-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<8 @ M	<8 @ M	<8 @ M	<100 @ M	<8 @ M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<5 @ M	<5 @ M	<100 @ M	<5 @ M
n-Butylbenzene	<3 µg/kg	TM116	<60 @	<11 @	<11 @	<11 @	<60 @	<11 @
1,2-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<10 @ M	<10 @ M	<10 @ M	<100 @ M	<10 @ M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<40 @ M	<14 @ M	<14 3 @ M	<14 @ M	<40 @ M	<14 @ M
Tert-amyl methyl ether	<1 µg/kg	TM116	<20 @ #	<10 @ #	<10 @ #	<10 @ #	<20 @ #	<10 @ #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<140 @	<20 @	<20 @	<20 @	<140 @	<20 @
Hexachlorobutadiene	<4 µg/kg	TM116	<80 @	<20 @	<20 @	<20 @	<80 @	<20 @
Naphthalene	<8 µg/kg	TM116	<160 @ M	<13 @ M	<13 @ M	<13 @ M	<160 @ M	<13 @ M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<200 @ #	<20 @ #	<20 @ #	<20 @ #	<200 @ #	<20 @ #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<140	<20	<20	<20	<140	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT15	BHT17	TP301	TP302	TP303	TP304
Depth (m)			7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			19/05/2023	17/05/2023	16/05/2023	16/05/2023	16/05/2023	17/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060279	28060350	28060320	28060331	28060259	28060270
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4 @	<0.02 @	<0.02 @	<0.02 @	<0.4 @	<0.02 @
Sum of BTEX	<7 µg/kg	TM116	<140 @	<40 @	<40 @	<40 @	<140 @	<40 @

12:33:26 12/06/2023

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP305	TP306	TP308	TP309	TP310	TP311
Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			-	-	-	-	-	-
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Dibromofluoromethane**	%	TM116	104 @	110 @	105	99.2	109	114
Toluene-d8**	%	TM116	95.3 @	98.8 @	95.7	100	94.9	98.9
4-Bromofluorobenzene**	%	TM116	76.2 @	81.4 @	76	100	77.1	83.8
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 @ #	<6 @ #	<0.5 #	<6 #	<6 #	<6 #
Chloromethane	<2 µg/kg	TM116	<7 3 @ #	<7 3 @ #	<2 #	<7 3 #	<7 3 #	<7 3 #
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<0.5 @ M	<6 @ M	<6 @ M	<6 @ M
Bromomethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<1 M	<10 M	<10 M	<10 M
Chloroethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<1 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<6 3 @ M	<6 3 @ M	<0.5 3 M	<6 3 M	<6 3 M	<6 3 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 @ #	<10 @ #	<0.5 #	<10 #	<10 #	<10 #
Carbon Disulphide	<1 µg/kg	TM116	<7 @ M	<7 @ M	6.38 M	<7 M	<7 M	17 M
Dichloromethane	<5 µg/kg	TM116	<10 @ #	<10 @ #	<5 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<0.5 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 @ M	<10 @ M	<1 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 @ M	<8 @ M	<0.5 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<0.5 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10 @	<10 @	<1	<10	<10	<10
Bromochloromethane	<2 µg/kg	TM116	<10 @ M	<10 @ M	<2 M	<10 M	<10 M	<10 M
Chloroform	<3 µg/kg	TM116	<8 @ M	<8 @ M	<3 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 @ M	<7 @ M	<0.5 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<0.5 M	<10 M	<10 M	<10 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<0.5 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<1 µg/kg	TM116	<5 @ M	<5 @ M	<1 3 M	<5 M	<5 M	<5 M
Benzene	<1 µg/kg	TM116	<9 @ M	<9 @ M	<1 M	<9 M	<9 M	<9 M
Trichloroethene	<1 µg/kg	TM116	<9 @ #	<9 @ #	<1 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<0.5 M	<10 M	<10 M	<10 M
Dibromomethane	<1 µg/kg	TM116	<9 @ M	<9 @ M	<1 M	<9 M	<9 M	<9 M
Bromodichloromethane	<2 µg/kg	TM116	<7 @ M	<7 @ M	<2 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<0.5 M	<10 M	<10 M	<10 M
Toluene	<1 µg/kg	TM116	<7 @ M	<7 @ M	<1 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10 @	<10 @	<1	<10	<10	<10
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<1 M	<10 M	<10 M	<10 M
1,3-Dichloropropane	<1 µg/kg	TM116	<7 @ M	<7 @ M	<1 M	<7 M	<7 M	<7 M

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP305	TP306	TP308	TP309	TP310	TP311
Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<5 @ M	<5 @ M	<2 M	<5 M	<5 M	<5 M
Dibromochloromethane	<2 µg/kg	TM116	<10 @ M	<10 @ M	<2 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<1 M	<10 M	<10 M	<10 M
Chlorobenzene	<2 µg/kg	TM116	<5 @ M	<5 @ M	<2 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<1 M	<10 M	<10 M	<10 M
Ethylbenzene	<1 µg/kg	TM116	<4 @ M	<4 @ M	<1 M	<4 M	<4 M	<4 M
p/m-Xylene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<2 #	<10 #	<10 #	<10 #
o-Xylene	<2 µg/kg	TM116	<10 @ M	<10 @ M	<2 M	<10 M	<10 M	<10 M
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<2 @ #	<10 @ #	<10 @ #	<10 @ #
Bromoform	<2 µg/kg	TM116	<10 @ M	<10 @ M	<2 M	<10 M	<10 M	<10 M
Isopropylbenzene	<2 µg/kg	TM116	<5 @ #	<5 @ #	<2 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 @ #	<10 @ #	<2 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 @ M	<16 @ M	<2 M	<16 M	<16 M	<16 M
Bromobenzene	<2 µg/kg	TM116	<10 @ M	<10 @ M	<2 M	<10 M	<10 M	<10 M
Propylbenzene	<2 µg/kg	TM116	<10 @ M	<10 @ M	<2 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<3 µg/kg	TM116	<9 @ M	<9 @ M	<3 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 @ M	<8 @ M	<2 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<3 µg/kg	TM116	<10 @ M	<10 @ M	<3 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<2 µg/kg	TM116	<14 @ #	<14 @ #	<2 #	<14 #	<14 #	<14 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 @ #	<9 @ #	<3 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<1 µg/kg	TM116	<10 @	<10 @	<1	<10	<10	<10
4-Isopropyltoluene	<2 µg/kg	TM116	<10 @	<10 @	<2	<10	<10	<10
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 @ M	<8 @ M	<5 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 @ M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<11 @	<11 @	<3	<11	<11	<11
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 @ M	<10 @ M	<5 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 @ M	<14 @ M	<2 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 @ #	<10 @ #	<1 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20 @	<20 @	<7	<20	<20	<20
Hexachlorobutadiene	<4 µg/kg	TM116	<20 @	<20 @	<4	<20	<20	<20
Naphthalene	<8 µg/kg	TM116	<13 @ M	<13 @ M	<8 M	<13 M	<13 M	<13 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 @ #	<20 @ #	<10 #	<20 #	<20 #	<20 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<7	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP305	TP306	TP308	TP309	TP310	TP311
Depth (m)			0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40	3.10 - 3.20	3.90 - 4.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/05/2023	17/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
Sample Time			.	.	.	.	.	.
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
SDG Ref			230526-70	230526-70	230526-70	230526-70	230526-70	230526-70
Lab Sample No.(s)			28060265	28060344	28060300	28060284	28060294	28060289
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02 @	<0.02 @	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<40 @	<40 @	<7	<40	<40	<40

12:33:26 12/06/2023

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			-	-	-	-		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	101 @	105 @	110 @	102 @		
Toluene-d8**	%	TM116	96.3 @	97 @	98.3 @	97.5 @		
4-Bromofluorobenzene**	%	TM116	78.6 @	80.3 @	94.4 @	80.2 @		
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<6 @ #	<6 @ #	<6 @ #	<6 @ #		
Chloromethane	<2 µg/kg	TM116	<7 3 @ #	<7 3 @ #	<7 @ #	<7 @ #		
Vinyl Chloride	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<6 @ M	<6 @ M		
Bromomethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Chloroethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Trichlorofluorormethane	<0.5 µg/kg	TM116	<6 3 @ M	<6 3 @ M	<6 @ M	<6 3 @ M		
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #		
Carbon Disulphide	<1 µg/kg	TM116	<7 @ M	<7 @ M	<7 @ M	<7 @ M		
Dichloromethane	<5 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 3 @ #		
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
1,1-Dichloroethane	<0.5 µg/kg	TM116	<8 @ M	<8 @ M	<8 @ M	<8 @ M		
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<6 @ M	<6 @ M	<6 @ M	<6 @ M		
2,2-Dichloropropane	<1 µg/kg	TM116	<10 @	<10 @	<10 3 @	<10 @		
Bromochloromethane	<2 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Chloroform	<3 µg/kg	TM116	<8 @ M	<8 @ M	<8 @ M	<8 @ M		
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<7 @ M	<7 @ M	<7 @ M	<7 @ M		
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Carbontetrachloride	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
1,2-Dichloroethane	<1 µg/kg	TM116	<5 @ M	<5 @ M	<5 3 @ M	<5 3 @ M		
Benzene	<1 µg/kg	TM116	<9 @ M	<9 @ M	<9 @ M	<9 @ M		
Trichloroethene	<1 µg/kg	TM116	<9 @ #	<9 @ #	<9 @ #	<9 @ #		
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Dibromomethane	<1 µg/kg	TM116	<9 @ M	<9 @ M	<9 @ M	<9 @ M		
Bromodichloromethane	<2 µg/kg	TM116	<7 @ M	<7 @ M	<7 @ M	<7 @ M		
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<10 @ M	<10 3 @ M	<10 @ M		
Toluene	<1 µg/kg	TM116	<7 @ M	<7 @ M	<7 @ M	<7 @ M		
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10 @	<10 @	<10 3 @	<10 @		
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
1,3-Dichloropropane	<1 µg/kg	TM116	<7 @ M	<7 @ M	<7 @ M	<7 @ M		

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP307A	TPT13	TPT14	TPT15		
Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			.	.	.	.		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Tetrachloroethene	<2 µg/kg	TM116	<5 @ M	<5 @ M	<5 @ M	<5 @ M		
Dibromochloromethane	<2 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
1,2-Dibromoethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Chlorobenzene	<2 µg/kg	TM116	<5 @ M	<5 @ M	<5 @ M	<5 @ M		
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Ethylbenzene	<1 µg/kg	TM116	<4 @ M	<4 @ M	<4 @ M	<4 @ M		
p/m-Xylene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #		
o-Xylene	<2 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Styrene	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #		
Bromoform	<2 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Isopropylbenzene	<2 µg/kg	TM116	<5 @ #	<5 @ #	<5 @ #	<5 @ #		
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #		
1,2,3-Trichloropropane	<2 µg/kg	TM116	<16 @ M	<16 @ M	<16 @ M	<16 @ M		
Bromobenzene	<2 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
Propylbenzene	<2 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
2-Chlorotoluene	<3 µg/kg	TM116	<9 @ M	<9 @ M	<9 @ M	<9 @ M		
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<8 @ M	<8 @ M	<8 @ M	<8 @ M		
4-Chlorotoluene	<3 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
tert-Butylbenzene	<2 µg/kg	TM116	<14 @ #	<14 @ #	<14 @ #	<14 @ #		
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<9 @ #	<9 @ #	<9 @ #	<9 @ #		
sec-Butylbenzene	<1 µg/kg	TM116	<10 @	<10 @	<10 @	<10 @		
4-Isopropyltoluene	<2 µg/kg	TM116	<10 @	<10 @	<10 @	<10 @		
1,3-Dichlorobenzene	<5 µg/kg	TM116	<8 @ M	<8 @ M	<8 @ M	<8 @ M		
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 @ M	<5 @ M	<5 @ M		
n-Butylbenzene	<3 µg/kg	TM116	<11 @	<11 @	<11 @	<11 @		
1,2-Dichlorobenzene	<5 µg/kg	TM116	<10 @ M	<10 @ M	<10 @ M	<10 @ M		
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<14 @ M	<14 @ M	<14 3 @ M	<14 3 @ M		
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<10 @ #		
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<20 @	<20 @	<20 @	<20 @		
Hexachlorobutadiene	<4 µg/kg	TM116	<20 @	<20 @	<20 @	<20 @		
Naphthalene	<8 µg/kg	TM116	<13 @ M	<13 @ M	<13 @ M	<13 @ M		
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<20 @ #	<20 @ #	<20 @ #	<20 @ #		
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<20	<20	<20	<20		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TP307A	TPT13	TPT14	TPT15		
Depth (m)			1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			17/05/2023	16/05/2023	16/05/2023	16/05/2023		
Sample Time			.	.	.	.		
Date Received			26/05/2023	26/05/2023	26/05/2023	26/05/2023		
SDG Ref			230526-70	230526-70	230526-70	230526-70		
Lab Sample No.(s)			28060337	28060315	28060326	28060307		
AGS Reference			ES1	ES1	ES1	ES1		
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02 @	<0.02 @	<0.02 @	<0.02 @		
Sum of BTEX	<7 µg/kg	TM116	<40 @	<40 @	<40 @	<40 @		

12:33:26 12/06/2023

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦$@	Sample deviation (see appendix)

Cust. Sample Ref. / Depth (m) / Sample Type / Date Sampled / Date Received / SDG / Original Sample / Method Number	Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. BHT15ES1 Depth (m) 7.00 - 7.00 Sample Type SOLID Date Sampled 19/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060279 Method Number TM048	06/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. BHT17ES1 Depth (m) 5.50 - 5.50 Sample Type SOLID Date Sampled 17/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060350 Method Number TM048	06/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. TP301ES1 Depth (m) 0.70 - 0.80 Sample Type SOLID Date Sampled 16/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060320 Method Number TM048	05/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. TP302ES1 Depth (m) 0.90 - 1.00 Sample Type SOLID Date Sampled 16/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060331 Method Number TM048	5/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. TP303ES1 Depth (m) 2.20 - 2.30 Sample Type SOLID Date Sampled 16/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060259 Method Number TM048	06/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. TP304ES1 Depth (m) 2.30 - 2.40 Sample Type SOLID Date Sampled 17/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060270 Method Number TM048	05/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. TP305ES1 Depth (m) 0.80 - 0.90 Sample Type SOLID Date Sampled 17/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060265 Method Number TM048	5/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. TP306ES1 Depth (m) 1.50 - 1.60 Sample Type SOLID Date Sampled 17/05/2023 00:00:00 Date Received 26/05/2023 10:00:00 SDG 230526-70 Original Sample 28060344 Method Number TM048	5/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP308ES1 1.30 - 1.40 SOLID 22/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060300 TM048	06/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP309ES1 0.30 - 0.40 SOLID 22/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060284 TM048	5/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP310ES1 3.10 - 3.20 SOLID 22/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060294 TM048	06/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP311ES1 3.90 - 4.00 SOLID 22/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060289 TM048	5/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP307AES1 1.00 - 1.10 SOLID 17/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060337 TM048	05/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT13ES1 0.20 - 0.30 SOLID 16/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060315 TM048	05/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT14ES1 0.15 - 0.30 SOLID 16/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060326 TM048	05/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT15ES1 0.40 - 0.50 SOLID 16/05/2023 00:00:00 26/05/2023 10:00:00 230526-70 28060307 TM048	06/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230526-70 **Report Number:** 692165 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	28060279	28060350	28060320	28060331	28060259	28060270	28060265	28060344	28060300	28060284
Customer Sample Ref.	BHT15	BHT17	TP301	TP302	TP303	TP304	TP305	TP306	TP308	TP309
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	7.00 - 7.00	5.50 - 5.50	0.70 - 0.80	0.90 - 1.00	2.20 - 2.30	2.30 - 2.40	0.80 - 0.90	1.50 - 1.60	1.30 - 1.40	0.30 - 0.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	03-Jun-2023	03-Jun-2023	03-Jun-2023	05-Jun-2023	05-Jun-2023	03-Jun-2023	03-Jun-2023	03-Jun-2023	03-Jun-2023	03-Jun-2023
Anions in soil by IC	05-Jun-2023	05-Jun-2023	05-Jun-2023	06-Jun-2023	06-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023
Asbestos ID in Solid Samples	06-Jun-2023	06-Jun-2023	05-Jun-2023	05-Jun-2023	06-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	06-Jun-2023	05-Jun-2023
Chromium III	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	01-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023
EPH CWG GC (S)	01-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
GRO by GC-FID (S)	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Hexavalent Chromium (s)	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
Magnesium (BRE)	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	05-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Metals in solid samples by OES	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
PAH by GCMS	31-May-2023	31-May-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	31-May-2023	01-Jun-2023	01-Jun-2023	31-May-2023	31-May-2023
PCBs by GCMS	05-Jun-2023	05-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	05-Jun-2023	02-Jun-2023	02-Jun-2023	05-Jun-2023	05-Jun-2023
pH	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023
Phenols by HPLC (S)	01-Jun-2023	01-Jun-2023	01-Jun-2023	31-May-2023	31-May-2023	31-May-2023	31-May-2023	31-May-2023	01-Jun-2023	31-May-2023
Sample description	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023
Semi Volatile Organic Compounds	31-May-2023	31-May-2023	02-Jun-2023	31-May-2023	31-May-2023	31-May-2023	31-May-2023	31-May-2023	02-Jun-2023	31-May-2023
Total Organic Carbon	09-Jun-2023	09-Jun-2023	09-Jun-2023	10-Jun-2023	09-Jun-2023	10-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023
Total Sulphate	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
Total Sulphur	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
TPH CWG GC (S)	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023
VOC MS (S)	05-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	05-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	03-Jun-2023	02-Jun-2023

Lab Sample No(s)	28060294	28060289	28060337	28060315	28060326	28060307
Customer Sample Ref.	TP310	TP311	TP307A	TPT13	TPT14	TPT15
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1
Depth	3.10 - 3.20	3.90 - 4.00	1.00 - 1.10	0.20 - 0.30	0.15 - 0.30	0.40 - 0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	03-Jun-2023	03-Jun-2023	03-Jun-2023	03-Jun-2023	03-Jun-2023	03-Jun-2023
Anions in soil by IC	05-Jun-2023	06-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023
Asbestos ID in Solid Samples	06-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	06-Jun-2023
Chromium III	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	02-Jun-2023
EPH CWG GC (S)	01-Jun-2023	01-Jun-2023	02-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
GRO by GC-FID (S)	01-Jun-2023	01-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	02-Jun-2023
Hexavalent Chromium (s)	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023	01-Jun-2023
Magnesium (BRE)	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Metals in solid samples by OES	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
PAH by GCMS	31-May-2023	31-May-2023	01-Jun-2023	31-May-2023	01-Jun-2023	31-May-2023
PCBs by GCMS	06-Jun-2023	01-Jun-2023	02-Jun-2023	05-Jun-2023	02-Jun-2023	01-Jun-2023
pH	02-Jun-2023	05-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
Phenols by HPLC (S)	31-May-2023	01-Jun-2023	31-May-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Sample description	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023	26-May-2023
Semi Volatile Organic Compounds	31-May-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	31-May-2023	31-May-2023
Total Organic Carbon	09-Jun-2023	10-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023
Total Sulphate	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
Total Sulphur	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
TPH CWG GC (S)	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023
VOC MS (S)	02-Jun-2023	02-Jun-2023	02-Jun-2023	02-Jun-2023	01-Jun-2023	02-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	12 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230601-67
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	692166
Order Number:	12380

We received 11 samples on Thursday June 01, 2023 and 11 of these samples were scheduled for analysis which was completed on Monday June 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28084622	TPT01	ES1	2.40 - 2.50	26/05/2023
28084638	TPT02	ES1	2.10 - 2.20	26/05/2023
28084645	TPT03	ES1	1.50 - 1.60	26/05/2023
28084651	TPT04	ES1	0.10 - 0.20	26/05/2023
28084656	TPT05	ES1	1.00 - 1.10	25/05/2023
28084661	TPT06	ES1	0.30 - 0.40	25/05/2023
28084666	TPT07	ES1	0.30 - 0.40	25/05/2023
28084671	TPT09	ES1	0.50 - 0.60	25/05/2023
28084676	TPT10	ES1	0.20 - 0.30	25/05/2023
28084627	TPT11	ES1	0.20 - 0.30	24/05/2023
28084633	TPT12	ES1	0.30 - 0.40	23/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28084622			28084638			28084645			28084651			28084656			28084661			28084666
Customer Sample Reference			TPT01			TPT02			TPT03			TPT04			TPT05			TPT06			TPT07
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			2.40 - 2.50			2.10 - 2.20			1.50 - 1.60			0.10 - 0.20			1.00 - 1.10			0.30 - 0.40			0.30 - 0.40
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Anions in soil by IC	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 11	X			X			X			X			X			X			X
Chromium III	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 11			X			X			X			X			X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Magnesium (BRE)	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Sample description	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28084622			28084638			28084645			28084651			28084656			28084661			28084666
Customer Sample Reference			TPT01			TPT02			TPT03			TPT04			TPT05			TPT06			TPT07
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			2.40 - 2.50			2.10 - 2.20			1.50 - 1.60			0.10 - 0.20			1.00 - 1.10			0.30 - 0.40			0.30 - 0.40
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 10					X			X			X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 11		X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 11			X			X			X			X			X			X	

28084633	TPT12	ES1	0.30 - 0.40	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		
				1kg TUB with Handle (ALE260)	S												
28084627	TPT11	ES1	0.20 - 0.30	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		
				1kg TUB with Handle (ALE260)	S												
28084676	TPT10	ES1	0.20 - 0.30	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		
				1kg TUB with Handle (ALE260)	S												
28084671	TPT09	ES1	0.50 - 0.60	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		
				1kg TUB with Handle (ALE260)	S												
28084666	TPT07	ES1	0.30 - 0.40	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28084622	TPT01	2.40 - 2.50	Beige	Sandy Silt Loam	Vegetation	None
28084638	TPT02	2.10 - 2.20	Dark Brown	Silt Loam	Stones	Vegetation
28084645	TPT03	1.50 - 1.60	Grey	Loamy Sand	Stones	None
28084651	TPT04	0.10 - 0.20	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28084656	TPT05	1.00 - 1.10	Grey	Silty Sand	None	None
28084661	TPT06	0.30 - 0.40	Dark Brown	Sandy Loam	Stones	Vegetation
28084666	TPT07	0.30 - 0.40	Dark Brown	Clay	Vegetation	None
28084671	TPT09	0.50 - 0.60	Dark Brown	Silty Sand	Stones	Vegetation
28084676	TPT10	0.20 - 0.30	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28084627	TPT11	0.20 - 0.30	Grey	Loamy Sand	Stones	None
28084633	TPT12	0.30 - 0.40	Dark Brown	Silt Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	47	46	22	26	26	16
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0012	0.000374	<0.0002	0.00048	0.000263	0.000318
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0896	0.199	0.0804	0.0125	0.0272	0.0493
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	0.0134 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	0.093 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	0.093 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.495 #	0.402 #	0.0651 #	0.0384 #	<0.02 #	<0.02 #
Organic Matter, Total	<0.35 %	TM132	3.12 #	9.65 #	0.945 #	2.88 #	2.95 #	1.18 #
Sulphate, Total potential	<0.06 %	TM132	1.49	1.21	0.195	0.115	0.06	0.06
pH	1 pH Units	TM133	8.07 M	7.19 M	8.46 M	7.15 M	8.36 M	8.11 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<105	<105	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<15 M	<15 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<180	<180	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	<0.9	36.1	5.73	34.7	5.72	11.6
Arsenic	<0.6 mg/kg	TM181	6.57 M	8 M	3.55 M	3.07 M	3.38 M	3.87 M
Barium	<0.6 mg/kg	TM181	338 #	69.5 #	8.24 #	30 #	14.9 #	49.9 #
Beryllium	<0.01 mg/kg	TM181	0.188 M	0.97 M	0.197 M	0.496 M	0.312 M	0.582 M
Cadmium	<0.02 mg/kg	TM181	0.107 M	1.67 M	0.546 M	1.47 M	0.644 M	0.681 M
Chromium	<0.9 mg/kg	TM181	<0.9 M	36.1 M	5.73 M	34.7 M	5.72 M	11.6 M
Copper	<1.4 mg/kg	TM181	<1.4 M	23.3 M	3.14 M	11.1 M	8.88 M	11.9 M
Lead	<0.7 mg/kg	TM181	<0.7 M	18.3 M	4.06 M	21.2 M	9.71 M	11.5 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	1.95 M	57.8 M	9.91 M	42.8 M	21.9 M	23.4 M
Selenium	<1 mg/kg	TM181	1.09 #	1.61 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	6.13 #	35.4 #	6.2 #	17.5 #	7.95 #	15.4 #
Zinc	<1.9 mg/kg	TM181	6.39 M	129 M	24.9 M	74.6 M	48.9 M	53 M
Sulphate, acid soluble (total)	<0.0048 %	TM221		0.136 M	0.0367 M	0.0152 M	0.0216 M	0.0348 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.007 M	0.0073 M	0.0066 M	0.0054 M	0.0047 M	0.0044 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Moisture Content Ratio (% of as received sample)	%	PM024	35	18	17	8.1	28
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0415	<0.0002	0.00183	0.00153	0.0105
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0262	0.0677	0.0124	0.0125	0.0187
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0203 #	0.0724 #	0.0322 #	<0.02 #	0.0463 #
Organic Matter, Total	<0.35 %	TM132	2.93 #	1.74 #	1.5 #	1.51 #	2.9 #
Sulphate, Total potential	<0.06 %	TM132	0.0609	0.217	0.0966	0.06	0.139
pH	1 pH Units	TM133	4.87 M	8.49 M	8.45 M	9.01 M	7.73 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 @ M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12	
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40	
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023	
Sample Time			.	.	.	.	.	
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633	
AGS Reference			ES1	ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	51.6	8.37	5.05	5.29	21.5	
Arsenic	<0.6 mg/kg	TM181	3.82 M	2.31 M	2.04 M	2.26 M	4.72 M	
Barium	<0.6 mg/kg	TM181	190 #	43.4 #	22.1 #	23.3 #	89.7 #	
Beryllium	<0.01 mg/kg	TM181	0.787 M	0.288 M	0.216 M	0.317 M	0.909 M	
Cadmium	<0.02 mg/kg	TM181	0.257 M	0.482 M	0.571 M	0.436 M	0.644 M	
Chromium	<0.9 mg/kg	TM181	51.6 M	8.37 M	5.05 M	5.29 M	21.5 M	
Copper	<1.4 mg/kg	TM181	2.46 M	5.72 M	3.71 M	6.22 M	11.7 M	
Lead	<0.7 mg/kg	TM181	27.6 M	5.6 M	4.04 M	5.55 M	17.1 M	
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	
Nickel	<0.2 mg/kg	TM181	32.1 M	14.2 M	10.2 M	12.5 M	33.3 M	
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	
Vanadium	<0.2 mg/kg	TM181	36.6 #	7.74 #	5.87 #	8.22 #	29.8 #	
Zinc	<1.9 mg/kg	TM181	91.6 M	35.1 M	21.2 M	32.5 M	48.6 M	
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0205 M	0.0688 M	0.0256 M	0.0155 M	0.0225 M	
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0049 M	0.0052 M	0.0052 M	0.004 M	0.0055 M	
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	

12:34:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	85.9	85.8	88.1	89.5	89.1	87.5
Acenaphthene-d10 % recovery**	%	TM218	91	91.8	93.2	97.2	93.7	92.4
Phenanthrene-d10 % recovery**	%	TM218	87.5	90.7	91.3	101	92	92.1
Chrysene-d12 % recovery**	%	TM218	97	103	102	109	99.1	98.6
Perylene-d12 % recovery**	%	TM218	87.1	88.1	90.4	92.1	88.7	89.4
Naphthalene	<9 µg/kg	TM218	<45 M	<18 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<60 M	<24 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<40 M	<16 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<50 M	<20 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<75 M	<30 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<80 M	<32 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<85 M	<34 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<75 M	<30 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<70 M	<28 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<50 M	<20 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<75 M	<30 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<70 M	<28 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<75 M	<30 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<90 M	<36 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<115 M	<46 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<120 M	<48 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<590	<236	<118	<118	<118	<118

12:34:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Naphthalene-d8 % recovery**	%	TM218	87.8	87.8	88.3	88.2	88.1
Acenaphthene-d10 % recovery**	%	TM218	93.4	93.4	92.3	92.9	93
Phenanthrene-d10 % recovery**	%	TM218	89.6	91.2	91.2	90.9	90.5
Chrysene-d12 % recovery**	%	TM218	97.2	98.1	103	101	100
Perylene-d12 % recovery**	%	TM218	86.3	87.3	93.8	90.2	89.3
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118

12:34:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<400	<100	<100	<200	<200	<200
Hexachlorobutadiene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<200	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	TPT07	TPT09	TPT10	TPT11	TPT12	
Customer Sample Ref.								
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40	
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023	
Sample Time			-	-	-	-	-	
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633	
AGS Reference			ES1	ES1	ES1	ES1	ES1	
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<400	<200	<200	<100	<100	
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPT07	TPT09	TPT10	TPT11	TPT12	
Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12	
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40	
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023	
Sample Time			.	.	.	.	.	
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633	
AGS Reference			ES1	ES1	ES1	ES1	ES1	
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	

12:34:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	89.7	78.3	91.7	87.3	137 4	93.5
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<2000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<2000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	3400 #	2500 #	<1000 #	<1000 #	<1000 #	1110 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	11300 #	21200 #	<1000 #	5740 #	<1000 #	3120 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1370	<2000	<1000	1500	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	16100	25600	<5000	7240	<5000	5020
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	45000	75800	<10000	58700	<10000	11200
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<2000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<2000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	2280 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	16800 #	33200 #	<1000 #	47000 #	2630 #	4240 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	11400	14700	1080	4070	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	2700	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	28900	50200	<5000	51500	<5000	6170
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	45000	75800	<10000	58700	<10000	11200
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50 4	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50 4	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20 4	<20

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
GRO Surrogate % recovery**	%	TM089	103	108	89.2	95.5	89 @
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 @
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 @
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 @
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1220 #	15200 #	2320 #	<1000 #	4000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	2710	<1000	<1000	1220
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	18700	<5000	<5000	5230
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	32200	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 @
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 @
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 @
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	2770 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	6500 #	6500 #	3920 #	<1000 #	2310 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	4270	2210	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	8440	13500	6350	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	32200	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50 @
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50 @
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20 @

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	122	112	121	101	118	115
Toluene-d8**	%	TM116	94.7	97.4	100	85.6	101	98.1
4-Bromofluorobenzene**	%	TM116	79.1	98	101	87	109	76.5
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<10 #	<5 #	<0.5 #	<0.5 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<40 #	<20 #	<2 #	<2 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<10 @ M	<5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<10 #	<5 #	<0.5 #	<0.5 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	109 M	38.9 M	31.2 M	<1 M	4.81 M	4.63 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<100 #	<50 #	<5 #	<5 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<20	<10	<1	<1	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<60 M	<30 M	<3 M	<3 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<20 #	<10 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<10 M	<5 M	<0.5 M	<0.5 M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	3.83 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<20	<10	<1	<1	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	<20 M	<10 M	<1 M	<1 M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	<40 #	<20 #	<2 #	<2 #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<40 @ #	<20 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<40 #	<20 #	<2 #	<2 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<40 #	<20 #	<2 #	<2 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<60 M	<30 M	<3 M	<3 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<60 M	<30 M	<3 M	<3 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<40 #	<20 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<60 #	<30 #	<3 #	<3 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<20	<10	<1	<1	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<40	<20	<2	<2	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<100 M	<50 M	<5 M	<5 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<100 M	<50 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<60	<30	<3	<3	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<100 M	<50 M	<5 M	<5 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<40 M	<20 M	<2 M	<2 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<20 #	<10 #	<1 #	<1 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<140	<70	<7	<7	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<80	<40	<4	<4	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<160 M	<80 M	<8 M	<8 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<200 #	<100 #	<10 #	<10 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<140	<70	<7	<7	<7

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT01	TPT02	TPT03	TPT04	TPT05	TPT06
Depth (m)			2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			26/05/2023	26/05/2023	26/05/2023	26/05/2023	25/05/2023	25/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084622	28084638	28084645	28084651	28084656	28084661
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.4	<0.2	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	<140	<70	<7	<7	<7

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CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Dibromofluoromethane**	%	TM116	112	112	100	114	107
Toluene-d8**	%	TM116	92.7	106	92.6	98.4	91.4
4-Bromofluorobenzene**	%	TM116	73.7	75.7	78.6	93	71.2
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<1 M	11.2 M	<1 M	<1 M	<1 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1	<1	<1	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M	3.73 M	<1 M	1.27 M	2.21 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023
Sample Time			.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #	<3 #	<3 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1	<1	<1	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2	<2	<2	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<3	<3	<3	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4	<4	<4	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7

12:34:26 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPT07	TPT09	TPT10	TPT11	TPT12
Depth (m)			0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30	0.30 - 0.40
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	25/05/2023	25/05/2023	24/05/2023	23/05/2023
Sample Time			.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-67	230601-67	230601-67	230601-67	230601-67
Lab Sample No.(s)			28084666	28084671	28084676	28084627	28084633
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	<7	<7	<7	<7

12:34:26 12/06/2023

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref.	TPT01ES1	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	2.40 - 2.50										
Sample Type	SOLID										
Date Sampled	26/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084622										
Method Number	TM048										
Cust. Sample Ref.	TPT02ES1	08/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	2.10 - 2.20										
Sample Type	SOLID										
Date Sampled	26/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084638										
Method Number	TM048										
Cust. Sample Ref.	TPT03ES1	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.50 - 1.60										
Sample Type	SOLID										
Date Sampled	26/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084645										
Method Number	TM048										
Cust. Sample Ref.	TPT04ES1	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.10 - 0.20										
Sample Type	SOLID										
Date Sampled	26/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084651										
Method Number	TM048										
Cust. Sample Ref.	TPT05ES1	08/06/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.00 - 1.10										
Sample Type	SOLID										
Date Sampled	25/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084656										
Method Number	TM048										
Cust. Sample Ref.	TPT06ES1	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.30 - 0.40										
Sample Type	SOLID										
Date Sampled	25/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084661										
Method Number	TM048										
Cust. Sample Ref.	TPT07ES1	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.30 - 0.40										
Sample Type	SOLID										
Date Sampled	25/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084666										
Method Number	TM048										
Cust. Sample Ref.	TPT09ES1	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.50 - 0.60										
Sample Type	SOLID										
Date Sampled	25/05/2023 00:00:00										
Date Receieved	01/06/2023 10:00:00										
SDG	230601-67										
Original Sample	28084671										
Method Number	TM048										

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT10ES1 0.20 - 0.30 SOLID 25/05/2023 00:00:00 01/06/2023 10:00:00 230601-67 28084676 TM048	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT11ES1 0.20 - 0.30 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-67 28084627 TM048	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT12ES1 0.30 - 0.40 SOLID 23/05/2023 00:00:00 01/06/2023 10:00:00 230601-67 28084633 TM048	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-67 **Report Number:** 692166 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	28084622	28084638	28084645	28084651	28084656	28084661	28084666	28084671	28084676	28084627
Customer Sample Ref.	TPT01	TPT02	TPT03	TPT04	TPT05	TPT06	TPT07	TPT09	TPT10	TPT11
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	2.40 - 2.50	2.10 - 2.20	1.50 - 1.60	0.10 - 0.20	1.00 - 1.10	0.30 - 0.40	0.30 - 0.40	0.50 - 0.60	0.20 - 0.30	0.20 - 0.30
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	07-Jun-2023	07-Jun-2023	06-Jun-2023	07-Jun-2023	07-Jun-2023	06-Jun-2023	07-Jun-2023	06-Jun-2023	07-Jun-2023	07-Jun-2023
Anions in soil by IC	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
Asbestos ID in Solid Samples	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
Chromium III	08-Jun-2023	08-Jun-2023	08-Jun-2023	07-Jun-2023	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
EPH CWG GC (S)	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
GRO by GC-FID (S)	07-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	08-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Hexavalent Chromium (s)	08-Jun-2023	08-Jun-2023	08-Jun-2023	06-Jun-2023	08-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Magnesium (BRE)	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Metals in solid samples by OES	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
PAH by GCMS	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
PCBs by GCMS	08-Jun-2023	12-Jun-2023	08-Jun-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
pH	06-Jun-2023	06-Jun-2023	06-Jun-2023	08-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Phenols by HPLC (S)	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	06-Jun-2023
Sample description	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Semi Volatile Organic Compounds	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Total Organic Carbon	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Total Sulphate		06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Total Sulphur	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
TPH CWG GC (S)	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
VOC MS (S)	07-Jun-2023	08-Jun-2023	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	06-Jun-2023

Lab Sample No(s)	28084633
Customer Sample Ref.	TPT12
AGS Ref.	ES1
Depth	0.30 - 0.40
Type	Soil/Solid (S)
Anions by Kone (soil)	07-Jun-2023
Anions in soil by IC	08-Jun-2023
Asbestos ID in Solid Samples	08-Jun-2023
Chromium III	07-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	07-Jun-2023
EPH CWG GC (S)	07-Jun-2023
GRO by GC-FID (S)	06-Jun-2023
Hexavalent Chromium (s)	06-Jun-2023
Magnesium (BRE)	06-Jun-2023
Metals in solid samples by OES	07-Jun-2023
PAH by GCMS	07-Jun-2023
PCBs by GCMS	09-Jun-2023
pH	06-Jun-2023
Phenols by HPLC (S)	05-Jun-2023
Sample description	01-Jun-2023
Semi Volatile Organic Compounds	06-Jun-2023
Total Organic Carbon	12-Jun-2023
Total Sulphate	06-Jun-2023
Total Sulphur	12-Jun-2023
TPH CWG GC (S)	07-Jun-2023
VOC MS (S)	06-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	13 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230601-68
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	692294
Order Number:	12380

We received 8 samples on Thursday June 01, 2023 and 8 of these samples were scheduled for analysis which was completed on Tuesday June 13, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28084693	TPBP01	ES1	1.40 - 1.50	23/05/2023
28084712	TPBP02	ES1	0.20 - 0.30	23/05/2023
28084719	TPBP03	ES1	0.20 - 0.30	23/05/2023
28084726	TPBP04	ES1	0.50 - 0.60	24/05/2023
28084732	TPBP05	ES1	0.50 - 0.60	23/05/2023
28084740	TPBP06	ES1	0.20 - 0.30	24/05/2023
28084745	TPBP07	ES1	0.30 - 0.40	24/05/2023
28084752	TPBP08	ES1	3.20 - 3.30	24/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28084693			28084712			28084719			28084726			28084732			28084740			28084745
Customer Sample Reference			TPBP01			TPBP02			TPBP03			TPBP04			TPBP05			TPBP06			TPBP07
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			1.40 - 1.50			0.20 - 0.30			0.20 - 0.30			0.50 - 0.60			0.50 - 0.60			0.20 - 0.30			0.30 - 0.40
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Anions in soil by IC	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Chromium III	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8			X			X			X			X			X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Magnesium (BRE)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Sample description	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		

28084752	TPBP08	ES1	3.20 - 3.30	60g VOC (ALE215)	S									X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X														
28084745	TPBP07	ES1	0.30 - 0.40	60g VOC (ALE215)	S									X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28084693			28084712			28084719			28084726			28084732			28084740			28084745
Customer Sample Reference			TPBP01			TPBP02			TPBP03			TPBP04			TPBP05			TPBP06			TPBP07
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			1.40 - 1.50			0.20 - 0.30			0.20 - 0.30			0.50 - 0.60			0.50 - 0.60			0.20 - 0.30			0.30 - 0.40
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 7		X						X			X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 8			X			X			X			X			X			X	

28084752	TPBP08	ES1	3.20 - 3.30	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		
				1kg TUB with Handle (ALE260)	S												
28084745	TPBP07	ES1	0.30 - 0.40	60g VOC (ALE215)	S												X
				250g Amber Jar (ALE210)	S		X		X		X		X		X		

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28084693	TPBP01	1.40 - 1.50	Dark Brown	Silt Loam	None	None
28084712	TPBP02	0.20 - 0.30	Light Brown	Clay Loam	Vegetation	Stones
28084719	TPBP03	0.20 - 0.30	Dark Brown	Sandy Loam	Stones	None
28084726	TPBP04	0.50 - 0.60	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28084732	TPBP05	0.50 - 0.60	Dark Brown	Sandy Loam	Stones	Vegetation
28084740	TPBP06	0.20 - 0.30	Dark Brown	Loamy Sand	Stones	Vegetation
28084745	TPBP07	0.30 - 0.40	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28084752	TPBP08	3.20 - 3.30	Grey	Sandy Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	61	25	4	38	22	1.8
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0016	0.000332	0.000859	0.00138	0.00228	0.00169
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.735	0.344	0.0115	0.378	0.0498	0.0146
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	2.9 #	0.303 #	0.0459 #	0.588 #	0.0995 #	0.0637 #
Organic Matter, Total	<0.35 %	TM132	27.9 #	15.4 #	7.36 #	9.76 #	6.95 #	0.638 #
Sulphate, Total potential	<0.06 %	TM132	8.7	0.909	0.138	1.76	0.299	0.191
pH	1 pH Units	TM133	5.56 M	8.2 M	8.79 M	7.75 M	9.03 M	9.02 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 @ M	<1 M	<1 @ M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<105	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<15 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<180	<36	<36

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	13.9	0.931	3.1	6.1	5.54	2.57
Arsenic	<0.6 mg/kg	TM181	51.8 M	2.56 M	3.14 M	14.7 M	3.91 M	2.15 M
Barium	<0.6 mg/kg	TM181	99.6 #	183 #	11.2 #	20 #	55 #	34.4 #
Beryllium	<0.01 mg/kg	TM181	0.681 M	0.18 M	0.158 M	0.428 M	0.28 M	0.152 M
Cadmium	<0.02 mg/kg	TM181	2.14 M	0.354 M	0.285 M	1.65 M	0.395 M	0.356 M
Chromium	<0.9 mg/kg	TM181	13.9 M	0.931 M	3.1 M	6.1 M	5.54 M	2.57 M
Copper	<1.4 mg/kg	TM181	20.9 M	3.47 M	2.63 M	23.7 M	5.08 M	2.23 M
Lead	<0.7 mg/kg	TM181	20.8 M	2.38 M	2.2 M	6.82 M	4.69 M	2.18 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	54.7 M	7 M	6.45 M	29.4 M	14 M	4.94 M
Selenium	<1 mg/kg	TM181	24.1 #	1.25 #	<1 #	8.47 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	22.5 #	3.93 #	3.74 #	9.96 #	7.04 #	5.09 #
Zinc	<1.9 mg/kg	TM181	165 M	24.9 M	13.4 M	71.6 M	31.1 M	17.6 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.866 M		0.0332 M	0.143 M	0.0587 M	0.0576 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.063 M	0.0049 M	0.0045 M	0.012 M	0.0095 M	0.0052 M
Magnesium (BRE)	<0.008 g/l	TM282	0.00867	<0.008	<0.008	<0.008	<0.008	<0.008

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CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPBP07	TPBP08				
Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			-	-				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Moisture Content Ratio (% of as received sample)	%	PM024	25	7.5				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0105	0.000433				
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0219	0.0119				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Sulphur, Total	<0.02 %	TM132	0.062 #	0.0545 #				
Organic Matter, Total	<0.35 %	TM132	2.5 #	5.17 #				
Sulphate, Total potential	<0.06 %	TM132	0.186	0.164				
pH	1 pH Units	TM133	8.4 M	9.07 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			.	.				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	14.3	5.79				
Arsenic	<0.6 mg/kg	TM181	8.89 M	1.56 M				
Barium	<0.6 mg/kg	TM181	61.9 #	39 #				
Beryllium	<0.01 mg/kg	TM181	0.667 M	0.32 M				
Cadmium	<0.02 mg/kg	TM181	0.791 M	0.778 M				
Chromium	<0.9 mg/kg	TM181	14.3 M	5.79 M				
Copper	<1.4 mg/kg	TM181	8.52 M	8.36 M				
Lead	<0.7 mg/kg	TM181	12.8 M	5.82 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181	30.5 M	15.9 M				
Selenium	<1 mg/kg	TM181	<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	18.1 #	8.81 #				
Zinc	<1.9 mg/kg	TM181	72.4 M	41 M				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0339 M	0.0318 M				
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.005 M	0.0029 M				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				

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CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	86.4	88.7	86.8	82.9	87.3	87.8
Acenaphthene-d10 % recovery**	%	TM218	97.1	94.6	92.4	88.3	92.4	93.8
Phenanthrene-d10 % recovery**	%	TM218	104	96.4	92.3	89.5	93.3	93.3
Chrysene-d12 % recovery**	%	TM218	106	109	103	105	106	102
Perylene-d12 % recovery**	%	TM218	93.2	96	91.5	87.7	91.5	92.3
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M	<9 @ M	<45 M	<9 @ M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M	<12 @ M	<60 M	<12 @ M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M	<8 @ M	<40 M	<8 @ M	<8 M
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<50 M	<10 @ M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<75 M	<15 @ M	<15 M
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M	<16 @ M	<80 M	<16 @ M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M	<17 @ M	<85 M	<17 @ M	<17 M
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<75 M	<15 @ M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<70 M	<14 @ M	<14 M
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<50 M	<10 @ M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<75 M	<15 @ M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<70 M	<14 @ M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<75 M	<15 @ M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M	<18 @ M	<90 M	<18 @ M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M	<23 @ M	<115 M	<23 @ M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M	<24 @ M	<120 M	<24 @ M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<590	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			-	-				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	86.9	86.8				
Acenaphthene-d10 % recovery**	%	TM218	93.2	92.3				
Phenanthrene-d10 % recovery**	%	TM218	93.8	88.7				
Chrysene-d12 % recovery**	%	TM218	106	92.7				
Perylene-d12 % recovery**	%	TM218	93.1	80.2				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M				
Pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M				
Chrysene	<10 µg/kg	TM218	<10 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				

12:03:26 13/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Isophorone	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<400	<200	<200	<1000	<200	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Carbazole	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Azobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Acenaphthene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Anthracene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Chrysene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Fluoranthene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Fluorene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Phenanthrene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Pyrene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Naphthalene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<200	<200	<100	<500	<100	<100

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			-	-				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<200	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	TPBP07	TPBP08				
Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			.	.				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Acenaphthylene	<100 µg/kg	TM157	<100	<100				
Acenaphthene	<100 µg/kg	TM157	<100	<100				
Anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Fluoranthene	<100 µg/kg	TM157	<100	<100				
Fluorene	<100 µg/kg	TM157	<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100				
Phenanthrene	<100 µg/kg	TM157	<100	<100				
Pyrene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

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CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	60.5 4 @	80.8 @	91.8 @	93	78.6 @	95.9
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 4 @	<10 @	<10 @	<10	<10 @	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 4 @	<10 @	<10 @	<10	<10 @	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 4 @	<10 @	<10 @	<10	<10 @	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	9860 #	<1000 #	<1000 #	3110 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	36900 #	8070 #	3190 #	16200 #	<1000 #	5710 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	9430	<1000	<1000	1630	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	56200	9480	<5000	21000	<5000	6270
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	198000	19200	<10000	82900	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 4 @	<10 @	<10 @	<10	<10 @	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 4 @	<10 @	<10 @	<10	<10 @	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 4 @	<10 @	<10 @	<10	<10 @	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	16200 #	<1000 #	<1000 #	1960 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	90600 #	6570 #	4620 #	36400 #	2200 #	1190 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	34200	2420	<1000	23600	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	11700	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	141000	9700	6200	61900	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	198000	19200	<10000	82900	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 4 @	<50 @	<50 @	<50	<50 @	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 4 @	<50 @	<50 @	<50	<50 @	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 4 @	<20 @	<20 @	<20	<20 @	<20

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			-	-				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	100	99.2				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1060 #	<1000 #				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	4860 #	<1000 #				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	6170	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20				

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			-	-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	108 @	109 @	111 @	109	121 @	108
Toluene-d8**	%	TM116	97.2 @	82 @	97.2 @	98.7	98.6 @	98.7
4-Bromofluorobenzene**	%	TM116	95.5 @	79.1 @	83.9 @	79.1	101 @	102
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<10 @ #	<0.5 @ #	<0.5 @ #	<0.5 #	<10 @ #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #	<2 #	<40 @ #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Chloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 @ #	<0.5 @ #	<0.5 @ #	<0.5 #	<10 @ #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	1570 @ M	2.95 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Dichloromethane	<5 µg/kg	TM116	<100 @ #	<5 @ #	<5 @ #	<5 #	<100 @ #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<20 @	<1 @	<1 @	<1	<20 @	<1
Bromochloromethane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Chloroform	<3 µg/kg	TM116	<60 @ M	<3 @ M	<3 @ M	<3 M	<60 @ M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Benzene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Trichloroethene	<1 µg/kg	TM116	<20 @ #	<1 @ #	<1 @ #	<1 #	<20 @ #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<10 @ M	<0.5 M
Toluene	<1 µg/kg	TM116	<20 @ M	<1 @ M	2.82 @ M	1.81 M	<20 @ M	2.08 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<20 @	<1 @	<1 @	<1	<20 @	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<1 @ M	<1 M	<20 @ M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #	<2 #	<40 @ #	<2 #
o-Xylene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Styrene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #	<2 #	<40 @ #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #	<2 #	<40 @ #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Bromobenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Propylbenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<60 @ M	<3 @ M	<3 @ M	<3 M	<60 @ M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<60 @ M	<3 @ M	<3 @ M	<3 M	<60 @ M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #	<2 #	<40 @ #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<60 @ #	<3 @ #	<3 @ #	<3 #	<60 @ #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<20 @	<1 @	<1 @	<1	<20 @	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<40 @	<2 @	<2 @	<2	<40 @	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<5 @ M	<5 M	<100 @ M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<5 @ M	<5 M	<100 @ M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<60 @	<3 @	<3 @	<3	<60 @	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<5 @ M	<5 M	<100 @ M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<2 @ M	<2 M	<40 @ M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<20 @ #	<1 @ #	<1 @ #	<1 #	<20 @ #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<140 @	<7 @	<7 @	<7	<140 @	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<80 @	<4 @	<4 @	<4	<80 @	<4
Naphthalene	<8 µg/kg	TM116	<160 @ M	<8 @ M	<8 @ M	<8 M	<160 @ M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<200 @ #	<10 @ #	<10 @ #	<10 #	<200 @ #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<140	<7	<7	<7	<140	<7

12:03:26 13/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06
Depth (m)			1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			23/05/2023	23/05/2023	23/05/2023	24/05/2023	23/05/2023	24/05/2023
Sample Time			.	.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-68	230601-68	230601-68	230601-68	230601-68	230601-68
Lab Sample No.(s)			28084693	28084712	28084719	28084726	28084732	28084740
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4 @	<0.02 @	<0.02 @	<0.02	<0.4 @	<0.02
Sum of BTEX	<7 µg/kg	TM116	<140 @	<7 @	<7 @	<7	<140 @	<7

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CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPBP07	TPBP08				
Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			-	-				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Dibromofluoromethane**	%	TM116	119	121				
Toluene-d8**	%	TM116	84.7	97.1				
4-Bromofluorobenzene**	%	TM116	77.9	74.8				
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #				
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #				
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M				
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M				
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M				
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #				
Carbon Disulphide	<1 µg/kg	TM116	<1 M	2.89 M				
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M				
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1				
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M				
Chloroform	<3 µg/kg	TM116	<3 M	<3 M				
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M				
Benzene	<1 µg/kg	TM116	<1 M	<1 M				
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #				
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M				
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M				
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
Toluene	<1 µg/kg	TM116	1.72 M	6.59 M				
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1				
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M				
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			.	.				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M				
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M				
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M				
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M				
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M				
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M				
p/m-Xylene	<2 µg/kg	TM116	<2 #	2.5 #				
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M				
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #				
Bromoform	<2 µg/kg	TM116	<2 M	<2 M				
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #				
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #				
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M				
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M				
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M				
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M				
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M				
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M				
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #				
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #				
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1				
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2				
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
n-Butylbenzene	<3 µg/kg	TM116	<3	<3				
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M				
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #				
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7				
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4				
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M				
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #				
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-68 **Report Number:** 692294 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPBP07	TPBP08				
Depth (m)			0.30 - 0.40	3.20 - 3.30				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			24/05/2023	24/05/2023				
Sample Time			.	.				
Date Received			01/06/2023	01/06/2023				
SDG Ref			230601-68	230601-68				
Lab Sample No.(s)			28084745	28084752				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02				
Sum of BTEX	<7 µg/kg	TM116	<7	9.09				

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Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP01ES1 1.40 - 1.50 SOLID 23/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084693 TM048	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP02ES1 0.20 - 0.30 SOLID 23/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084712 TM048	08/06/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP03ES1 0.20 - 0.30 SOLID 23/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084719 TM048	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP04ES1 0.50 - 0.60 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084726 TM048	05/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP05ES1 0.50 - 0.60 SOLID 23/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084732 TM048	08/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP06ES1 0.20 - 0.30 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084740 TM048	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP07ES1 0.30 - 0.40 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084745 TM048	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPBP08ES1 3.20 - 3.30 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-68 28084752 TM048	08/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28084693	28084712	28084719	28084726	28084732	28084740	28084745	28084752
Customer Sample Ref.	TPBP01	TPBP02	TPBP03	TPBP04	TPBP05	TPBP06	TPBP07	TPBP08
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	1.40 - 1.50	0.20 - 0.30	0.20 - 0.30	0.50 - 0.60	0.50 - 0.60	0.20 - 0.30	0.30 - 0.40	3.20 - 3.30
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	08-Jun-2023	07-Jun-2023	06-Jun-2023	07-Jun-2023	07-Jun-2023	06-Jun-2023	07-Jun-2023	06-Jun-2023
Anions in soil by IC	09-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
Asbestos ID in Solid Samples	08-Jun-2023	08-Jun-2023	08-Jun-2023	05-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
Chromium III	07-Jun-2023	07-Jun-2023	07-Jun-2023	08-Jun-2023	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
EPH CWG GC (S)	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
GRO by GC-FID (S)	08-Jun-2023	06-Jun-2023	07-Jun-2023	07-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Hexavalent Chromium (s)	06-Jun-2023	06-Jun-2023	06-Jun-2023	08-Jun-2023	08-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Magnesium (BRE)	08-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Metals in solid samples by OES	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
PAH by GCMS	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
PCBs by GCMS	12-Jun-2023	12-Jun-2023	08-Jun-2023	12-Jun-2023	12-Jun-2023	08-Jun-2023	12-Jun-2023	08-Jun-2023
pH	06-Jun-2023	08-Jun-2023	06-Jun-2023	06-Jun-2023	08-Jun-2023	06-Jun-2023	08-Jun-2023	06-Jun-2023
Phenols by HPLC (S)	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023	06-Jun-2023
Sample description	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Semi Volatile Organic Compounds	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Total Organic Carbon	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Total Sulphate	06-Jun-2023		06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Total Sulphur	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	13-Jun-2023	12-Jun-2023	12-Jun-2023
TPH CWG GC (S)	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
VOC MS (S)	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	12 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230601-71
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	692167
Order Number:	12380

We received 5 samples on Thursday June 01, 2023 and 5 of these samples were scheduled for analysis which was completed on Monday June 12, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28084795	BHT10	ES1	5.50 - 5.50	25/05/2023
28084813	BHT11	ES1	5.00 - 5.00	24/05/2023
28084821	BHT12	ES1	6.00 - 6.00	24/05/2023
28084829	BHT13	ES1	3.00 - 3.00	24/05/2023
28084834	BHT14	ES1	1.50 - 1.50	19/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

		Lab Sample No(s)	28084795			28084813			28084821			28084829			28084834	
		Customer Sample Reference	BHT10			BHT11			BHT12			BHT13			BHT14	
		AGS Reference	ES1			ES1			ES1			ES1			ES1	
		Depth (m)	5.50 - 5.50			5.00 - 5.00			6.00 - 6.00			3.00 - 3.00			1.50 - 1.50	
		Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
		Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 5		X			X			X			X		X
Anions in soil by IC	All	NDPs: 0 Tests: 5		X			X			X			X		X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5	X			X			X			X		X	
Chromium III	All	NDPs: 0 Tests: 5		X			X			X			X		X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5		X			X			X			X		X
EPH CWG GC (S)	All	NDPs: 0 Tests: 5		X			X			X			X		X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 5			X			X			X		X		X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 5		X			X			X			X		X
Magnesium (BRE)	All	NDPs: 0 Tests: 5		X			X			X			X		X
Metals in solid samples by OES	All	NDPs: 0 Tests: 5		X			X			X			X		X
PAH by GCMS	All	NDPs: 0 Tests: 5		X			X			X			X		X
PCBs by GCMS	All	NDPs: 0 Tests: 5		X			X			X			X		X
pH	All	NDPs: 0 Tests: 5		X			X			X			X		X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 5		X			X			X			X		X
Sample description	All	NDPs: 0 Tests: 5		X			X			X			X		X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)				28084795			28084813			28084821			28084829		28084834
Customer Sample Reference				BHT10			BHT11			BHT12			BHT13		BHT14
AGS Reference				ES1			ES1			ES1			ES1		ES1
Depth (m)				5.50 - 5.50			5.00 - 5.00			6.00 - 6.00			3.00 - 3.00		1.50 - 1.50
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type				S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 5			X			X			X			X		X
Total Organic Carbon	All	NDPs: 0 Tests: 5			X			X			X			X		X
Total Sulphate	All	NDPs: 0 Tests: 5			X			X			X			X		X
Total Sulphur	All	NDPs: 0 Tests: 5			X			X			X			X		X
TPH CWG GC (S)	All	NDPs: 0 Tests: 5			X			X			X			X		X
VOC MS (S)	All	NDPs: 0 Tests: 5				X			X			X		X		X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28084795	BHT10	5.50 - 5.50	Grey	Silty Clay	Stones	None
28084813	BHT11	5.00 - 5.00	Dark Brown	Sand	Stones	Vegetation
28084821	BHT12	6.00 - 6.00	Grey	Sand	Stones	None
28084829	BHT13	3.00 - 3.00	Grey	Sand	Stones	Vegetation
28084834	BHT14	1.50 - 1.50	Dark Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Moisture Content Ratio (% of as received sample)	%	PM024	19	2.8	9	3	8.9
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00036	0.00026	0.000249	<0.0002	0.000256
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.018	0.0169	0.0253	0.0174	0.013
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 @ M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 @ M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 @ M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 @ M
Sulphur, Total	<0.02 %	TM132	0.0825 #	0.0458 #	0.112 #	0.0491 #	0.0285 #
Organic Matter, Total	<0.35 %	TM132	0.46 #	0.402 #	<0.35 #	<0.35 #	0.648 #
Sulphate, Total potential	<0.06 %	TM132	0.248	0.137	0.336	0.147	0.0855
pH	1 pH Units	TM133	8.64 M	9.61 M	9.43 M	9.66 M	8.93 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 @ M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14	
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50	
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023	
Sample Time			.	.	.	.	.	
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023	
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71	
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834	
AGS Reference			ES1	ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	5.21	4.26	4.1	3.23	8.52	
Arsenic	<0.6 mg/kg	TM181	1.88 M	2.38 M	2.17 M	1.71 M	1.9 M	
Barium	<0.6 mg/kg	TM181	40.8 #	10.4 #	7.45 #	9.37 #	8.27 #	
Beryllium	<0.01 mg/kg	TM181	0.461 M	0.216 M	0.167 M	0.199 M	0.237 M	
Cadmium	<0.02 mg/kg	TM181	0.875 M	0.344 M	0.379 M	0.44 M	0.385 M	
Chromium	<0.9 mg/kg	TM181	5.21 M	4.26 M	4.1 M	3.23 M	8.52 M	
Copper	<1.4 mg/kg	TM181	12.3 M	4.47 M	4.11 M	4.22 M	4.38 M	
Lead	<0.7 mg/kg	TM181	10.2 M	3.64 M	3.03 M	3.43 M	7.1 M	
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	
Nickel	<0.2 mg/kg	TM181	22.2 M	14.8 M	15.3 M	8.95 M	15 M	
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	
Vanadium	<0.2 mg/kg	TM181	10.3 #	4.46 #	4.58 #	4.32 #	4.65 #	
Zinc	<1.9 mg/kg	TM181	55.2 M	27.8 M	17.8 M	26.1 M	29.4 M	
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0186 M	0.0314 M	0.0273 M	0.0245 M	0.0227 M	
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.004 M	0.0037 M	0.004 M	0.0034 M	0.0037 M	
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Naphthalene-d8 % recovery**	%	TM218	87.7	88.3	87.8	87.3	88
Acenaphthene-d10 % recovery**	%	TM218	92.4	92.9	91.8	91.9	92
Phenanthrene-d10 % recovery**	%	TM218	87.3	87.7	87.9	88.5	88.9
Chrysene-d12 % recovery**	%	TM218	93.7	87.5	96.7	98.6	97.2
Perylene-d12 % recovery**	%	TM218	80.9	78.6	86.8	89	88.3
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118

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CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<200	<200	<200	<200
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
GRO Surrogate % recovery**	%	TM089	62 4	103	113	89.7 2	90 2
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10	<10 2	<10 2
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10	<10 2	<10 2
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10	<10 2	<10 2
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	2660 #	<1000 #	2140 @ #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000 @
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000 @
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10	<10 2	<10 2
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10	<10 2	<10 2
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10	<10 2	<10 2
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	4110 @ #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000 @
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000 @
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	5390
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 4	<50	<50	<50 2	<50 2
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 4	<50	<50	<50 2	<50 2
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 4	<20	<20	<20 2	<20 2

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
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- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			-	-	-	-	-
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Dibromofluoromethane**	%	TM116	117	112	109	119 2	160 2
Toluene-d8**	%	TM116	91.6	116	98.6	101 2	105 2
4-Bromofluorobenzene**	%	TM116	91.5	91.2	110	98.3 2	100 2
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<5 #	<0.5 #	<0.5 #	<0.5 2 #	<0.5 2 #
Chloromethane	<2 µg/kg	TM116	<20 #	<2 #	<2 #	<2 2 #	<2 2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<5 @ M	<0.5 @ M	<0.5 @ M	<0.5 2 M	<0.5 2 M
Bromomethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Chloroethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<5 #	<0.5 #	<0.5 #	<0.5 2 #	<0.5 2 #
Carbon Disulphide	<1 µg/kg	TM116	<10 M	1.06 M	<1 M	<1 2 M	3.61 2 M
Dichloromethane	<5 µg/kg	TM116	<50 #	<5 #	<5 #	23.1 2 #	31.3 2 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<1	<1	<1 2	<1 2
Bromochloromethane	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Chloroform	<3 µg/kg	TM116	<30 M	<3 M	<3 M	<3 2 M	<3 2 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
Carbontetrachloride	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
1,2-Dichloroethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Benzene	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Trichloroethene	<1 µg/kg	TM116	<10 #	<1 #	<1 #	<1 2 #	<1 2 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
Dibromomethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Bromodichloromethane	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<5 M	<0.5 M	<0.5 M	<0.5 2 M	<0.5 2 M
Toluene	<1 µg/kg	TM116	<10 M	4.14 M	10 M	<1 2 M	2.04 2 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<1	<1	<1 2	<1 2
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
1,3-Dichloropropane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT10	BHT11	BHT12	BHT13	BHT14
Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Dibromochloromethane	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Chlorobenzene	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<1 M	<1 M	<1 2 M	<1 2 M
Ethylbenzene	<1 µg/kg	TM116	<10 M	<1 M	1.54 M	<1 2 M	<1 2 M
p/m-Xylene	<2 µg/kg	TM116	<20 #	<2 #	4.11 #	<2 2 #	<2 2 #
o-Xylene	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Styrene	<2 µg/kg	TM116	<20 @ #	<2 @ #	<2 @ #	<2 2 #	<2 2 #
Bromoform	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Isopropylbenzene	<2 µg/kg	TM116	<20 #	<2 #	<2 #	<2 2 #	<2 2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<20 #	<2 #	<2 #	<2 2 #	<2 2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Bromobenzene	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Propylbenzene	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
2-Chlorotoluene	<3 µg/kg	TM116	<30 M	<3 M	<3 M	<3 2 M	<3 2 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
4-Chlorotoluene	<3 µg/kg	TM116	<30 M	<3 M	<3 M	<3 2 M	<3 2 M
tert-Butylbenzene	<2 µg/kg	TM116	<20 #	<2 #	<2 #	<2 2 #	<2 2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<30 #	<3 #	<3 #	<3 2 #	<3 2 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<1	<1	<1 2	<1 2
4-Isopropyltoluene	<2 µg/kg	TM116	<20	<2	<2	<2 2	<2 2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M	<5 M	<5 2 M	<5 2 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M	<5 M	<5 2 M	<5 2 M
n-Butylbenzene	<3 µg/kg	TM116	<30	<3	<3	<3 2	<3 2
1,2-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M	<5 M	<5 2 M	<5 2 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<20 M	<2 M	<2 M	<2 2 M	<2 2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<1 #	<1 #	<1 2 #	<1 2 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<70	<7	<7	<7 2	<7 2
Hexachlorobutadiene	<4 µg/kg	TM116	<40	<4	<4	<4 2	<4 2
Naphthalene	<8 µg/kg	TM116	<80 M	<8 M	<8 M	<8 2 M	<8 2 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<100 #	<10 #	<10 #	<10 2 #	<10 2 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<70	<7	<7	<7 2	<7 2

12:35:19 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT10	BHT11	BHT12	BHT13	BHT14
Depth (m)			5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2023	24/05/2023	24/05/2023	24/05/2023	19/05/2023
Sample Time			.	.	.	.	.
Date Received			01/06/2023	01/06/2023	01/06/2023	01/06/2023	01/06/2023
SDG Ref			230601-71	230601-71	230601-71	230601-71	230601-71
Lab Sample No.(s)			28084795	28084813	28084821	28084829	28084834
AGS Reference			ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**					
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.2	<0.02	<0.02	<0.02 2	<0.02 2
Sum of BTEX	<7 µg/kg	TM116	<70	<7	15.7	<7 2	<7 2

12:35:19 12/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT10ES1 5.50 - 5.50 SOLID 25/05/2023 00:00:00 01/06/2023 10:00:00 230601-71 28084795 TM048	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT11ES1 5.00 - 5.00 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-71 28084813 TM048	07/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT12ES1 6.00 - 6.00 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-71 28084821 TM048	07/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT13ES1 3.00 - 3.00 SOLID 24/05/2023 00:00:00 01/06/2023 10:00:00 230601-71 28084829 TM048	08/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT14ES1 1.50 - 1.50 SOLID 19/05/2023 00:00:00 01/06/2023 10:00:00 230601-71 28084834 TM048	08/06/2023	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230601-71 **Report Number:** 692167 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	28084795	28084813	28084821	28084829	28084834
Customer Sample Ref.	BHT10	BHT11	BHT12	BHT13	BHT14
AGS Ref.	ES1	ES1	ES1	ES1	ES1
Depth	5.50 - 5.50	5.00 - 5.00	6.00 - 6.00	3.00 - 3.00	1.50 - 1.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	07-Jun-2023	07-Jun-2023	06-Jun-2023	06-Jun-2023	07-Jun-2023
Anions in soil by IC	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
Asbestos ID in Solid Samples	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
Chromium III	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
EPH CWG GC (S)	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
GRO by GC-FID (S)	08-Jun-2023	06-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
Hexavalent Chromium (s)	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Magnesium (BRE)	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Metals in solid samples by OES	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
PAH by GCMS	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
PCBs by GCMS	08-Jun-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
pH	06-Jun-2023	08-Jun-2023	06-Jun-2023	08-Jun-2023	06-Jun-2023
Phenols by HPLC (S)	06-Jun-2023	06-Jun-2023	05-Jun-2023	05-Jun-2023	05-Jun-2023
Sample description	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023	01-Jun-2023
Semi Volatile Organic Compounds	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Total Organic Carbon	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Total Sulphate	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Total Sulphur	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
TPH CWG GC (S)	08-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
VOC MS (S)	08-Jun-2023	07-Jun-2023	07-Jun-2023	08-Jun-2023	08-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	15 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230605-71
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	692601
Order Number:	12380

We received 13 samples on Monday June 05, 2023 and 13 of these samples were scheduled for analysis which was completed on Thursday June 15, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28101530	BHT05	ES1	5.00 - 5.00	01/06/2023
28101525	BHT07	ES1	5.50 - 5.50	31/05/2023
28101519	BHT09	ES1	6.00 - 6.00	29/05/2023
28101471	TP312	ES1	1.20 - 1.30	30/05/2023
28101513	TP313	ES1	0.50 - 0.60	31/05/2023
28101535	TPC01	ES1	2.60 - 2.70	29/05/2023
28101540	TPC02	ES1	2.50 - 2.60	29/05/2023
28101477	TPC03	ES1	3.20 - 3.30	30/05/2023
28101482	TPC04	ES1	1.60 - 1.70	30/05/2023
28101487	TPC05	ES1	0.50 - 0.60	30/05/2023
28101497	TPC06	ES1	2.50 - 2.60	30/05/2023
28101508	TPC07	ES1	1.40 - 1.50	30/05/2023
28101492	TPCC01	ES1	2.90 - 3.00	29/05/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28101530			28101525			28101519			28101471			28101513			28101535			28101540
Customer Sample Reference			BHT05			BHT07			BHT09			TP312			TP313			TPC01			TPC02
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1			ES1
Depth (m)			5.00 - 5.00			5.50 - 5.50			6.00 - 6.00			1.20 - 1.30			0.50 - 0.60			2.60 - 2.70			2.50 - 2.60
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 1 Tests: 12		X			X			X			X			X			X		
Anions in soil by IC	All	NDPs: 1 Tests: 12		X			X			X			X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 13	X			X			X			X			X			X			X
Chromium III	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 13			X			X			X			X			X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
Magnesium (BRE)	All	NDPs: 1 Tests: 12		X			X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		
Sample description	All	NDPs: 0 Tests: 13		X			X			X			X			X			X		

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					28101530			28101525			28101519			28101471			28101513			28101535		28101540
Customer Sample Reference					BHT05			BHT07			BHT09			TP312			TP313			TPC01		TPC02
AGS Reference					ES1			ES1			ES1			ES1			ES1			ES1		ES1
Depth (m)					5.00 - 5.00			5.50 - 5.50			6.00 - 6.00			1.20 - 1.30			0.50 - 0.60			2.60 - 2.70		2.50 - 2.60
Container					1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type					S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 13				X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 13				X			X			X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 13				X			X			X			X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 13				X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 13				X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 13					X			X			X			X			X			X	

28101492	TPCC01	ES1	2.90 - 3.00	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28101508	TPC07	ES1	1.40 - 1.50	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28101497	TPC06	ES1	2.50 - 2.60	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28101487	TPC05	ES1	0.50 - 0.60	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28101482	TPC04	ES1	1.60 - 1.70	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28101477	TPC03	ES1	3.20 - 3.30	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	
				1kg TUB with Handle (ALE260)	S						
28101540	TPC02	ES1	2.50 - 2.60	60g VOC (ALE215)	S						X
				250g Amber Jar (ALE210)	S	X	X	X	X	X	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28101530	BHT05	5.00 - 5.00	Grey	Loamy Sand	Vegetation	None
28101525	BHT07	5.50 - 5.50	Dark Brown	Sand	Stones	None
28101519	BHT09	6.00 - 6.00	Grey	Sandy Clay	Stones	None
28101471	TP312	1.20 - 1.30	Grey	Sandy Silt Loam	Stones	None
28101513	TP313	0.50 - 0.60	Dark Brown	Loamy Sand	Stones	None
28101535	TPC01	2.60 - 2.70	Grey	Sandy Loam	Stones	None
28101540	TPC02	2.50 - 2.60	Dark Brown	Sandy Clay Loam	Stones	None
28101477	TPC03	3.20 - 3.30	Grey	Sandy Loam	Stones	None
28101482	TPC04	1.60 - 1.70	Grey	Sandy Silt Loam	Stones	Vegetation
28101487	TPC05	0.50 - 0.60	Dark Brown	Silt Loam	Stones	Vegetation
28101497	TPC06	2.50 - 2.60	Dark Brown	Silt Loam	Vegetation	None
28101508	TPC07	1.40 - 1.50	Grey	Sandy Silt Loam	Stones	None
28101492	TPCC01	2.90 - 3.00	Dark Brown	Sandy Silt Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	19	3.7	8	9.6	12	20
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000218	<0.0002	0.000253	<0.0002	0.0172	<0.0002
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0204	0.0171	0.0226	0.0171	0.0119	0.02
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.0895 #	0.0608 #	0.0673 #	0.0462 #	0.0391 #	0.0307 #
Organic Matter, Total	<0.35 %	TM132	2.78 #	7.52 #	2.69 #	0.802 #	3.69 #	0.731 #
Sulphate, Total potential	<0.06 %	TM132	0.269	0.182	0.202	0.139	0.117	0.0921
pH	1 pH Units	TM133	8.94 M	9.46 M	8.66 M	8.4 M	8.59 M	8.48 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	7.44	3.07	7.52	7.08	2.66	17.9
Arsenic	<0.6 mg/kg	TM181	2.36 M	2.05 M	3.65 M	3.02 M	3.02 M	4.14 M
Barium	<0.6 mg/kg	TM181	10 #	7.03 #	74.2 #	29.4 #	16.1 #	22.6 #
Beryllium	<0.01 mg/kg	TM181	0.169 M	0.17 M	0.317 M	0.43 M	0.206 M	0.356 M
Cadmium	<0.02 mg/kg	TM181	0.423 M	0.302 M	0.836 M	0.906 M	0.358 M	0.591 M
Chromium	<0.9 mg/kg	TM181	7.44 M	3.07 M	7.52 M	7.08 M	2.66 M	17.9 M
Copper	<1.4 mg/kg	TM181	5.88 M	3.74 M	10.5 M	10.5 M	4.3 M	7.38 M
Lead	<0.7 mg/kg	TM181	4.88 M	3.86 M	7 M	9.97 M	4.1 M	7.36 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	11.5 M	9.32 M	22.3 M	40.7 M	11.4 M	28.2 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	1.18 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	4.75 #	4.51 #	11.6 #	13.3 #	4.85 #	14.9 #
Zinc	<1.9 mg/kg	TM181	38.8 M	20.7 M	51.7 M	75 M	28.6 M	46 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0314 M	0.0422 M	0.0278 M	0.0238 M	0.0437 M	0.0412 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0054 M	0.0038 M	0.0038 M	0.0084 M	0.0136 M	0.0071 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

08:28:18 15/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	20	14	21	85	29	28
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	<0.0002	0.000355	<0.0002		0.00096	<0.0002
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0228	0.0265	0.0347		0.066	0.0147
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.061 #	0.15 #	0.0466 #	0.663 #	0.198 #	0.0269 #
Organic Matter, Total	<0.35 %	TM132	1.19 #	2.81 #	1.51 #	78.4 #	3.91 #	1.93 #
Sulphate, Total potential	<0.06 %	TM132	0.183	0.45	0.14	1.99	0.594	0.0807
pH	1 pH Units	TM133	7.9 M	8.36 M	6.68 M	5.36 M	7.75 M	7.74 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	32.1	25.7	47.8	<0.9	21.6	53.8
Arsenic	<0.6 mg/kg	TM181	6.46 M	5.85 M	4.88 M	6.3 M	5.93 M	5.3 M
Barium	<0.6 mg/kg	TM181	85.7 #	71.2 #	86.4 #	137 #	276 #	146 #
Beryllium	<0.01 mg/kg	TM181	0.979 M	0.567 M	0.463 M	0.043 M	0.817 M	1.03 M
Cadmium	<0.02 mg/kg	TM181	0.689 M	0.516 M	0.458 M	0.0488 M	0.523 M	0.995 M
Chromium	<0.9 mg/kg	TM181	32.1 M	25.7 M	47.8 M	<0.9 M	21.6 M	53.8 M
Copper	<1.4 mg/kg	TM181	19.9 M	13.7 M	9.13 M	2.56 M	25.4 M	15.8 M
Lead	<0.7 mg/kg	TM181	19.5 M	9.65 M	18.6 M	1.87 M	37 M	20.3 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	72.8 M	48.9 M	60.3 M	9.06 M	44.3 M	71.6 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	1.61 #	4.73 #	<1 #
Vanadium	<0.2 mg/kg	TM181	38 #	29.1 #	37.8 #	1.37 #	19.3 #	57.7 #
Zinc	<1.9 mg/kg	TM181	85.8 M	57.4 M	97.1 M	6.39 M	81.1 M	102 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0217 M	0.0365 M	0.0285 M	0.155 M	0.0432 M	0.0082 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0096 M	0.0069 M	0.0525 M		0.0147 M	0.0065 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008		<0.008	<0.008

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CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPCC01					
Customer Sample Ref.			TPCC01					
Depth (m)			2.90 - 3.00					
Sample Type			Soil/Solid (S)					
Date Sampled			29/05/2023					
Sample Time			-					
Date Received			05/06/2023					
SDG Ref			230605-71					
Lab Sample No.(s)			28101492					
AGS Reference			ES1					
Moisture Content Ratio (% of as received sample)	%	PM024	51					
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00136					
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.35					
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M					
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M					
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M					
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M					
Sulphur, Total	<0.02 %	TM132	0.676 #					
Organic Matter, Total	<0.35 %	TM132	11.8 #					
Sulphate, Total potential	<0.06 %	TM132	2.03					
pH	1 pH Units	TM133	7.89 M					
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M					
Cyanide, Total	<1 mg/kg	TM153	<1 M					
PCB congener 28	<3 µg/kg	TM168	<6 M					
PCB congener 52	<3 µg/kg	TM168	<6 M					
PCB congener 101	<3 µg/kg	TM168	<6 M					
PCB congener 118	<3 µg/kg	TM168	<6 M					
PCB congener 138	<3 µg/kg	TM168	<6 M					
PCB congener 153	<3 µg/kg	TM168	<6 M					
PCB congener 180	<3 µg/kg	TM168	<6 M					
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<42					
PCB congener 81	<3 µg/kg	TM168	<6 M					
PCB congener 77	<3 µg/kg	TM168	<6 M					
PCB congener 123	<3 µg/kg	TM168	<6 M					
PCB congener 114	<3 µg/kg	TM168	<6 M					
PCB congener 105	<3 µg/kg	TM168	<6 M					
PCB congener 126	<3 µg/kg	TM168	<6 M					
PCB congener 167	<3 µg/kg	TM168	<6 M					
PCB congener 156	<3 µg/kg	TM168	<6 M					
PCB congener 157	<3 µg/kg	TM168	<6 M					
PCB congener 169	<3 µg/kg	TM168	<6 M					
PCB congener 189	<3 µg/kg	TM168	<6 M					
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<72					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	TPCC01					
Customer Sample Ref.			TPCC01					
Depth (m)			2.90 - 3.00					
Sample Type			Soil/Solid (S)					
Date Sampled			29/05/2023					
Sample Time			.					
Date Received			05/06/2023					
SDG Ref			230605-71					
Lab Sample No.(s)			28101492					
AGS Reference			ES1					
Chromium, Trivalent	<0.9 mg/kg	TM181	2.98					
Arsenic	<0.6 mg/kg	TM181	9.52 M					
Barium	<0.6 mg/kg	TM181	213 #					
Beryllium	<0.01 mg/kg	TM181	0.327 M					
Cadmium	<0.02 mg/kg	TM181	0.271 M					
Chromium	<0.9 mg/kg	TM181	2.98 M					
Copper	<1.4 mg/kg	TM181	3.18 M					
Lead	<0.7 mg/kg	TM181	1.62 M					
Mercury	<0.1 mg/kg	TM181	<0.1 M					
Nickel	<0.2 mg/kg	TM181	8.4 M					
Selenium	<1 mg/kg	TM181	2.01 #					
Vanadium	<0.2 mg/kg	TM181	7.7 #					
Zinc	<1.9 mg/kg	TM181	20.7 M					
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.157 M					
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0115 M					
Magnesium (BRE)	<0.008 g/l	TM282	<0.008					

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CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	91.3	94.3	92.7	90.8	90.5	93.2
Acenaphthene-d10 % recovery**	%	TM218	91.7	94.9	92.1	92.5	92.9	91.9
Phenanthrene-d10 % recovery**	%	TM218	83.9	91.3	83.8	88.4	89.5	82.4
Chrysene-d12 % recovery**	%	TM218	79.6	96.5	81.6	91	93.1	78.4
Perylene-d12 % recovery**	%	TM218	74.5	91.1	76.3	87.3	88.2	77.6
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	91.5	89.5	95.5	94.6	91.4	93.7
Acenaphthene-d10 % recovery**	%	TM218	94.1	91.9	95.3	97.1	94.4	92.3
Phenanthrene-d10 % recovery**	%	TM218	92.1	89.8	86.6	92.8	92.5	82.2
Chrysene-d12 % recovery**	%	TM218	95.8	92.7	80.8	86.4	97	77.8
Perylene-d12 % recovery**	%	TM218	93.2	88.9	80.5	82.2	92.2	75.8
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	TPCC01
Depth (m)	2.90 - 3.00
Sample Type	Soil/Solid (S)
Date Sampled	29/05/2023
Sample Time	-
Date Received	05/06/2023
SDG Ref	230605-71
Lab Sample No.(s)	28101492
AGS Reference	ES1

Component	LOD/Units	Method	TPCC01
Naphthalene-d8 % recovery**	%	TM218	94.8
Acenaphthene-d10 % recovery**	%	TM218	99.1
Phenanthrene-d10 % recovery**	%	TM218	95.3
Chrysene-d12 % recovery**	%	TM218	101
Perylene-d12 % recovery**	%	TM218	98.2
Naphthalene	<9 µg/kg	TM218	<18 M
Acenaphthylene	<12 µg/kg	TM218	<24 M
Acenaphthene	<8 µg/kg	TM218	<16 M
Fluorene	<10 µg/kg	TM218	<20 M
Phenanthrene	<15 µg/kg	TM218	<30 M
Anthracene	<16 µg/kg	TM218	<32 M
Fluoranthene	<17 µg/kg	TM218	<34 M
Pyrene	<15 µg/kg	TM218	<30 M
Benz(a)anthracene	<14 µg/kg	TM218	<28 M
Chrysene	<10 µg/kg	TM218	<20 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<30 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<28 M
Benzo(a)pyrene	<15 µg/kg	TM218	<30 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<36 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<46 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<48 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<236

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	TPCC01
Depth (m)	2.90 - 3.00
Sample Type	Soil/Solid (S)
Date Sampled	29/05/2023
Sample Time	-
Date Received	05/06/2023
SDG Ref	230605-71
Lab Sample No.(s)	28101492
AGS Reference	ES1

Component	LOD/Units	Method						
Phenol	<100 µg/kg	TM157	<100					
Pentachlorophenol	<100 µg/kg	TM157	<100					
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100					
Nitrobenzene	<100 µg/kg	TM157	<100					
Isophorone	<100 µg/kg	TM157	<100					
Hexachloroethane	<100 µg/kg	TM157	<100					
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100					
Hexachlorobutadiene	<100 µg/kg	TM157	<100					
Hexachlorobenzene	<100 µg/kg	TM157	<100					
n-Dioctyl phthalate	<100 µg/kg	TM157	<100					
Dimethyl phthalate	<100 µg/kg	TM157	<100					
Diethyl phthalate	<100 µg/kg	TM157	<100					
n-Dibutyl phthalate	<100 µg/kg	TM157	<100					
Dibenzofuran	<100 µg/kg	TM157	<100					
Carbazole	<100 µg/kg	TM157	<100					
Butylbenzyl phthalate	<100 µg/kg	TM157	<100					
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100					
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100					
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100					
Azobenzene	<100 µg/kg	TM157	<100					
4-Nitrophenol	<100 µg/kg	TM157	<100					
4-Nitroaniline	<100 µg/kg	TM157	<100					
4-Methylphenol	<100 µg/kg	TM157	<100					
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100					
4-Chloroaniline	<100 µg/kg	TM157	<100					
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100					
4-Bromophenylphenylether	<100 µg/kg	TM157	<100					
3-Nitroaniline	<100 µg/kg	TM157	<100					
2-Nitrophenol	<100 µg/kg	TM157	<100					
2-Nitroaniline	<100 µg/kg	TM157	<100					
2-Methylphenol	<100 µg/kg	TM157	<100					
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100					
2-Chlorophenol	<100 µg/kg	TM157	<100					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPCC01					
Depth (m)			2.90 - 3.00					
Sample Type			Soil/Solid (S)					
Date Sampled			29/05/2023					
Sample Time			.					
Date Received			05/06/2023					
SDG Ref			230605-71					
Lab Sample No.(s)			28101492					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dimethylphenol	<100 µg/kg	TM157	<100					
2,4-Dichlorophenol	<100 µg/kg	TM157	<100					
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100					
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100					
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100					
2-Chloronaphthalene	<100 µg/kg	TM157	<100					
2-Methylnaphthalene	<100 µg/kg	TM157	<100					
Acenaphthylene	<100 µg/kg	TM157	<100					
Acenaphthene	<100 µg/kg	TM157	<100					
Anthracene	<100 µg/kg	TM157	<100					
Benzo(a)anthracene	<100 µg/kg	TM157	<100					
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100					
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100					
Benzo(a)pyrene	<100 µg/kg	TM157	<100					
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100					
Chrysene	<100 µg/kg	TM157	<100					
Fluoranthene	<100 µg/kg	TM157	<100					
Fluorene	<100 µg/kg	TM157	<100					
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100					
Phenanthrene	<100 µg/kg	TM157	<100					
Pyrene	<100 µg/kg	TM157	<100					
Naphthalene	<100 µg/kg	TM157	<100					
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100					
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100					

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	92.9	101	74.2	117	103	104
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	1280 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	3630 #	<1000 #	3950 #	<1000 #	6490 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	2290	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	10100	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	24700	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1730 #	<1000 #	1030 #	<1000 #	11800 #	<1000 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	2350	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	14700	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	24700	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	101	108	98.8	66 4	99.5	89.7
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10 4	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10 4	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10 4	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	8230 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	47000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	39200 #	29700 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	14400 #	69500 #	1560 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	12100	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	109000	111000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	131000	383000	17500	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10 4	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10 4	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10 4	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	7990 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	7960 #	13600 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	4190 #	227000 #	14000 #	1760 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	31400	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	1770	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	21500	272000	15100	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	131000	383000	15100	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50 4	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50 4	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20 4	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	TPCC01
Depth (m)	2.90 - 3.00
Sample Type	Soil/Solid (S)
Date Sampled	29/05/2023
Sample Time	-
Date Received	05/06/2023
SDG Ref	230605-71
Lab Sample No.(s)	28101492
AGS Reference	ES1

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	98.9
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1610 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	4700 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	6090
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT05	BHT07	BHT09	TP312	TP313	TPC01
Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Dibromofluoromethane**	%	TM116	105	101	105	111	127	114
Toluene-d8**	%	TM116	103	102	100	95.8	93.7	97.2
4-Bromofluorobenzene**	%	TM116	96.1	91.4	94.7	77.1	70.9	85.6
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<5 #	<0.5 #	<10 #	<0.5 #	<0.5 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<20 #	<2 #	<40 #	<2 #	<2 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Chloroethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<5 #	<0.5 #	<10 #	<0.5 #	<0.5 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<10 M	<1 M	<20 M	1.91 M	1.22 M	1.35 M
Dichloromethane	<5 µg/kg	TM116	<50 #	<5 #	<100 #	<5 #	<5 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<1	<20	<1	<1	<1
Bromochloromethane	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
Chloroform	<3 µg/kg	TM116	<30 M	<3 M	<60 M	<3 M	<3 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Benzene	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<10 #	<1 #	<20 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<5 M	<0.5 M	<10 M	<0.5 M	<0.5 M	<0.5 M
Toluene	<1 µg/kg	TM116	<10 M	1.21 M	<20 M	<1 M	2.25 M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<1	<20	<1	<1	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<10 M	<1 M	<20 M	<1 M	<1 M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<20 #	<2 #	<40 #	<2 #	<2 #	<2 #
o-Xylene	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
Styrene	<2 µg/kg	TM116	<20 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<55 M	<5.5 M	<110 M	<2 M	<2 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<20 #	<2 #	<40 #	<2 #	<2 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<20 #	<2 #	<40 #	<2 #	<2 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<30 M	<3 M	<60 M	<3 M	<3 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<30 M	<3 M	<60 M	<3 M	<3 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<20 #	<2 #	<40 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<30 #	<3 #	<60 #	<3 #	<3 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<10	<1	<20	<1	<1	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<20	<2	<40	<2	<2	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M	<100 M	<5 M	<5 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M	<100 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<30	<3	<60	<3	<3	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M	<100 M	<5 M	<5 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<20 M	<2 M	<40 M	<2 M	<2 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<1 #	<20 #	<1 #	<1 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<70	<7	<140	<7	<7	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<40	<4	<80	<4	<4	<4
Naphthalene	<8 µg/kg	TM116	<80 M	<8 M	<160 M	<8 M	<8 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<100 #	<10 #	<200 #	<10 #	<10 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<70	<7	<140	<7	<7	<7

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHT05	BHT07	BHT09	TP312	TP313	TPC01
Depth (m)			5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			01/06/2023	31/05/2023	29/05/2023	30/05/2023	31/05/2023	29/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101530	28101525	28101519	28101471	28101513	28101535
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.2	<0.02	<0.4	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<70	<7	<140	<7	<7	<7

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CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			-	-	-	-	-	-
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	110	117	106	103	105	102
Toluene-d8**	%	TM116	95.9	96.3	91.6	99.4	102	90.5
4-Bromofluorobenzene**	%	TM116	89.6	78.9	73.8	93.6	94.8	76.6
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<10 #	<10 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<40 #	<40 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<10 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<10 #	<10 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<1 M	3.87 M	14.3 M	<20 M	<20 M	3.46 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #	<5 #	<100 #	<100 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1	<1	<20	<20	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<60 M	<60 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<20 #	<20 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<10 M	<10 M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1	<1	<20	<20	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<20 M	<20 M	1.82 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<40 #	<40 #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<40 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<110 M	<100 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<40 #	<40 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<40 #	<40 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<60 M	<60 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<60 M	<60 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<40 #	<40 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #	<3 #	<60 #	<60 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1	<1	<20	<20	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2	<2	<40	<40	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<100 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<100 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<3	<3	<60	<60	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<100 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<40 M	<40 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<20 #	<20 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<140	<140	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4	<4	<80	<80	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<160 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<200 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<140	<140	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPC02	TPC03	TPC04	TPC05	TPC06	TPC07
Depth (m)			2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60	2.50 - 2.60	1.40 - 1.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
Sample Time			.	.	.	.	.	.
Date Received			05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023	05/06/2023
SDG Ref			230605-71	230605-71	230605-71	230605-71	230605-71	230605-71
Lab Sample No.(s)			28101540	28101477	28101482	28101487	28101497	28101508
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.4	<0.4	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	<7	<7	<140	<140	<7

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CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	TPCC01
Depth (m)	2.90 - 3.00
Sample Type	Soil/Solid (S)
Date Sampled	29/05/2023
Sample Time	-
Date Received	05/06/2023
SDG Ref	230605-71
Lab Sample No.(s)	28101492
AGS Reference	ES1

Component	LOD/Units	Method	TPCC01
Dibromofluoromethane**	%	TM116	126
Toluene-d8**	%	TM116	95.8
4-Bromofluorobenzene**	%	TM116	78.6
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	4.87 M
Dichloromethane	<5 µg/kg	TM116	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M
Chloroform	<3 µg/kg	TM116	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M
Benzene	<1 µg/kg	TM116	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	TPCC01
Depth (m)	2.90 - 3.00
Sample Type	Soil/Solid (S)
Date Sampled	29/05/2023
Sample Time	.
Date Received	05/06/2023
SDG Ref	230605-71
Lab Sample No.(s)	28101492
AGS Reference	ES1

Component	LOD/Units	Method	TPCC01
Tetrachloroethene	<2 µg/kg	TM116	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4
Naphthalene	<8 µg/kg	TM116	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPCC01
Depth (m)			2.90 - 3.00
Sample Type			Soil/Solid (S)
Date Sampled			29/05/2023
Sample Time			.
Date Received			05/06/2023
SDG Ref			230605-71
Lab Sample No.(s)			28101492
AGS Reference			ES1
Component	**LOD/Units**	**Method**	
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT05ES1 5.00 - 5.00 SOLID 01/06/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101530 TM048	09/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT07ES1 5.50 - 5.50 SOLID 31/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101525 TM048	12/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT09ES1 6.00 - 6.00 SOLID 29/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101519 TM048	12/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP312ES1 1.20 - 1.30 SOLID 30/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101471 TM048	12/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP313ES1 0.50 - 0.60 SOLID 31/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101513 TM048	12/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC01ES1 2.60 - 2.70 SOLID 29/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101535 TM048	12/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC02ES1 2.50 - 2.60 SOLID 29/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101540 TM048	12/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC03ES1 3.20 - 3.30 SOLID 30/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101477 TM048	12/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC04ES1 1.60 - 1.70 SOLID 30/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101482 TM048	12/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC05ES1 0.50 - 0.60 SOLID 30/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101487 TM048	12/06/202	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC06ES1 2.50 - 2.60 SOLID 30/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101497 TM048	12/06/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC07ES1 1.40 - 1.50 SOLID 30/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101508 TM048	12/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPCC01ES1 2.90 - 3.00 SOLID 29/05/2023 00:00:00 05/06/2023 10:00:00 230605-71 28101492 TM048	12/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Notification of NDPs (No determination possible)

Date Received : 05/06/2023 12:04:09

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
28101487	TPC05 ES1	0.50 - 0.60	Anions in soil by IC	Sample cannot be filtered
28101487	TPC05 ES1	0.50 - 0.60	Anions by Kone (soil)	Sample cannot be filtered
28101487	TPC05	0.50 - 0.60	Magnesium (BRE)	Unsuitable for Analysis

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM282	Extraction of Magnesium by BRE Method
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Validated

CERTIFICATE OF ANALYSIS

SDG: 230605-71 **Report Number:** 692601 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Test Completion Dates

Lab Sample No(s)	28101530	28101525	28101519	28101471	28101513	28101535	28101540	28101477	28101482	28101487
Customer Sample Ref.	BHT05	BHT07	BHT09	TP312	TP313	TPC01	TPC02	TPC03	TPC04	TPC05
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	5.00 - 5.00	5.50 - 5.50	6.00 - 6.00	1.20 - 1.30	0.50 - 0.60	2.60 - 2.70	2.50 - 2.60	3.20 - 3.30	1.60 - 1.70	0.50 - 0.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023	12-Jun-2023	08-Jun-2023	12-Jun-2023	
Anions in soil by IC	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	
Asbestos ID in Solid Samples	09-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Chromium III	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	12-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	13-Jun-2023
EPH CWG GC (S)	08-Jun-2023	08-Jun-2023	09-Jun-2023	09-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023
GRO by GC-FID (S)	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023
Hexavalent Chromium (s)	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	12-Jun-2023
Magnesium (BRE)	08-Jun-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023	
Metals in solid samples by OES	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	08-Jun-2023	09-Jun-2023	09-Jun-2023	08-Jun-2023	09-Jun-2023	12-Jun-2023
PAH by GCMS	12-Jun-2023	08-Jun-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023	12-Jun-2023
PCBs by GCMS	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023
pH	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
Phenols by HPLC (S)	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023
Sample description	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023	06-Jun-2023
Semi Volatile Organic Compounds	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Total Organic Carbon	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023
Total Sulphate	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	12-Jun-2023
Total Sulphur	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	12-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023	13-Jun-2023
TPH CWG GC (S)	08-Jun-2023	08-Jun-2023	09-Jun-2023	09-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023	12-Jun-2023
VOC MS (S)	10-Jun-2023	10-Jun-2023	10-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	10-Jun-2023

Lab Sample No(s)	28101497	28101508	28101492
Customer Sample Ref.	TPC06	TPC07	TPCC01
AGS Ref.	ES1	ES1	ES1
Depth	2.50 - 2.60	1.40 - 1.50	2.90 - 3.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	08-Jun-2023	08-Jun-2023	12-Jun-2023
Anions in soil by IC	14-Jun-2023	09-Jun-2023	15-Jun-2023
Asbestos ID in Solid Samples	12-Jun-2023	12-Jun-2023	12-Jun-2023
Chromium III	09-Jun-2023	09-Jun-2023	09-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	09-Jun-2023	09-Jun-2023	09-Jun-2023
EPH CWG GC (S)	09-Jun-2023	09-Jun-2023	08-Jun-2023
GRO by GC-FID (S)	08-Jun-2023	08-Jun-2023	08-Jun-2023
Hexavalent Chromium (s)	09-Jun-2023	09-Jun-2023	09-Jun-2023
Magnesium (BRE)	08-Jun-2023	08-Jun-2023	12-Jun-2023
Metals in solid samples by OES	09-Jun-2023	09-Jun-2023	09-Jun-2023
PAH by GCMS	08-Jun-2023	12-Jun-2023	08-Jun-2023
PCBs by GCMS	13-Jun-2023	13-Jun-2023	13-Jun-2023
pH	07-Jun-2023	07-Jun-2023	07-Jun-2023
Phenols by HPLC (S)	08-Jun-2023	08-Jun-2023	12-Jun-2023
Sample description	06-Jun-2023	06-Jun-2023	06-Jun-2023
Semi Volatile Organic Compounds	12-Jun-2023	12-Jun-2023	12-Jun-2023
Total Organic Carbon	13-Jun-2023	13-Jun-2023	13-Jun-2023
Total Sulphate	09-Jun-2023	09-Jun-2023	12-Jun-2023
Total Sulphur	13-Jun-2023	13-Jun-2023	13-Jun-2023
TPH CWG GC (S)	09-Jun-2023	09-Jun-2023	08-Jun-2023
VOC MS (S)	10-Jun-2023	09-Jun-2023	09-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	28 June 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230615-86
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	694116
Order Number:	12380

This report has been revised and directly supersedes 693622 in its entirety.

We received 6 samples on Thursday June 15, 2023 and 6 of these samples were scheduled for analysis which was completed on Wednesday June 28, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28158637	BHT1		5.00	13/06/2023
28158646	BHT2	ES1	6.00	08/06/2023
28158669	BHT3	ES1	5.50	07/06/2023
28158679	BHT4	ES1	4.00	06/06/2023
28158654	BHT6	ES1	5.50	02/06/2023
28158621	TPT8		0.50 - 0.80	13/06/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28158637				28158646				28158669				28158679				28158654				28158621	
Customer Sample Reference			BHT1				BHT2				BHT3				BHT4				BHT6				TPT8	
AGS Reference							ES1				ES1				ES1				ES1					
Depth (m)			5.00				6.00				5.50				4.00				5.50				0.50 - 0.80	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Anions in soil by IC	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 6	X			X			X			X			X			X			X		
Chromium III	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6			X			X			X			X			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
pH	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Sample description	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
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Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28158637			28158646			28158669			28158679			28158654			28158621		
Customer Sample Reference			BHT1			BHT2			BHT3			BHT4			BHT6			TPT8		
AGS Reference						ES1			ES1			ES1			ES1					
Depth (m)			5.00			6.00			5.50			4.00			5.50			0.50 - 0.80		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Total Sulphate	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 6			X			X			X			X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28158637	BHT1	5.00	Dark Brown	Sand	Stones	None
28158646	BHT2	6.00	Dark Brown	Silty Sand	Vegetation	None
28158669	BHT3	5.50	Grey	Silt Loam	Stones	None
28158679	BHT4	4.00	Dark Brown	Sand	Stones	None
28158654	BHT6	5.50	Dark Brown	Silty Clay Loam	None	None
28158621	TPT8	0.50 - 0.80	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Customer Sample Ref.								
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			-	-	-	-	-	-
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Moisture Content Ratio (% of as received sample)	%	PM024	11	18	17	7.8	12	22
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000819	0.000576	0.000838	0.00203	0.000764	0.0183
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.04	0.0454	0.0354	0.0179	0.0577	0.0284
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 @ M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 @ M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 @ M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 @ M	<0.035 M
Sulphur, Total	<0.02 %	TM132	0.475 #	0.0819 #	0.084 #	0.0481 #	0.0676 #	0.0456 #
Organic Matter, Total	<0.35 %	TM132	9.45 #	7.28 #	1.88 #	3.55 #	3.84 #	1.52 #
Sulphate, Total potential	<0.06 %	TM132	1.43	0.246	0.252	0.144	0.203	0.137
pH	1 pH Units	TM133	8.69 M	8.4 M	8.6 M	9.56 M	8.57 M	8.26 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 @ M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			.	.	.	.	.	.
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	5.85	3.61	6.95	3.36	11.1	14
Arsenic	<0.6 mg/kg	TM181	9.69 M	3.63 M	2.68 M	1.08 M	6.28 M	3.37 M
Barium	<0.6 mg/kg	TM181	12.9 #	20.3 #	60.9 #	7.78 #	84.7 #	41.3 #
Beryllium	<0.01 mg/kg	TM181	0.174 M	0.216 M	0.492 M	0.142 M	0.542 M	0.56 M
Cadmium	<0.02 mg/kg	TM181	0.379 M	0.469 M	0.858 M	0.273 M	0.963 M	0.486 M
Chromium	<0.9 mg/kg	TM181	5.85 M	3.61 M	6.95 M	3.36 M	11.1 M	14 M
Copper	<1.4 mg/kg	TM181	5.21 M	5.98 M	15.8 M	2.48 M	19.2 M	7.46 M
Lead	<0.7 mg/kg	TM181	3.6 M	5.69 M	10.5 M	2.28 M	24.3 M	12.3 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	13 M	12.6 M	27.9 M	7.35 M	38.9 M	20.3 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	1.23 #	<1 #	1.34 #	<1 #
Vanadium	<0.2 mg/kg	TM181	5.28 #	5.23 #	12.5 #	3.6 #	15.7 #	17.1 #
Zinc	<1.9 mg/kg	TM181	26.7 M	44 M	72.5 M	17.9 M	104 M	36.8 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0464 M	0.0235 M	0.0243 M	0.0295 M	0.0415 M	0.0293 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0078 M	0.0043 M	0.0069 M	0.0028 M	0.008 M	0.0059 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
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- aq Aqueous / settled sample.
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- tot.unfilt Total / unfiltered sample.
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- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			-	-	-	-	-	-
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	89.1	99.4	99.6	101	85.9	88.7
Acenaphthene-d10 % recovery**	%	TM218	91	95.6	95.5	95.9	88	90.7
Phenanthrene-d10 % recovery**	%	TM218	89.5	91.5	89.4	90.4	87.7	89
Chrysene-d12 % recovery**	%	TM218	89	85.5	77.9	80	80.7	83.3
Perylene-d12 % recovery**	%	TM218	84.5	85.3	75.5	80.1	72.6	70.7
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 @ M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 @ M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 @ M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 @ M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 @ M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 @ M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 @ M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 @ M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 @ M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 @ M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 @ M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 @ M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 @ M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
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- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
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- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			-	-	-	-	-	-
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			.	.	.	.	.	.
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

13:26:49 28/06/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			-	-	-	-	-	-
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	124	91.8	93.8	95.3	21.8 4 @	97.4
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4 @	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4 @	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4 @	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	52100 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	8020	<1000	<1000	<1000 @	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	60500	<5000	<5000	<5000 @	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	86900	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4 @	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4 @	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10 4 @	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 @ #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	20500 #	<1000 #	<1000 #	<1000 @ #	3620 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	5230	<1000	<1000	<1000 @	1690
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	1490	<1000	<1000	<1000 @	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	26400	<5000	<5000	<5000	5370
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	86900	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50 4 @	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50 4 @	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20 4 @	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			-	-	-	-	-	-
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	111	99.6	109	127	112 @	127
Toluene-d8**	%	TM116	101	96.7	102	103	101 @	98.5
4-Bromofluorobenzene**	%	TM116	87.5	75.2	94.5	99.5	87.2 @	80.3
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<10 #	<0.5 #	<10 @ #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #	<40 #	<2 #	<40 @ #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 @ M	<10 @ M	<0.5 @ M	<10 @ M	<0.5 M
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<10 #	<0.5 #	<10 @ #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	6.8 M	3.34 M	<20 M	<1 M	<20 @ M	<1 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #	<100 #	<5 #	<100 @ #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1	<20	<1	<20 @	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<3 M	<60 M	<3 M	<60 @ M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #	<20 #	<1 #	<20 @ #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<10 M	<0.5 M	<10 @ M	<0.5 M
Toluene	<1 µg/kg	TM116	1.75 M	14.6 M	<20 M	7.11 M	42.5 @ M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1	<20	<1	<20 @	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M

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CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			.	.	.	.	.	.
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M	<20 M	<1 M	<20 @ M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	3.33 M	<20 M	1.1 M	<20 @ M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	8.72 #	<40 #	3.31 #	<40 @ #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
Styrene	<2 µg/kg	TM116	<2 #	<2 @ #	<40 @ #	<2 @ #	<40 @ #	<2 #
Bromoform	<2 µg/kg	TM116	<2 M	<5 M	<98 M	<5 M	<107 @ M	<6 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<40 #	<2 #	<40 @ #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #	<40 #	<2 #	<40 @ #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<60 M	<3 M	<60 @ M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<60 M	<3 M	<60 @ M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<40 #	<2 #	<40 @ #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #	<60 #	<3 #	<60 @ #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1	<20	<1	<20 @	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2	<40	<2	<40 @	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<100 M	<5 M	<100 @ M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<100 M	<5 M	<100 @ M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<3	<60	<3	<60 @	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<100 M	<5 M	<100 @ M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M	<40 M	<2 M	<40 @ M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #	<20 #	<1 #	<20 @ #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<140	<7	<140 @	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4	<80	<4	<80 @	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M	<160 M	<8 M	<160 @ M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #	<200 #	<10 #	<200 @ #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<140	<7	<140	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230615-86 **Report Number:** 694116 **Superseded Report:** 693622
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
Depth (m)			5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			13/06/2023	08/06/2023	07/06/2023	06/06/2023	02/06/2023	13/06/2023
Sample Time			.	.	.	.	.	.
Date Received			15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023	15/06/2023
SDG Ref			230615-86	230615-86	230615-86	230615-86	230615-86	230615-86
Lab Sample No.(s)			28158637	28158646	28158669	28158679	28158654	28158621
AGS Reference				ES1	ES1	ES1	ES1	
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.4	<0.02	<0.4 @	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	26.6	<140	11.5	<140 @	<7

13:26:49 28/06/2023

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT1 5.00 SOLID 13/06/2023 00:00:00 15/06/2023 11:00:00 230615-86 28158637 TM048	23/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT2ES1 6.00 SOLID 08/06/2023 00:00:00 15/06/2023 11:00:00 230615-86 28158646 TM048	22/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT3ES1 5.50 SOLID 07/06/2023 00:00:00 15/06/2023 11:00:00 230615-86 28158669 TM048	21/06/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT4ES1 4.00 SOLID 06/06/2023 00:00:00 15/06/2023 11:00:00 230615-86 28158679 TM048	22/06/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT6ES1 5.50 SOLID 02/06/2023 00:00:00 15/06/2023 11:00:00 230615-86 28158654 TM048	22/06/2023	Paul Poynton	Loose fibres in soil	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPT8 0.50 - 0.80 SOLID 13/06/2023 00:00:00 15/06/2023 11:00:00 230615-86 28158621 TM048	22/06/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM019	Determination of Anions in Soils using Ion Chromatography
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM218	The determination of PAH in soil samples by GC-MS
TM282	Extraction of Magnesium by BRE Method

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28158637	28158646	28158669	28158679	28158654	28158621
Customer Sample Ref.	BHT1	BHT2	BHT3	BHT4	BHT6	TPT8
AGS Ref.		ES1	ES1	ES1	ES1	
Depth	5.00	6.00	5.50	4.00	5.50	0.50 - 0.80
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	23-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	23-Jun-2023
Anions in soil by IC	23-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	23-Jun-2023
Asbestos ID in Solid Samples	23-Jun-2023	22-Jun-2023	21-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023
Chromium III	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023
Cyanide Comp/Free/Total/Thiocyanate	22-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	22-Jun-2023
EPH CWG GC (S)	22-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	22-Jun-2023
GRO by GC-FID (S)	22-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	22-Jun-2023
Hexavalent Chromium (s)	21-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	21-Jun-2023
Magnesium (BRE)	23-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	23-Jun-2023
Metals in solid samples by OES	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023
PAH by GCMS	21-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	23-Jun-2023	21-Jun-2023
PCBs by GCMS	26-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	26-Jun-2023
pH	21-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	21-Jun-2023
Phenols by HPLC (S)	21-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	22-Jun-2023
Sample description	19-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	15-Jun-2023	19-Jun-2023
Semi Volatile Organic Compounds	26-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023
Total Organic Carbon	23-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	23-Jun-2023
Total Sulphate	23-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	21-Jun-2023	23-Jun-2023
Total Sulphur	28-Jun-2023	22-Jun-2023	22-Jun-2023	22-Jun-2023	23-Jun-2023	23-Jun-2023
TPH CWG GC (S)	22-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	22-Jun-2023
VOC MS (S)	22-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	20-Jun-2023	22-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	03 July 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230623-103
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	694794
Order Number:	12380

We received 6 samples on Friday June 23, 2023 and 6 of these samples were scheduled for analysis which was completed on Monday July 03, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28207092	BHCC01	ES1	4.50 - 4.50	14/06/2023
28207097	BHCC02	ES1	3.00 - 3.00	14/06/2023
28207102	TP221	ES1	2.70 - 2.80	14/06/2023
28207108	TP222	ES1	1.50 - 1.70	14/06/2023
28207115	TP223	ES1	2.50 - 2.60	14/06/2023
28207120	TP224	ES1	0.90 - 1.00	14/06/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28207092			28207097			28207102			28207108			28207115			28207120		
Customer Sample Reference			BHCC01			BHCC02			TP221			TP222			TP223			TP224		
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1		
Depth (m)			4.50 - 4.50			3.00 - 3.00			2.70 - 2.80			1.50 - 1.70			2.50 - 2.60			0.90 - 1.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 2		X			X													
Anions by Kone (soil)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 2	X			X														
Anions in soil by IC	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 6	X			X			X			X			X			X		
CEN Readings	All	NDPs: 0 Tests: 2	X			X														
Chromium III	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Coronene	All	NDPs: 0 Tests: 2		X			X													
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	X			X														
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2	X			X														
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X													
EPH CWG GC (S)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Fluoride	All	NDPs: 0 Tests: 2	X			X														
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6			X			X			X			X			X			X

16:26:42 03/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28207092				28207097				28207102				28207108				28207115				28207120	
Customer Sample Reference			BHCC01				BHCC02				TP221				TP222				TP223				TP224	
AGS Reference			ES1				ES1				ES1				ES1				ES1				ES1	
Depth (m)			4.50 - 4.50				3.00 - 3.00				2.70 - 2.80				1.50 - 1.70				2.50 - 2.60				0.90 - 1.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 2		X			X																
Magnesium (BRE)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 2	X			X																	
Metals in solid samples by OES	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 2		X			X																
PAH by GCMS	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
pH	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 2	X			X																	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2	X			X																	
Sample description	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 6		X			X			X			X			X			X			X	

16:26:42 03/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28207092			28207097			28207102			28207108			28207115			28207120		
Customer Sample Reference			BHCC01			BHCC02			TP221			TP222			TP223			TP224		
AGS Reference			ES1			ES1			ES1			ES1			ES1			ES1		
Depth (m)			4.50 - 4.50			3.00 - 3.00			2.70 - 2.80			1.50 - 1.70			2.50 - 2.60			0.90 - 1.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Total Sulphate	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 6			X			X			X			X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28207092	BHCC01	4.50 - 4.50	Grey	Loamy Sand	None	None
28207097	BHCC02	3.00 - 3.00	Grey	Loamy Sand	Stones	None
28207102	TP221	2.70 - 2.80	Light Brown	Silt Loam	Stones	None
28207108	TP222	1.50 - 1.70	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28207115	TP223	2.50 - 2.60	Dark Brown	Sandy Loam	Stones	Vegetation
28207120	TP224	0.90 - 1.00	Dark Brown	Silty Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			-	-	-	-	-	-
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	16	9.7	21	24	12	17
Loss on ignition	<0.7 %	TM018	0.751 M	1.43 M				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000481	0.000411	0.00112	0.00146	0.00101	0.000436
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0814	0.0476	0.101	0.38	0.023	0.301
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 @ M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 @ M
Organic Carbon, Total	<0.2 %	TM132	5.92 M	4.6 M				
Sulphur, Total	<0.02 %	TM132	0.143 #	0.154 #	0.183 #	2.59 #	0.0379 #	0.259 #
Organic Matter, Total	<0.35 %	TM132	10.2 #	7.93 #	1.61 #	3.71 #	2.67 #	1.84 #
Sulphate, Total potential	<0.06 %	TM132	0.429	0.462	0.549	7.77	0.114	0.777
pH	1 pH Units	TM133	8.78 M	8.7 M	7.56 M	5.84 M	8.46 M	7.11 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	2.42 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 @ M	<1 @ M	<1 @ M	<1 @ M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
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- 1-4+§@ Sample deviation (see appendix)

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Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			.	.	.	.	.	.
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36
Chromium, Trivalent	<0.9 mg/kg	TM181	5.17	5.42	106	48.5	11.8	13.8
Arsenic	<0.6 mg/kg	TM181	3.96 M	4.04 M	36.7 M	172 M	4.63 M	10.3 M
Barium	<0.6 mg/kg	TM181	13.8 #	15.4 #	75.9 #	35.5 #	12.3 #	28.8 #
Beryllium	<0.01 mg/kg	TM181	0.148 M	0.166 M	1.04 M	0.757 M	0.281 M	0.359 M
Cadmium	<0.02 mg/kg	TM181	0.399 M	0.402 M	26.1 M	10.8 M	0.631 M	0.618 M
Chromium	<0.9 mg/kg	TM181	5.17 M	5.42 M	109 M	48.5 M	11.8 M	13.8 M
Copper	<1.4 mg/kg	TM181	4.76 M	4.32 M	14.3 M	89.5 M	18.5 M	12.2 M
Lead	<0.7 mg/kg	TM181	2.28 M	2.58 M	9.82 M	31 M	9.06 M	21.3 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	12.7 M	11.4 M	382 M	121 M	30.8 M	28.2 M
Selenium	<1 mg/kg	TM181	1.37 #	1.52 #	<1 #	2.65 #	<1 #	1.08 #
Vanadium	<0.2 mg/kg	TM181	5.67 #	5.83 #	407 #	142 #	9 #	17.5 #
Zinc	<1.9 mg/kg	TM181	25.8 M	27.6 M	1820 M	366 M	42.1 M	105 M
ANC @ pH 4	<0.03 mol/kg	TM182	0.104	0.217				
ANC @ pH 6	<0.03 mol/kg	TM182	0.0411	0.0485				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0623 M	0.0673 M	0.164 M	0.151 M	0.0348 M	0.123 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.003 M	0.0029 M	0.0274 M	0.0101 M	0.0088 M	0.0058 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10				
Coronene	<200 µg/kg	TM410	<200	<200				
EPH Surrogate % recovery**	%	TM415	101	95.9				
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5				

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
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- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
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- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			-	-	-	-	-	-
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	97.9	96.7	96	92.2	91.9	91.7
Acenaphthene-d10 % recovery**	%	TM218	100	99.2	96.5	93.3	92.3	91.8
Phenanthrene-d10 % recovery**	%	TM218	99.9	101	95.6	92.6	90.6	91
Chrysene-d12 % recovery**	%	TM218	98.3	98.9	96.1	94	89	87.8
Perylene-d12 % recovery**	%	TM218	105	106	108	102	95.3	93.2
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
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Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			-	-	-	-	-	-
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<500	<500	<500	<500	<500	<500
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
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Semi Volatile Organic Compounds

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Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			.	.	.	.	.	.
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	186	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	254	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	167	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			.	.	.	.	.	.
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	95.5 @	97.4 @	102 @	71.8 @	95.8 @	105 @
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	43.6 @
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	69 @
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	169 @
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	2440 @ #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	4930 @ #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	2310 @ #	<1000 @ #	3250 @ #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000 @	<5000 @	<5000 @	<5000 @	<5000 @	11100 @
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	37800	<10000	19300
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	<10 @
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10 @	<10 @	113 @
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	1390 @ #	30800 @ #	<1000 @ #	6680 @ #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	3660 @	<1000 @	<1000 @
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	34600	<5000	8200
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	34600	<10000	19700
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50 @	<50 @	282 @
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50 @	<50 @	113 @
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 @	<20 @	<20 @	<20 @	<20 @	394 @

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CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			-	-	-	-	-	-
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	103 @	116 @	112 @	107 @	112 @	109 @
Toluene-d8**	%	TM116	98.3 @	97.6 @	98.3 @	98.9 @	97.7 @	96.5 @
4-Bromofluorobenzene**	%	TM116	94.9 @	97 @	94.8 @	97.2 @	94.6 @	82 @
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 @ #	<0.5 @ #	<0.5 @ #	<10 @ #	<0.5 @ #	<0.5 @ #
Chloromethane	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Chloroethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Trichlorofluoromethane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 @ #	<0.5 @ #	<0.5 @ #	<10 @ #	<0.5 @ #	<0.5 @ #
Carbon Disulphide	<1 µg/kg	TM116	3.59 @ M	2.45 @ M	11.3 @ M	134 @ M	3.78 @ M	22.1 @ M
Dichloromethane	<5 µg/kg	TM116	<5 @ #	<5 @ #	<5 @ #	<100 @ #	<5 @ #	<5 @ #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
2,2-Dichloropropane	<1 µg/kg	TM116	<1 @	<1 @	<1 @	<20 @	<1 @	<1 @
Bromochloromethane	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Chloroform	<3 µg/kg	TM116	<3 @ M	<3 @ M	<3 @ M	<60 @ M	<3 @ M	<3 @ M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Benzene	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Trichloroethene	<1 µg/kg	TM116	<1 @ #	<1 @ #	<1 @ #	<20 @ #	<1 @ #	<1 @ #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
Dibromomethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Bromodichloromethane	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<10 @ M	<0.5 @ M	<0.5 @ M
Toluene	<1 µg/kg	TM116	<1 @ M	2.31 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1 @	<1 @	<1 @	<20 @	<1 @	<1 @
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHCC01	BHCC02	TP221	TP222	TP223	TP224
Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			.	.	.	.	.	.
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Tetrachloroethene	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Dibromochloromethane	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Chlorobenzene	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
Ethylbenzene	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<20 @ M	<1 @ M	<1 @ M
p/m-Xylene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #
o-Xylene	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Isopropylbenzene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Bromobenzene	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Propylbenzene	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
2-Chlorotoluene	<3 µg/kg	TM116	<3 @ M	<3 @ M	<3 @ M	<60 @ M	<3 @ M	<3 @ M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
4-Chlorotoluene	<3 µg/kg	TM116	<3 @ M	<3 @ M	<3 @ M	<60 @ M	<3 @ M	<3 @ M
tert-Butylbenzene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<40 @ #	<2 @ #	<2 @ #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 @ #	<3 @ #	<3 @ #	<60 @ #	<3 @ #	<3 @ #
sec-Butylbenzene	<1 µg/kg	TM116	<1 @	<1 @	<1 @	<20 @	<1 @	<1 @
4-Isopropyltoluene	<2 µg/kg	TM116	<2 @	<2 @	<2 @	<40 @	<2 @	<2 @
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 @ M	<5 @ M	<100 @ M	<5 @ M	<5 @ M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 @ M	<5 @ M	<100 @ M	<5 @ M	<5 @ M
n-Butylbenzene	<3 µg/kg	TM116	<3 @	<3 @	<3 @	<60 @	<3 @	<3 @
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 @ M	<5 @ M	<100 @ M	<5 @ M	<5 @ M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 @ M	<2 @ M	<2 @ M	<40 @ M	<2 @ M	<2 @ M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 @ #	<1 @ #	<1 @ #	<20 @ #	<1 @ #	<1 @ #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7 @	<7 @	<7 @	<140 @	<7 @	<7 @
Hexachlorobutadiene	<4 µg/kg	TM116	<4 @	<4 @	<4 @	<80 @	<4 @	<4 @
Naphthalene	<8 µg/kg	TM116	<8 @ M	<8 @ M	<8 @ M	<160 @ M	<8 @ M	<8 @ M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 @ #	<10 @ #	<10 @ #	<200 @ #	<10 @ #	<10 @ #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<140	<7	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHCC01	BHCC02	TP221	TP222	TP223	TP224
Depth (m)			4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023	14/06/2023
Sample Time			.	.	.	.	.	.
Date Received			23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023	23/06/2023
SDG Ref			230623-103	230623-103	230623-103	230623-103	230623-103	230623-103
Lab Sample No.(s)			28207092	28207097	28207102	28207108	28207115	28207120
AGS Reference			ES1	ES1	ES1	ES1	ES1	ES1
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02 @	<0.02 @	<0.02 @	<0.4 @	<0.02 @	<0.02 @
Sum of BTEX	<7 µg/kg	TM116	<7 @	<7 @	<7 @	<140 @	<7 @	<7 @

16:26:42 03/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHCC01ES1 4.50 - 4.50 SOLID 14/06/2023 00:00:00 23/06/2023 10:00:00 230623-103 28207092 TM048	30/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHCC02ES1 3.00 - 3.00 SOLID 14/06/2023 00:00:00 23/06/2023 10:00:00 230623-103 28207097 TM048	30/06/2023	Renata Bozhkov	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP221ES1 2.70 - 2.80 SOLID 14/06/2023 00:00:00 23/06/2023 10:00:00 230623-103 28207102 TM048	30/06/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP222ES1 1.50 - 1.70 SOLID 14/06/2023 00:00:00 23/06/2023 10:00:00 230623-103 28207108 TM048	30/06/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP223ES1 2.50 - 2.60 SOLID 14/06/2023 00:00:00 23/06/2023 10:00:00 230623-103 28207115 TM048	30/06/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP224ES1 0.90 - 1.00 SOLID 14/06/2023 00:00:00 23/06/2023 10:00:00 230623-103 28207120 TM048	30/06/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	16.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85.7
Particle Size <4mm	>95%		

Case	
SDG	230623-103
Lab Sample Number(s)	28207092
Sampled Date	14-Jun-2023
Customer Sample Ref.	BHCC01 ES1
Depth (m)	4.50 - 4.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	5.92	3	5	6
Loss on Ignition (%)	0.751	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.78	-	>6	-
ANC to pH 6 (mol/kg)	0.0411	-	-	-
ANC to pH 4 (mol/kg)	0.104	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00919	<0.0005	0.0919	<0.005	0.5	2	25
Barium	0.189	<0.0002	1.89	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00237	<0.0003	0.0237	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0273	<0.003	0.273	<0.03	0.5	10	30
Nickel	0.0029	<0.0004	0.029	<0.004	0.4	10	40
Lead	0.000569	<0.0002	0.00569	<0.002	0.5	10	50
Antimony	0.00287	<0.001	0.0287	<0.01	0.06	0.7	5
Selenium	0.0197	<0.001	0.197	<0.01	0.1	0.5	7
Zinc	0.00505	<0.001	0.0505	<0.01	4	50	200
Chloride	2.8	<2	28	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	19.7	<2	197	<20	1000	20000	50000
Total Dissolved Solids	87.6	<10	876	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.01	<3	60.1	<30	500	800	1000

Leach Test Information

Date Prepared	28-Jun-2023
pH (pH Units)	9.06
Conductivity (µS/cm)	115
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

03/07/2023 16:26:50

16:26:42 03/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230623-103 **Report Number:** 694794 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	10.2
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.7
Particle Size <4mm	>95%		

Case	
SDG	230623-103
Lab Sample Number(s)	28207097
Sampled Date	14-Jun-2023
Customer Sample Ref.	BHCC02 ES1
Depth (m)	3.00 - 3.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	4.6	3	5	6
Loss on Ignition (%)	1.43	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.7	-	>6	-
ANC to pH 6 (mol/kg)	0.0485	-	-	-
ANC to pH 4 (mol/kg)	0.217	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00457	<0.0005	0.0457	<0.005	0.5	2	25
Barium	0.0097	<0.0002	0.097	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00153	<0.0003	0.0153	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0176	<0.003	0.176	<0.03	0.5	10	30
Nickel	0.00142	<0.0004	0.0142	<0.004	0.4	10	40
Lead	0.000227	<0.0002	0.00227	<0.002	0.5	10	50
Antimony	0.00239	<0.001	0.0239	<0.01	0.06	0.7	5
Selenium	0.00898	<0.001	0.0898	<0.01	0.1	0.5	7
Zinc	0.00357	<0.001	0.0357	<0.01	4	50	200
Chloride	2.3	<2	23	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	4.1	<2	41	<20	1000	20000	50000
Total Dissolved Solids	60.9	<10	609	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.37	<3	43.7	<30	500	800	1000

Leach Test Information

Date Prepared	28-Jun-2023
pH (pH Units)	9.04
Conductivity (µS/cm)	81
Volume Leachant (Litres)	0.891

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM019	Determination of Anions in Soils using Ion Chromatography
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Determination of Fluoride using the Kone Analyser
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Determination of Hexavalent Chromium using Kone analyser
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	The determination of PAH in soil samples by GC-MS
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM282	Extraction of Magnesium by BRE Method
TM410	Determination of Coronene in soils by GCMS
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28207092	28207097	28207102	28207108	28207115	28207120
Customer Sample Ref.	BHCC01	BHCC02	TP221	TP222	TP223	TP224
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1
Depth	4.50 - 4.50	3.00 - 3.00	2.70 - 2.80	1.50 - 1.70	2.50 - 2.60	0.90 - 1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	29-Jun-2023	29-Jun-2023				
Anions by Kone (soil)	30-Jun-2023	30-Jun-2023	29-Jun-2023	30-Jun-2023	29-Jun-2023	30-Jun-2023
Anions by Kone (w)	30-Jun-2023	29-Jun-2023				
Anions in soil by IC	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Asbestos ID in Solid Samples	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
CEN 10:1 Leachate (1 Stage)	28-Jun-2023	28-Jun-2023				
CEN Readings	30-Jun-2023	30-Jun-2023				
Chromium III	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Coronene	30-Jun-2023	30-Jun-2023				
Cyanide Comp/Free/Total/Thiocyanate	30-Jun-2023	30-Jun-2023	29-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Dissolved Metals by ICP-MS	30-Jun-2023	03-Jul-2023				
Dissolved Organic/Inorganic Carbon	03-Jul-2023	30-Jun-2023				
EPH by GCxGC-FID	01-Jul-2023	30-Jun-2023				
EPH CWG GC (S)	30-Jun-2023	30-Jun-2023	29-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Fluoride	30-Jun-2023	30-Jun-2023				
GRO by GC-FID (S)	29-Jun-2023	29-Jun-2023	29-Jun-2023	29-Jun-2023	29-Jun-2023	29-Jun-2023
Hexavalent Chromium (s)	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Loss on Ignition in soils	30-Jun-2023	30-Jun-2023				
Magnesium (BRE)	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Mercury Dissolved	30-Jun-2023	30-Jun-2023				
Metals in solid samples by OES	30-Jun-2023	30-Jun-2023	29-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Moisture at 105C	28-Jun-2023	28-Jun-2023				
PAH 16 & 17 Calc	30-Jun-2023	30-Jun-2023				
PAH by GCMS	30-Jun-2023	30-Jun-2023	03-Jul-2023	03-Jul-2023	03-Jul-2023	03-Jul-2023
PCBs by GCMS	30-Jun-2023	30-Jun-2023	03-Jul-2023	03-Jul-2023	03-Jul-2023	03-Jul-2023
pH	29-Jun-2023	29-Jun-2023	29-Jun-2023	29-Jun-2023	29-Jun-2023	29-Jun-2023
pH Value of Filtered Water	30-Jun-2023	30-Jun-2023				
Phenols by HPLC (S)	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Phenols by HPLC (W)	30-Jun-2023	30-Jun-2023				
Sample description	28-Jun-2023	28-Jun-2023	27-Jun-2023	28-Jun-2023	28-Jun-2023	28-Jun-2023
Semi Volatile Organic Compounds	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Total Organic Carbon	01-Jul-2023	01-Jul-2023	30-Jun-2023	30-Jun-2023	01-Jul-2023	01-Jul-2023
Total Sulphate	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
Total Sulphur	30-Jun-2023	30-Jun-2023	28-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
TPH CWG GC (S)	30-Jun-2023	30-Jun-2023	29-Jun-2023	30-Jun-2023	30-Jun-2023	30-Jun-2023
VOC MS (S)	29-Jun-2023	29-Jun-2023	29-Jun-2023	30-Jun-2023	29-Jun-2023	29-Jun-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	06 July 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230627-39
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	695202
Order Number:	12380

We received 3 samples on Monday June 26, 2023 and 3 of these samples were scheduled for analysis which was completed on Thursday July 06, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28220946	BHSS06	ES1	5.50 - 5.50	20/06/2023
28220938	BHT8	ES1	3.50 - 3.50	19/06/2023
28220954	BHT16	ES1	3.50 - 3.50	21/06/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28220946			28220938			28220954		
Customer Sample Reference			BHSS06			BHT8			BHT16		
AGS Reference			ES1			ES1			ES1		
Depth (m)			5.50 - 5.50			3.50 - 3.50			3.50 - 3.50		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X	
Anions in soil by IC	All	NDPs: 0 Tests: 3		X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X		
Chromium III	All	NDPs: 0 Tests: 3		X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 3		X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
pH	All	NDPs: 0 Tests: 3		X			X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3		X			X			X	
Sample description	All	NDPs: 0 Tests: 3		X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					28220946			28220938			28220954
Customer Sample Reference					BHSS06			BHT8			BHT16
AGS Reference					ES1			ES1			ES1
Depth (m)					5.50 - 5.50			3.50 - 3.50			3.50 - 3.50
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3			X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 3			X			X			X	
Total Sulphate	All	NDPs: 0 Tests: 3			X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 3			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 3				X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28220946	BHSS06	5.50 - 5.50	Black	Loamy Sand	Stones	None
28220938	BHT8	3.50 - 3.50	Grey	Loamy Sand	Stones	None
28220954	BHT16	3.50 - 3.50	Black	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			-	-	-			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	15	9.8	1.1			
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000317	0.000321	0.000711			
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.162	0.0229	0.0206			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 @ M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 @ M	<0.035 M			
Sulphur, Total	<0.02 %	TM132	2.13 #	0.11 #	0.0563 #			
Organic Matter, Total	<0.35 %	TM132	7.67 #	<0.35 #	11.5 #			
Sulphate, Total potential	<0.06 %	TM132	6.39	0.33	0.169			
pH	1 pH Units	TM133	6.35 M	9.16 M	9.54 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M			
Cyanide, Total	<1 mg/kg	TM153	<1 @ M	<1 @ M	<1 M			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21			
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	55.5	11	4.43			
Arsenic	<0.6 mg/kg	TM181	28.9 M	2.18 M	0.828 M			
Barium	<0.6 mg/kg	TM181	22.1 #	9.4 #	4.65 #			
Beryllium	<0.01 mg/kg	TM181	0.183 M	0.15 M	0.118 M			
Cadmium	<0.02 mg/kg	TM181	25.9 M	0.463 M	0.161 M			
Chromium	<0.9 mg/kg	TM181	55.5 M	11 M	4.43 M			
Copper	<1.4 mg/kg	TM181	19.6 M	3.75 M	1.56 M			
Lead	<0.7 mg/kg	TM181	38.4 M	2.58 M	<0.7 M			
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181	309 M	14.4 M	3.83 M			
Selenium	<1 mg/kg	TM181	8.76 #	1.05 #	1.21 #			
Vanadium	<0.2 mg/kg	TM181	57.2 #	4.08 #	3.17 #			
Zinc	<1.9 mg/kg	TM181	997 M	36.4 M	8.9 M			
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.235 M	0.0433 M	0.0778 M			
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.023 M	0.0049 M	0.0029 M			
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHSS06	BHT8	BHT16			
Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Naphthalene-d8 % recovery**	%	TM218	95.9	96.3	100			
Acenaphthene-d10 % recovery**	%	TM218	96.1	96.6	97.4			
Phenanthrene-d10 % recovery**	%	TM218	94.1	95.9	99.4			
Chrysene-d12 % recovery**	%	TM218	82.8	95	96.9			
Perylene-d12 % recovery**	%	TM218	75.2	100	102			
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			

12:16:39 06/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			-	-	-			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157	<500	<500	<500			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100			
Isophorone	<100 µg/kg	TM157	<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100			
Carbazole	<100 µg/kg	TM157	<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100			
Azobenzene	<100 µg/kg	TM157	<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100			
Anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100	<100			
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Fluorene	<100 µg/kg	TM157	<100	<100	<100			
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100			
Pyrene	<100 µg/kg	TM157	<100	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100	<100			
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	45.5 4	98.8	91.4			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 4	<10	<10			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000 @	<1000			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000 @	<5000			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 4	<10	<10			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1580 #	<1000 @ #	<1000 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	2640 #	<1000 @ #	<1000 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1350	<1000 @	<1000			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000 @	<1000			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	5570	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 4	<50	<50			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 4	<50	<50			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 4	<20	<20			

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	102	107	103			
Toluene-d8**	%	TM116	96.6	96.1	97.6			
4-Bromofluorobenzene**	%	TM116	88.5	97	98.2			
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<10 #	<0.5 #	<0.5 #			
Chloromethane	<2 µg/kg	TM116	<40 #	<2 #	<2 #			
Vinyl Chloride	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<0.5 @ M			
Bromomethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Chloroethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Trichlorofluorormethane	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 #	<0.5 #	<0.5 #			
Carbon Disulphide	<1 µg/kg	TM116	156 M	<1 M	<1 M			
Dichloromethane	<5 µg/kg	TM116	<100 #	<5 #	<5 #			
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
1,1-Dichloroethane	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
2,2-Dichloropropane	<1 µg/kg	TM116	<20	<1	<1			
Bromochloromethane	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Chloroform	<3 µg/kg	TM116	<60 M	<3 M	<3 M			
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
Carbontetrachloride	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
1,2-Dichloroethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Benzene	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Trichloroethene	<1 µg/kg	TM116	<20 #	<1 #	<1 #			
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
Dibromomethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Bromodichloromethane	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 M	<0.5 M	<0.5 M			
Toluene	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<20	<1	<1			
1,1,2-Trichloroethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
1,3-Dichloropropane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Dibromochloromethane	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
1,2-Dibromoethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Chlorobenzene	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
Ethylbenzene	<1 µg/kg	TM116	<20 M	<1 M	<1 M			
p/m-Xylene	<2 µg/kg	TM116	<40 #	<2 #	<2 #			
o-Xylene	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Styrene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<2 @ #			
Bromoform	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Isopropylbenzene	<2 µg/kg	TM116	<40 #	<2 #	<2 #			
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<40 #	<2 #	<2 #			
1,2,3-Trichloropropane	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Bromobenzene	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Propylbenzene	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
2-Chlorotoluene	<3 µg/kg	TM116	<60 M	<3 M	<3 M			
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
4-Chlorotoluene	<3 µg/kg	TM116	<60 M	<3 M	<3 M			
tert-Butylbenzene	<2 µg/kg	TM116	<40 #	<2 #	<2 #			
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<60 #	<3 #	<3 #			
sec-Butylbenzene	<1 µg/kg	TM116	<20	<1	<1			
4-Isopropyltoluene	<2 µg/kg	TM116	<40	<2	<2			
1,3-Dichlorobenzene	<5 µg/kg	TM116	<100 M	<5 M	<5 M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<100 M	<5 M	<5 M			
n-Butylbenzene	<3 µg/kg	TM116	<60	<3	<3			
1,2-Dichlorobenzene	<5 µg/kg	TM116	<100 M	<5 M	<5 M			
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<40 M	<2 M	<2 M			
Tert-amyl methyl ether	<1 µg/kg	TM116	<20 #	<1 #	<1 #			
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<140	<7	<7			
Hexachlorobutadiene	<4 µg/kg	TM116	<80	<4	<4			
Naphthalene	<8 µg/kg	TM116	<160 M	<8 M	<8 M			
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<200 #	<10 #	<10 #			
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<140	<7	<7			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230627-39 **Report Number:** 695202 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHSS06	BHT8	BHT16			
Depth (m)			5.50 - 5.50	3.50 - 3.50	3.50 - 3.50			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			20/06/2023	19/06/2023	21/06/2023			
Sample Time			.	.	.			
Date Received			26/06/2023	26/06/2023	26/06/2023			
SDG Ref			230627-39	230627-39	230627-39			
Lab Sample No.(s)			28220946	28220938	28220954			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4	<0.02	<0.02			
Sum of BTEX	<7 µg/kg	TM116	<140	<7	<7			

12:16:39 06/07/2023

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS06ES1 5.50 - 5.50 SOLID 20/06/2023 00:00:00 26/06/2023 15:00:00 230627-39 28220946 TM048	04/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT8ES1 3.50 - 3.50 SOLID 19/06/2023 00:00:00 26/06/2023 15:00:00 230627-39 28220938 TM048	04/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT16ES1 3.50 - 3.50 SOLID 21/06/2023 00:00:00 26/06/2023 15:00:00 230627-39 28220954 TM048	04/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM019	Determination of Anions in Soils using Ion Chromatography
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM218	The determination of PAH in soil samples by GC-MS
TM282	Extraction of Magnesium by BRE Method

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28220946	28220938	28220954
Customer Sample Ref.	BHSS06	BHT8	BHT16
AGS Ref.	ES1	ES1	ES1
Depth	5.50 - 5.50	3.50 - 3.50	3.50 - 3.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	03-Jul-2023	03-Jul-2023	03-Jul-2023
Anions in soil by IC	06-Jul-2023	06-Jul-2023	06-Jul-2023
Asbestos ID in Solid Samples	04-Jul-2023	04-Jul-2023	04-Jul-2023
Chromium III	04-Jul-2023	04-Jul-2023	04-Jul-2023
Cyanide Comp/Free/Total/Thiocyanate	06-Jul-2023	06-Jul-2023	06-Jul-2023
EPH CWG GC (S)	05-Jul-2023	05-Jul-2023	04-Jul-2023
GRO by GC-FID (S)	04-Jul-2023	02-Jul-2023	02-Jul-2023
Hexavalent Chromium (s)	04-Jul-2023	04-Jul-2023	04-Jul-2023
Magnesium (BRE)	03-Jul-2023	03-Jul-2023	03-Jul-2023
Metals in solid samples by OES	04-Jul-2023	03-Jul-2023	03-Jul-2023
PAH by GCMS	06-Jul-2023	06-Jul-2023	06-Jul-2023
PCBs by GCMS	06-Jul-2023	06-Jul-2023	06-Jul-2023
pH	03-Jul-2023	03-Jul-2023	03-Jul-2023
Phenols by HPLC (S)	04-Jul-2023	04-Jul-2023	04-Jul-2023
Sample description	30-Jun-2023	30-Jun-2023	30-Jun-2023
Semi Volatile Organic Compounds	05-Jul-2023	05-Jul-2023	05-Jul-2023
Total Organic Carbon	04-Jul-2023	04-Jul-2023	03-Jul-2023
Total Sulphate	04-Jul-2023	04-Jul-2023	04-Jul-2023
Total Sulphur	04-Jul-2023	04-Jul-2023	04-Jul-2023
TPH CWG GC (S)	05-Jul-2023	05-Jul-2023	04-Jul-2023
VOC MS (S)	03-Jul-2023	03-Jul-2023	03-Jul-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	18 July 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230705-77
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	696722
Order Number:	12380

We received 20 samples on Wednesday July 05, 2023 and 20 of these samples were scheduled for analysis which was completed on Tuesday July 18, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28275828	TP208	ES5	2.00 - 2.10	29/06/2023
28275833	TP208	ES10	3.50 - 3.60	29/06/2023
28275856	TPC08	ES5	0.80 - 0.90	28/06/2023
28275861	TPC08	ES8	2.30 - 2.60	28/06/2023
28275840	TPC09	ES5	1.30 - 1.40	28/06/2023
28275848	TPC09	ES8	2.70 - 2.80	28/06/2023
28275895	TPSS101	ES3	0.40 - 0.50	27/06/2023
28275900	TPSS101	ES8	2.40 - 2.50	27/06/2023
28275883	TPSS102	ES3	0.40 - 0.50	27/06/2023
28275888	TPSS102	ES8	2.40 - 2.50	27/06/2023
28275905	TPSS103	ES3	0.40 - 0.50	27/06/2023
28275910	TPSS103	ES8	2.40 - 2.50	27/06/2023
28275818	TPSS104	ES5	0.70 - 0.80	27/06/2023
28275823	TPSS104	ES8	2.00 - 2.10	27/06/2023
28275922	TPSS105	ES3	0.40 - 0.50	27/06/2023
28275813	TPSS105	ES8	2.40 - 2.50	27/06/2023
28275803	TPSS106	ES3	0.40 - 0.50	27/06/2023
28275873	TPSS106	ES8	2.40 - 2.50	27/06/2023
28275868	TPSS107	ES3	0.40 - 0.50	28/06/2023
28275878	TPSS107	ES6	1.80 - 1.90	28/06/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28275828			28275833			28275856			28275861			28275840			28275848			28275895
Customer Sample Reference			TP208			TP208			TPC08			TPC08			TPC09			TPC09			TPSS101
AGS Reference			ES5			ES10			ES5			ES8			ES5			ES8			ES3
Depth (m)			2.00 - 2.10			3.50 - 3.60			0.80 - 0.90			2.30 - 2.60			1.30 - 1.40			2.70 - 2.80			0.40 - 0.50
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Anions in soil by IC	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 20	X			X			X			X			X			X			X
Chromium III	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 20			X			X			X			X			X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Magnesium (BRE)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Sample description	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		

28275823	TPSS104	ES8	2.00 - 2.10	1kg TUB with Handle (ALE260)	S			X												
28275818	TPSS104	ES5	0.70 - 0.80	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28275910	TPSS103	ES8	2.40 - 2.50	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28275905	TPSS103	ES3	0.40 - 0.50	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28275888	TPSS102	ES8	2.40 - 2.50	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28275883	TPSS102	ES3	0.40 - 0.50	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28275900	TPSS101	ES8	2.40 - 2.50	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X
				1kg TUB with Handle (ALE260)	S			X												
28275895	TPSS101	ES3	0.40 - 0.50	60g VOC (ALE215)	S							X								
				250g Amber Jar (ALE210)	S	X	X		X	X	X		X	X	X	X	X	X	X	X

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28275828			28275833			28275856			28275861			28275840			28275848			28275895
Customer Sample Reference			TP208			TP208			TPC08			TPC08			TPC09			TPC09			TPSS101
AGS Reference			ES5			ES10			ES5			ES8			ES5			ES8			ES3
Depth (m)			2.00 - 2.10			3.50 - 3.60			0.80 - 0.90			2.30 - 2.60			1.30 - 1.40			2.70 - 2.80			0.40 - 0.50
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 20			X			X			X			X			X			X	

28275823	TPSS104	ES8	2.00 - 2.10	1kg TUB with Handle (ALE260)	S							
28275818	TPSS104	ES5	0.70 - 0.80	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28275910	TPSS103	ES8	2.40 - 2.50	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28275905	TPSS103	ES3	0.40 - 0.50	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28275888	TPSS102	ES8	2.40 - 2.50	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28275883	TPSS102	ES3	0.40 - 0.50	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28275900	TPSS101	ES8	2.40 - 2.50	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		
				1kg TUB with Handle (ALE260)	S							
28275895	TPSS101	ES3	0.40 - 0.50	60g VOC (ALE215)	S							X
				250g Amber Jar (ALE210)	S	X	X	X	X	X		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28275823			28275922			28275813			28275803			28275873			28275868			28275878	
Customer Sample Reference			TPSS104			TPSS105			TPSS105			TPSS106			TPSS106			TPSS107			TPSS107	
AGS Reference			ES8			ES3			ES8			ES3			ES8			ES3			ES6	
Depth (m)			2.00 - 2.10			0.40 - 0.50			2.40 - 2.50			0.40 - 0.50			2.40 - 2.50			0.40 - 0.50			1.80 - 1.90	
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Anions in soil by IC	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 20			X			X			X			X			X			X		
Chromium III	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Magnesium (BRE)	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
PAH by GCMS	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
PCBs by GCMS	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
pH	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Sample description	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
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UNL - Unspecified Liquid
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Lab Sample No(s)			28275823			28275922			28275813			28275803			28275873			28275868			28275878	
Customer Sample Reference			TPSS104			TPSS105			TPSS105			TPSS106			TPSS106			TPSS107			TPSS107	
AGS Reference			ES8			ES3			ES8			ES3			ES8			ES3			ES6	
Depth (m)			2.00 - 2.10			0.40 - 0.50			2.40 - 2.50			0.40 - 0.50			2.40 - 2.50			0.40 - 0.50			1.80 - 1.90	
Container			250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Total Organic Carbon	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Total Sulphate	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
Total Sulphur	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 20	X			X			X			X			X			X		X		
VOC MS (S)	All	NDPs: 0 Tests: 20		X			X			X			X			X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28275828	TP208	2.00 - 2.10	Dark Brown	Silty Clay Loam	Stones	Vegetation
28275833	TP208	3.50 - 3.60	Dark Brown	Sandy Silt Loam	Stones	None
28275856	TPC08	0.80 - 0.90	Light Brown	Sandy Silt Loam	Stones	Vegetation
28275861	TPC08	2.30 - 2.60	Grey	Sandy Silt Loam	Stones	None
28275840	TPC09	1.30 - 1.40	Grey	Sandy Silt Loam	Stones	None
28275848	TPC09	2.70 - 2.80	Grey	Sandy Silt Loam	Stones	None
28275895	TPSS101	0.40 - 0.50	Light Brown	Sandy Loam	Stones	Vegetation
28275900	TPSS101	2.40 - 2.50	Grey	Sandy Silt Loam	Stones	Vegetation
28275883	TPSS102	0.40 - 0.50	Light Brown	Sandy Loam	Stones	Vegetation
28275888	TPSS102	2.40 - 2.50	Light Brown	Sandy Silt Loam	Stones	None
28275905	TPSS103	0.40 - 0.50	Light Brown	Sandy Silt Loam	Stones	Vegetation
28275910	TPSS103	2.40 - 2.50	Grey	Sandy Silt Loam	Stones	None
28275818	TPSS104	0.70 - 0.80	Dark Brown	Sandy Silt Loam	Stones	None
28275823	TPSS104	2.00 - 2.10	Grey	Sandy Silt Loam	Stones	None
28275813	TPSS105	2.40 - 2.50	Grey	Sandy Silt Loam	Stones	None
28275922	TPSS105	0.40 - 0.50	Dark Brown	Sandy Silt Loam	Stones	Vegetation
28275803	TPSS106	0.40 - 0.50	Light Brown	Sandy Loam	Stones	Vegetation
28275873	TPSS106	2.40 - 2.50	Grey	Sandy Silt Loam	Stones	None
28275868	TPSS107	0.40 - 0.50	Dark Brown	Silty Clay Loam	Stones	Vegetation
28275878	TPSS107	1.80 - 1.90	Grey	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	21	11	23	11	17	14
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00894	0.00518	0.00603	0.000331	0.000443	<0.0002
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0151	0.012	0.0239	0.0174	0.0248	0.0146
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #
Organic Matter, Total	<0.35 %	TM132	1.53 #	<0.35 #	1.72 #	<0.35 #	0.634 #	0.395 #
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06	0.06	0.06	0.06	0.06
pH	1 pH Units	TM133	6.24 M	8.44 M	7.42 M	8.4 M	8.07 M	8.73 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	20.9	6.65	44.3	16.8	15.2	8.11
Arsenic	<0.6 mg/kg	TM181	2.47 M	2.07 M	4.9 M	1.29 M	7.01 M	3.06 M
Barium	<0.6 mg/kg	TM181	40 #	19.7 #	127 #	72.3 #	85.6 #	61.2 #
Beryllium	<0.01 mg/kg	TM181	0.502 M	0.398 M	0.931 M	0.481 M	0.428 M	0.434 M
Cadmium	<0.02 mg/kg	TM181	2.84 M	0.726 M	0.569 M	0.691 M	0.145 M	0.546 M
Chromium	<0.9 mg/kg	TM181	20.9 M	6.65 M	44.3 M	16.8 M	15.2 M	8.11 M
Copper	<1.4 mg/kg	TM181	12.3 M	11.2 M	11.1 M	13.6 M	4.22 M	10.1 M
Lead	<0.7 mg/kg	TM181	21.1 M	7.18 M	17.3 M	7.61 M	11.3 M	10.4 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	45.4 M	19.8 M	59.4 M	32.7 M	24.6 M	23.2 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	21.7 #	9.58 #	45.8 #	19.9 #	19 #	10.8 #
Zinc	<1.9 mg/kg	TM181	113 M	56.4 M	101 M	55 M	44 M	46.6 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0122 M	0.0171 M	0.0154 M	0.0187 M	0.0242 M	0.0238 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0042 M	0.0027 M	0.0066 M	0.0032 M	0.0058 M	0.0045 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

10:33:40 18/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	12	11	20	9.8	10	10
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00612	<0.0002	0.00338	<0.0002	0.000438	<0.0002
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.012	0.01	0.017	0.00865	0.0151	0.0166
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #
Organic Matter, Total	<0.35 %	TM132	1.09 #	<0.35 #	2.03 #	<0.35 #	0.86 #	0.398 #
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06	0.06	0.06	0.06	0.06
pH	1 pH Units	TM133	8.3 M	8.23 M	8.26 M	8.55 M	8.57 M	8.45 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Chromium, Trivalent	<0.9 mg/kg	TM181	30.9	23.3	47.1	18.3	21.3	19.3
Arsenic	<0.6 mg/kg	TM181	5.12 M	8.08 M	3.59 M	4.38 M	4 M	2.07 M
Barium	<0.6 mg/kg	TM181	137 #	107 #	129 #	91.8 #	103 #	89.4 #
Beryllium	<0.01 mg/kg	TM181	0.743 M	0.518 M	0.984 M	0.509 M	0.528 M	0.476 M
Cadmium	<0.02 mg/kg	TM181	0.374 M	0.489 M	0.698 M	0.459 M	0.433 M	0.49 M
Chromium	<0.9 mg/kg	TM181	30.9 M	23.3 M	47.1 M	18.3 M	21.3 M	19.3 M
Copper	<1.4 mg/kg	TM181	8.99 M	13.8 M	12.2 M	13.1 M	12.2 M	14.5 M
Lead	<0.7 mg/kg	TM181	14.6 M	7.27 M	20.3 M	7.95 M	7.65 M	7.92 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	46.2 M	42.6 M	65.1 M	40.7 M	44.1 M	39.2 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	1.13 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	33.9 #	24.8 #	49.3 #	23.1 #	24.9 #	22.3 #
Zinc	<1.9 mg/kg	TM181	70.9 M	64.6 M	157 M	56 M	58.6 M	62.3 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0275 M	0.0255 M	0.035 M	0.0237 M	0.023 M	0.0193 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0034 M	0.0031 M	0.0042 M	0.0025 M	0.0031 M	0.0034 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

10:33:40 18/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	26	12	12	10	15	11
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000523	<0.0002	0.00159	0.000274	0.00382	<0.0002
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0279	0.0188	0.012	0.00848	0.00919	0.0129
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #	<0.02 #
Organic Matter, Total	<0.35 %	TM132	1.78 #	<0.35 #	0.419 #	<0.35 #	2.71 #	<0.35 #
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06	0.06	0.06	0.06	0.06
pH	1 pH Units	TM133	7.97 M	8.25 M	8.62 M	8.22 M	7.82 M	8.31 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Chromium, Trivalent	<0.9 mg/kg	TM181	28.2	23.4	10.8	18.8	27.7	23.5
Arsenic	<0.6 mg/kg	TM181	6.47 M	3.28 M	3.78 M	1.99 M	16.1 M	2.78 M
Barium	<0.6 mg/kg	TM181	124 #	63.4 #	70.2 #	80.6 #	165 #	109 #
Beryllium	<0.01 mg/kg	TM181	0.679 M	0.558 M	0.416 M	0.501 M	0.663 M	0.533 M
Cadmium	<0.02 mg/kg	TM181	0.454 M	0.414 M	0.454 M	0.519 M	0.757 M	0.467 M
Chromium	<0.9 mg/kg	TM181	28.2 M	23.4 M	10.8 M	18.8 M	27.7 M	23.5 M
Copper	<1.4 mg/kg	TM181	8.88 M	11.2 M	7.72 M	13.7 M	11.6 M	15.6 M
Lead	<0.7 mg/kg	TM181	16.7 M	7.4 M	12.6 M	6.79 M	20.6 M	6.57 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	51.5 M	43.9 M	26.6 M	39 M	46.8 M	45.1 M
Selenium	<1 mg/kg	TM181	1.1 #	1.08 #	1.1 #	1.02 #	<1 #	1.08 #
Vanadium	<0.2 mg/kg	TM181	33.9 #	26.8 #	12.4 #	23.7 #	33.4 #	26.6 #
Zinc	<1.9 mg/kg	TM181	100 M	61.1 M	44.3 M	55.3 M	76.4 M	54.8 M
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0321 M	0.0473 M	0.0296 M	0.0398 M	0.0209 M	0.0182 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0054 M	0.0045 M	0.0036 M	0.0033 M	0.0048 M	0.0047 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008

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CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Moisture Content Ratio (% of as received sample)	%	PM024	18	7.4				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00194	<0.0002				
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0197	0.0112				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #				
Organic Matter, Total	<0.35 %	TM132	1.55 #	<0.35 #				
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06				
pH	1 pH Units	TM133	8.19 M	8.48 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36				

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Chromium, Trivalent	<0.9 mg/kg	TM181	25.6	32.4				
Arsenic	<0.6 mg/kg	TM181	6.01 M	3.69 M				
Barium	<0.6 mg/kg	TM181	161 #	95.3 #				
Beryllium	<0.01 mg/kg	TM181	0.771 M	0.603 M				
Cadmium	<0.02 mg/kg	TM181	0.455 M	0.328 M				
Chromium	<0.9 mg/kg	TM181	25.6 M	32.4 M				
Copper	<1.4 mg/kg	TM181	11.2 M	16.7 M				
Lead	<0.7 mg/kg	TM181	19.8 M	5.87 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181	41.1 M	52.7 M				
Selenium	<1 mg/kg	TM181	<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	30.3 #	37.1 #				
Zinc	<1.9 mg/kg	TM181	73.5 M	60.5 M				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0384 M	0.0322 M				
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0056 M	0.0032 M				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	96.4	94.6	96.7	95.5	93.2	97.4
Acenaphthene-d10 % recovery**	%	TM218	94.5	92.3	93.6	93.2	91.8	94.9
Phenanthrene-d10 % recovery**	%	TM218	93	89.1	91	91.5	90.5	91.5
Chrysene-d12 % recovery**	%	TM218	93.1	92.8	94.6	97.8	95.5	97.5
Perylene-d12 % recovery**	%	TM218	88.3	89.3	91.3	97.6	91.7	92.2
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 @ M	<9 @ M	<9 @ M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 @ M	<12 @ M	<12 @ M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 @ M	<8 @ M	<8 @ M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 @ M	<16 @ M	<16 @ M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 @ M	<17 @ M	<17 @ M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 @ M	<18 @ M	<18 @ M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 @ M	<23 @ M	<23 @ M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 @ M	<24 @ M	<24 @ M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	92	97.2	95.8	92.2	92.4	92.6
Acenaphthene-d10 % recovery**	%	TM218	90.7	93.7	92.6	90.3	90.9	91.4
Phenanthrene-d10 % recovery**	%	TM218	90.6	90.6	89.8	88.9	90.2	90.5
Chrysene-d12 % recovery**	%	TM218	82.7	92.4	91.1	80.9	84.7	83
Perylene-d12 % recovery**	%	TM218	78.9	89.8	83.2	78.7	80.2	81.3
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

10:33:40 18/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Naphthalene-d8 % recovery**	%	TM218	92	94.2	91.9	95.8	96.5	92.6
Acenaphthene-d10 % recovery**	%	TM218	91.4	91.9	90.8	93	94.8	91.3
Phenanthrene-d10 % recovery**	%	TM218	90.8	89.7	88.7	89.1	93.8	89.6
Chrysene-d12 % recovery**	%	TM218	83.6	82	84	90.3	95.2	84.3
Perylene-d12 % recovery**	%	TM218	79.5	80.5	83.3	86.2	88.8	86.7
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M	<9 @ M
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M	<12 @ M
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M	<8 @ M
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M	<16 @ M
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M	<17 @ M
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M	<10 @ M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M	<14 @ M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M	<18 @ M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M	<23 @ M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M	<24 @ M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

10:33:40 18/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	95.1	95.7				
Acenaphthene-d10 % recovery**	%	TM218	92.6	93.4				
Phenanthrene-d10 % recovery**	%	TM218	90	91.3				
Chrysene-d12 % recovery**	%	TM218	93.2	97.2				
Perylene-d12 % recovery**	%	TM218	89	93.1				
Naphthalene	<9 µg/kg	TM218	<9 @ M	<9 @ M				
Acenaphthylene	<12 µg/kg	TM218	<12 @ M	<12 @ M				
Acenaphthene	<8 µg/kg	TM218	<8 @ M	<8 @ M				
Fluorene	<10 µg/kg	TM218	<10 @ M	<10 @ M				
Phenanthrene	<15 µg/kg	TM218	<15 @ M	<15 @ M				
Anthracene	<16 µg/kg	TM218	<16 @ M	<16 @ M				
Fluoranthene	<17 µg/kg	TM218	<17 @ M	<17 @ M				
Pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 @ M	<14 @ M				
Chrysene	<10 µg/kg	TM218	<10 @ M	<10 @ M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 @ M	<15 @ M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 @ M	<14 @ M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 @ M	<15 @ M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 @ M	<18 @ M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 @ M	<23 @ M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 @ M	<24 @ M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP208	TP208	TPC08	TPC08	TPC09	TPC09
Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP208	TP208	TPC08	TPC08	TPC09	TPC09
Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method						
		Customer Sample Ref.	TPSS107	TPSS107				
		Depth (m)	0.40 - 0.50	1.80 - 1.90				
		Sample Type	Soil/Solid (S)	Soil/Solid (S)				
		Date Sampled	28/06/2023	28/06/2023				
		Sample Time	.	.				
		Date Received	05/07/2023	05/07/2023				
		SDG Ref	230705-77	230705-77				
		Lab Sample No.(s)	28275868	28275878				
		AGS Reference	ES3	ES6				
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Acenaphthylene	<100 µg/kg	TM157	<100	<100				
Acenaphthene	<100 µg/kg	TM157	<100	<100				
Anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Fluoranthene	<100 µg/kg	TM157	<100	<100				
Fluorene	<100 µg/kg	TM157	<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100				
Phenanthrene	<100 µg/kg	TM157	<100	<100				
Pyrene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	107	93.9	114	127	98.5	156 4
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10 4
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10 4
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10 4
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10 4
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10 4
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10 4
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	1780 #	<1000 #	<1000 #	<1000 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50 4
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50 4
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20 4

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
GRO Surrogate % recovery**	%	TM089	91.2	94.1	129	106	96.5	90.4
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1330 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000 @	<5000 @	<5000 @	<5000 @	<5000 @	<5000 @
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	2960 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	128	116 @	94.8	101	90.8	99.2
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10	<10	<10	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10	<10	<10	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10	<10	<10	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000 @	<5000 @	<5000 @	<5000 @	<5000 @	<5000 @
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10	<10	<10	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10	<10	<10	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10	<10	<10	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @ #	<1000 @ #	<1000 @ #	<1000 @ #	2280 @ #	<1000 @ #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @	<1000 @
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50 @	<50	<50	<50	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50 @	<50	<50	<50	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20 @	<20	<20	<20	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	103	102				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20				

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	112	111	104	117	104	104
Toluene-d8**	%	TM116	98.3	101	95.2	98.3	98.2	99.4
4-Bromofluorobenzene**	%	TM116	89.5	94.9	88	99.6	97.6	96.1
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	1.61 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TP208	TP208	TPC08	TPC08	TPC09	TPC09
Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2	<2	<2	<2	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<3	<3	<3	<3	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4	<4	<4	<4	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TP208	TP208	TPC08	TPC08	TPC09	TPC09
Depth (m)			2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			29/06/2023	29/06/2023	28/06/2023	28/06/2023	28/06/2023	28/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275828	28275833	28275856	28275861	28275840	28275848
AGS Reference			ES5	ES10	ES5	ES8	ES5	ES8
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

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CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	108	114	137	123	117	119
Toluene-d8**	%	TM116	99.4	99.7	98.2	101	100	99.8
4-Bromofluorobenzene**	%	TM116	85.4	92.2	79.9	92	91.6	95.6
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2	<2	<2	<2	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<3	<3	<3	<3	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4	<4	<4	<4	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS101	TPSS101	TPSS102	TPSS102	TPSS103	TPSS103
Depth (m)			0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275895	28275900	28275883	28275888	28275905	28275910
AGS Reference			ES3	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

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CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			-	-	-	-	-	-
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	115	122	109	114	111	109
Toluene-d8**	%	TM116	98.5	100	90.4	101	96.3	100
4-Bromofluorobenzene**	%	TM116	80	97	70.4	94.1	75.6	91.2
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Chloroform	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Benzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1	<1	<1	<1	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2	<2	<2	<2	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3	<3	<3	<3	<3	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M	<2 M	<2 M	<2 M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4	<4	<4	<4	<4
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

10:33:40 18/07/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106
Depth (m)			0.70 - 0.80	2.00 - 2.10	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023	27/06/2023
Sample Time			.	.	.	.	.	.
Date Received			05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023	05/07/2023
SDG Ref			230705-77	230705-77	230705-77	230705-77	230705-77	230705-77
Lab Sample No.(s)			28275818	28275823	28275922	28275813	28275803	28275873
AGS Reference			ES5	ES8	ES3	ES8	ES3	ES8
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

10:33:40 18/07/2023

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	109	116				
Toluene-d8**	%	TM116	98.4	98.8				
4-Bromofluorobenzene**	%	TM116	97	99.9				
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<5 #	<0.5 #				
Chloromethane	<2 µg/kg	TM116	<20 #	<2 #				
Vinyl Chloride	<0.5 µg/kg	TM116	<5 @ M	<0.5 @ M				
Bromomethane	<1 µg/kg	TM116	<10 M	<1 M				
Chloroethane	<1 µg/kg	TM116	<10 M	<1 M				
Trichlorofluorormethane	<0.5 µg/kg	TM116	<5 M	<0.5 M				
1,1-Dichloroethene	<0.5 µg/kg	TM116	<5 #	<0.5 #				
Carbon Disulphide	<1 µg/kg	TM116	<10 M	<1 M				
Dichloromethane	<5 µg/kg	TM116	<50 #	<5 #				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<5 M	<0.5 M				
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<10 M	<1 M				
1,1-Dichloroethane	<0.5 µg/kg	TM116	<5 M	<0.5 M				
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<5 M	<0.5 M				
2,2-Dichloropropane	<1 µg/kg	TM116	<10	<1				
Bromochloromethane	<2 µg/kg	TM116	<20 M	<2 M				
Chloroform	<3 µg/kg	TM116	<30 M	<3 M				
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<5 M	<0.5 M				
1,1-Dichloropropene	<0.5 µg/kg	TM116	<5 M	<0.5 M				
Carbontetrachloride	<0.5 µg/kg	TM116	<5 M	<0.5 M				
1,2-Dichloroethane	<1 µg/kg	TM116	<10 M	<1 M				
Benzene	<1 µg/kg	TM116	<10 M	<1 M				
Trichloroethene	<1 µg/kg	TM116	<10 #	<1 #				
1,2-Dichloropropane	<0.5 µg/kg	TM116	<5 M	<0.5 M				
Dibromomethane	<1 µg/kg	TM116	<10 M	<1 M				
Bromodichloromethane	<2 µg/kg	TM116	<20 M	<2 M				
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<5 M	<0.5 M				
Toluene	<1 µg/kg	TM116	<10 M	<1 M				
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<10	<1				
1,1,2-Trichloroethane	<1 µg/kg	TM116	<10 M	<1 M				
1,3-Dichloropropane	<1 µg/kg	TM116	<10 M	<1 M				

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	TPSS107	TPSS107				
Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Tetrachloroethene	<2 µg/kg	TM116	<20 M	<2 M				
Dibromochloromethane	<2 µg/kg	TM116	<20 M	<2 M				
1,2-Dibromoethane	<1 µg/kg	TM116	<10 M	<1 M				
Chlorobenzene	<2 µg/kg	TM116	<20 M	<2 M				
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<10 M	<1 M				
Ethylbenzene	<1 µg/kg	TM116	<10 M	<1 M				
p/m-Xylene	<2 µg/kg	TM116	<20 #	<2 #				
o-Xylene	<2 µg/kg	TM116	<20 M	<2 M				
Styrene	<2 µg/kg	TM116	<20 @ #	<2 @ #				
Bromoform	<2 µg/kg	TM116	<20 M	<2 M				
Isopropylbenzene	<2 µg/kg	TM116	<20 #	<2 #				
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<20 #	<2 #				
1,2,3-Trichloropropane	<2 µg/kg	TM116	<20 M	<2 M				
Bromobenzene	<2 µg/kg	TM116	<20 M	<2 M				
Propylbenzene	<2 µg/kg	TM116	<20 M	<2 M				
2-Chlorotoluene	<3 µg/kg	TM116	<30 M	<3 M				
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<20 M	<2 M				
4-Chlorotoluene	<3 µg/kg	TM116	<30 M	<3 M				
tert-Butylbenzene	<2 µg/kg	TM116	<20 #	<2 #				
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<30 #	<3 #				
sec-Butylbenzene	<1 µg/kg	TM116	<10	<1				
4-Isopropyltoluene	<2 µg/kg	TM116	<20	<2				
1,3-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M				
n-Butylbenzene	<3 µg/kg	TM116	<30	<3				
1,2-Dichlorobenzene	<5 µg/kg	TM116	<50 M	<5 M				
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<20 M	<2 M				
Tert-amyl methyl ether	<1 µg/kg	TM116	<10 #	<1 #				
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<70	<7				
Hexachlorobutadiene	<4 µg/kg	TM116	<40	<4				
Naphthalene	<8 µg/kg	TM116	<80 M	<8 M				
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<100 #	<10 #				
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<70	<7				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			TPSS107	TPSS107				
Depth (m)			0.40 - 0.50	1.80 - 1.90				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			28/06/2023	28/06/2023				
Sample Time			.	.				
Date Received			05/07/2023	05/07/2023				
SDG Ref			230705-77	230705-77				
Lab Sample No.(s)			28275868	28275878				
AGS Reference			ES3	ES6				
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.2	<0.02				
Sum of BTEX	<7 µg/kg	TM116	<70	<7				

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Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP208ES5 2.00 - 2.10 SOLID 29/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275828 TM048	12/07/2023	Alex Horner	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP208ES10 3.50 - 3.60 SOLID 29/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275833 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC08ES5 0.80 - 0.90 SOLID 28/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275856 TM048	13/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC08ES8 2.30 - 2.60 SOLID 28/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275861 TM048	13/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC09ES5 1.30 - 1.40 SOLID 28/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275840 TM048	12/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPC09ES8 2.70 - 2.80 SOLID 28/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275848 TM048	12/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS101ES3 0.40 - 0.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275895 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS101ES8 2.40 - 2.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275900 TM048	12/07/2023	Alex Horner	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS102ES3 0.40 - 0.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275883 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS102ES8 2.40 - 2.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275888 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS103ES3 0.40 - 0.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275905 TM048	12/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS103ES8 2.40 - 2.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275910 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS104ES5 0.70 - 0.80 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275818 TM048	13/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS104ES8 2.00 - 2.10 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275823 TM048	13/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS105ES3 0.40 - 0.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275922 TM048	13/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS105ES8 2.40 - 2.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275813 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS106ES3 0.40 - 0.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275803 TM048	12/07/2023	Renata Bozhkov	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230705-77 **Report Number:** 696722 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS106ES8 2.40 - 2.50 SOLID 27/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275873 TM048	12/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS107ES3 0.40 - 0.50 SOLID 28/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275868 TM048	12/07/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TPSS107ES6 1.80 - 1.90 SOLID 28/06/2023 00:00:00 05/07/2023 10:00:00 230705-77 28275878 TM048	13/07/2023	Alex Horner	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM019	Determination of Anions in Soils using Ion Chromatography
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM218	The determination of PAH in soil samples by GC-MS
TM282	Extraction of Magnesium by BRE Method
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28275828	28275833	28275856	28275861	28275840	28275848	28275895	28275900	28275883	28275888
Customer Sample Ref.	TP208	TP208	TPC08	TPC08	TPC09	TPC09	TPSS101	TPSS101	TPSS102	TPSS102
AGS Ref.	ES5	ES10	ES5	ES8	ES5	ES8	ES3	ES8	ES3	ES8
Depth	2.00 - 2.10	3.50 - 3.60	0.80 - 0.90	2.30 - 2.60	1.30 - 1.40	2.70 - 2.80	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	2.40 - 2.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023
Anions in soil by IC	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023
Asbestos ID in Solid Samples	12-Jul-2023	12-Jul-2023	13-Jul-2023	13-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023
Chromium III	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023
Cyanide Comp/Free/Total/Thiocyanate	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023
EPH CWG GC (S)	13-Jul-2023	14-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	14-Jul-2023	14-Jul-2023	18-Jul-2023
GRO by GC-FID (S)	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	10-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	11-Jul-2023
Hexavalent Chromium (s)	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023
Magnesium (BRE)	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	12-Jul-2023	12-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023
Metals in solid samples by OES	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	07-Jul-2023	07-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023
PAH by GCMS	14-Jul-2023	14-Jul-2023	14-Jul-2023	14-Jul-2023	14-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	14-Jul-2023	17-Jul-2023
PCBs by GCMS	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023
pH	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	12-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023
Phenols by HPLC (S)	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	12-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023
Sample description	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023
Semi Volatile Organic Compounds	13-Jul-2023	13-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	13-Jul-2023	12-Jul-2023	13-Jul-2023	12-Jul-2023	13-Jul-2023
Total Organic Carbon	11-Jul-2023	11-Jul-2023	11-Jul-2023	10-Jul-2023	11-Jul-2023	10-Jul-2023	11-Jul-2023	12-Jul-2023	11-Jul-2023	11-Jul-2023
Total Sulphate	10-Jul-2023	10-Jul-2023	10-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023
Total Sulphur	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	11-Jul-2023	07-Jul-2023	11-Jul-2023
TPH CWG GC (S)	13-Jul-2023	14-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	14-Jul-2023	14-Jul-2023	18-Jul-2023
VOC MS (S)	07-Jul-2023	07-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023

Lab Sample No(s)	28275905	28275910	28275818	28275823	28275813	28275922	28275803	28275873	28275868	28275878
Customer Sample Ref.	TPSS103	TPSS103	TPSS104	TPSS104	TPSS105	TPSS105	TPSS106	TPSS106	TPSS107	TPSS107
AGS Ref.	ES3	ES8	ES5	ES8	ES8	ES3	ES3	ES8	ES3	ES6
Depth	0.40 - 0.50	2.40 - 2.50	0.70 - 0.80	2.00 - 2.10	2.40 - 2.50	0.40 - 0.50	0.40 - 0.50	2.40 - 2.50	0.40 - 0.50	1.80 - 1.90
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023
Anions in soil by IC	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	12-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023
Asbestos ID in Solid Samples	12-Jul-2023	12-Jul-2023	13-Jul-2023	13-Jul-2023	12-Jul-2023	13-Jul-2023	12-Jul-2023	12-Jul-2023	12-Jul-2023	13-Jul-2023
Chromium III	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023
Cyanide Comp/Free/Total/Thiocyanate	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023
EPH CWG GC (S)	14-Jul-2023	18-Jul-2023	18-Jul-2023	18-Jul-2023	14-Jul-2023	18-Jul-2023	18-Jul-2023	14-Jul-2023	18-Jul-2023	14-Jul-2023
GRO by GC-FID (S)	07-Jul-2023	07-Jul-2023	07-Jul-2023	12-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023
Hexavalent Chromium (s)	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023	08-Jul-2023
Magnesium (BRE)	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	12-Jul-2023
Metals in solid samples by OES	07-Jul-2023	07-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	07-Jul-2023	10-Jul-2023	07-Jul-2023
PAH by GCMS	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	13-Jul-2023	14-Jul-2023	14-Jul-2023
PCBs by GCMS	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023	13-Jul-2023
pH	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023	06-Jul-2023
Phenols by HPLC (S)	12-Jul-2023	12-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	12-Jul-2023	07-Jul-2023
Sample description	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023	05-Jul-2023
Semi Volatile Organic Compounds	12-Jul-2023	13-Jul-2023	13-Jul-2023	12-Jul-2023	12-Jul-2023	13-Jul-2023	12-Jul-2023	13-Jul-2023	12-Jul-2023	12-Jul-2023
Total Organic Carbon	10-Jul-2023	10-Jul-2023	12-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	11-Jul-2023	10-Jul-2023	10-Jul-2023	12-Jul-2023
Total Sulphate	07-Jul-2023	07-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	10-Jul-2023	07-Jul-2023	10-Jul-2023	07-Jul-2023
Total Sulphur	07-Jul-2023	07-Jul-2023	07-Jul-2023	11-Jul-2023	07-Jul-2023	07-Jul-2023	11-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023
TPH CWG GC (S)	14-Jul-2023	18-Jul-2023	18-Jul-2023	18-Jul-2023	14-Jul-2023	18-Jul-2023	18-Jul-2023	14-Jul-2023	18-Jul-2023	14-Jul-2023
VOC MS (S)	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	07-Jul-2023	10-Jul-2023	10-Jul-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	02 August 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230726-72
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	698813
Order Number:	12380

We received 8 samples on Wednesday July 26, 2023 and 8 of these samples were scheduled for analysis which was completed on Wednesday August 02, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28383943	BHSS101	ES18	1.00 - 1.50	17/07/2023
28383948	BHSS102	ES13	3.00 - 3.80	18/07/2023
28383953	BHSS103	ES15	3.00 - 3.50	17/07/2023
28383958	BHSS104	ES15	2.00 - 2.50	19/07/2023
28383964	BHSS105	ES7	1.00 - 1.50	14/07/2023
28383969	BHSS106	ES16	3.00 - 3.50	20/07/2023
28383974	BHSS107	ES9	2.50 - 2.50	20/07/2023
28383979	BHSS108	ES12	3.00 - 3.00	20/07/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28383943			28383948			28383953			28383958			28383964			28383969			28383974
Customer Sample Reference			BHSS101			BHSS102			BHSS103			BHSS104			BHSS105			BHSS106			BHSS107
AGS Reference			ES18			ES13			ES15			ES15			ES7			ES16			ES9
Depth (m)			1.00 - 1.50			3.00 - 3.80			3.00 - 3.50			2.00 - 2.50			1.00 - 1.50			3.00 - 3.50			2.50 - 2.50
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Anions by Kone (w)	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Anions in soil by IC	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
CEN Readings	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Chromium III	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Coronene	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
EPH by GCxGC-FID	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Fluoride	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8			X			X			X			X			X			X	

| | | |

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28383943			28383948			28383953			28383958			28383964			28383969			28383974
Customer Sample Reference			BHSS101			BHSS102			BHSS103			BHSS104			BHSS105			BHSS106			BHSS107
AGS Reference			ES18			ES13			ES15			ES15			ES7			ES16			ES9
Depth (m)			1.00 - 1.50			3.00 - 3.80			3.00 - 3.50			2.00 - 2.50			1.00 - 1.50			3.00 - 3.50			2.50 - 2.50
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Loss on Ignition in soils	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Magnesium (BRE)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Mercury Dissolved	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Metals in solid samples by OES	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Phenols by HPLC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 8	X			X			X			X			X			X			X
Sample description	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		

| | | |

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28383943			28383948			28383953			28383958			28383964			28383969			28383974
Customer Sample Reference			BHSS101			BHSS102			BHSS103			BHSS104			BHSS105			BHSS106			BHSS107
AGS Reference			ES18			ES13			ES15			ES15			ES7			ES16			ES9
Depth (m)			1.00 - 1.50			3.00 - 3.80			3.00 - 3.50			2.00 - 2.50			1.00 - 1.50			3.00 - 3.50			2.50 - 2.50
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Total Sulphate	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
Total Sulphur	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 8		X			X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 8			X			X			X			X			X			X	

28383979	BHSS108	ES12	3.00 - 3.00	60g VOC (ALE215)	S								X
				250g Amber Jar (ALE210)	S		X		X		X		
				1kg TUB with Handle (ALE260)	S								
28383974	BHSS107	ES9	2.50 - 2.50	60g VOC (ALE215)	S								X
				250g Amber Jar (ALE210)	S		X		X		X		

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28383943	BHSS101	1.00 - 1.50	Dark Brown	Sandy Clay Loam	Stones	Vegetation
28383948	BHSS102	3.00 - 3.80	Grey	Sandy Loam	Stones	None
28383953	BHSS103	3.00 - 3.50	Dark Brown	Sandy Clay Loam	Stones	None
28383958	BHSS104	2.00 - 2.50	Grey	Sandy Clay Loam	Stones	Vegetation
28383964	BHSS105	1.00 - 1.50	Dark Brown	Sandy Clay Loam	Stones	None
28383969	BHSS106	3.00 - 3.50	Grey	Sandy Loam	Stones	None
28383974	BHSS107	2.50 - 2.50	Grey	Sandy Clay Loam	Stones	None
28383979	BHSS108	3.00 - 3.00	Dark Brown	Sandy Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			-	-	-	-	-	-
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Moisture Content Ratio (% of as received sample)	%	PM024	21	6.4	10	6.4	13	6.3
Loss on ignition	<0.7 %	TM018	3.63 M	4.31 M	3.09 M	3.06 M	2.95 M	11.4 M
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00502	0.00192	0.00274	0.00334	0.0025	0.00122
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0251	0.0264	0.0123	0.0487	0.0206	0.0125
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M	<0.035 M
Organic Carbon, Total	<0.2 %	TM132	1.19 M	1.67 M	3 M	0.415 M	0.335 M	<0.2 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	<0.02 #	0.162 #	<0.02 #	<0.02 #
Organic Matter, Total	<0.35 %	TM132	2.05 #	2.88 #	5.17 #	0.715 #	0.578 #	<0.35 #
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06	0.06	0.486	0.06	0.06
pH	1 pH Units	TM133	8.21 M	8.78 M	8.73 M	8.44 M	8.38 M	8.72 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 @ M	<1 M
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			.	.	.	.	.	.
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36	<36	<36	<36
Chromium, Trivalent	<0.9 mg/kg	TM181	13.2	29	26	11.7	35.8	14
Arsenic	<0.6 mg/kg	TM181	6.17 M	2.37 M	3.17 M	3.22 M	4.41 M	1.79 M
Barium	<0.6 mg/kg	TM181	74.2 #	85.9 #	68.2 #	79.7 #	109 #	64.4 #
Beryllium	<0.01 mg/kg	TM181	0.389 M	0.564 M	0.476 M	0.303 M	0.647 M	0.309 M
Cadmium	<0.02 mg/kg	TM181	0.328 M	0.395 M	0.44 M	0.311 M	0.45 M	0.384 M
Chromium	<0.9 mg/kg	TM181	13.2 M	29 M	26 M	11.8 M	35.8 M	14 M
Copper	<1.4 mg/kg	TM181	7.13 M	16.5 M	14.3 M	10.7 M	14.6 M	10.2 M
Lead	<0.7 mg/kg	TM181	17.1 M	13 M	6.89 M	8.81 M	9.75 M	6.36 M
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181	22.5 M	51 M	49.3 M	26.2 M	62.9 M	28.7 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	1.13 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	13.6 #	31 #	27 #	13.9 #	35.2 #	16 #
Zinc	<1.9 mg/kg	TM181	112 M	79 M	59.7 M		194 M	
ANC @ pH 4	<0.03 mol/kg	TM182	0.525	2.06	2.79	2.31	2.14	2.51
ANC @ pH 6	<0.03 mol/kg	TM182	0.0387	0.131	0.169	0.135	0.0609	0.118
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0417 M	0.0428 M	0.0253 M	0.0429 M	0.0245 M	0.0267 M
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0105 M	0.0227 M	0.0051 M	0.0063 M	0.0104 M	0.0064 M
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10	<10	<10	<10
Coronene	<200 µg/kg	TM410	<200	<200	<200	<200	<200	<200
EPH Surrogate % recovery**	%	TM415	100	105	93.5	100	97.2	102
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5	<5	<5	<5	<5

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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	7.5	8.8				
Loss on ignition	<0.7 %	TM018	2.27 M	3.24 M				
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.000916	0.000812				
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0183	0.0144				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
Organic Carbon, Total	<0.2 %	TM132	0.511 M	0.913 M				
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #				
Organic Matter, Total	<0.35 %	TM132	0.881 #	1.57 #				
Sulphate, Total potential	<0.06 %	TM132	0.06	0.06				
pH	1 pH Units	TM133	8.4 M	8.72 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M				
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M				
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21				
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M				
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHSS107	BHSS108				
Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M				
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36				
Chromium, Trivalent	<0.9 mg/kg	TM181	33.6	33.3				
Arsenic	<0.6 mg/kg	TM181	2.78 M	6.76 M				
Barium	<0.6 mg/kg	TM181	98.2 #	96.4 #				
Beryllium	<0.01 mg/kg	TM181	0.551 M	0.627 M				
Cadmium	<0.02 mg/kg	TM181	0.442 M	1 M				
Chromium	<0.9 mg/kg	TM181	33.6 M	33.3 M				
Copper	<1.4 mg/kg	TM181	17.7 M	20 M				
Lead	<0.7 mg/kg	TM181	7.6 M	10.1 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181	62.2 M	74.9 M				
Selenium	<1 mg/kg	TM181	1.03 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	34.6 #	33.6 #				
Zinc	<1.9 mg/kg	TM181	65.4 M	90.3 M				
ANC @ pH 4	<0.03 mol/kg	TM182	2.5	1.66				
ANC @ pH 6	<0.03 mol/kg	TM182	0.257	0.0823				
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0321 M	0.0186 M				
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0054 M	0.0046 M				
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008				
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10				
Coronene	<200 µg/kg	TM410	<200	<200				
EPH Surrogate % recovery**	%	TM415	97.1	97.2				
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5				

15:40:22 02/08/2023

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			.	.	.	.	.	.
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	93.2	91.4	93.6	94	92.6	92.8
Acenaphthene-d10 % recovery**	%	TM218	87.7	87.2	88.3	88.8	86.9	87.8
Phenanthrene-d10 % recovery**	%	TM218	84.4	86.1	82.6	84.3	79.9	83
Chrysene-d12 % recovery**	%	TM218	85.9	93.1	85.4	92	76.8	85.1
Perylene-d12 % recovery**	%	TM218	86.3	86.8	82.2	90.3	76.4	85
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	<118	<118

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	91.2	92.7				
Acenaphthene-d10 % recovery**	%	TM218	87.7	88.5				
Phenanthrene-d10 % recovery**	%	TM218	84.7	87.8				
Chrysene-d12 % recovery**	%	TM218	84.1	92.7				
Perylene-d12 % recovery**	%	TM218	76.2	89.6				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M				
Pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M				
Chrysene	<10 µg/kg	TM218	<10 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			-	-	-	-	-	-
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			.	.	.	.	.	.
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chlorophenol	<100 µg/kg	TM157	<100	<100				

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100				
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100				
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100				
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100				
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100				
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100				
Acenaphthylene	<100 µg/kg	TM157	<100	<100				
Acenaphthene	<100 µg/kg	TM157	<100	<100				
Anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100				
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100				
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100				
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100				
Chrysene	<100 µg/kg	TM157	<100	<100				
Fluoranthene	<100 µg/kg	TM157	<100	<100				
Fluorene	<100 µg/kg	TM157	<100	<100				
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100				
Phenanthrene	<100 µg/kg	TM157	<100	<100				
Pyrene	<100 µg/kg	TM157	<100	<100				
Naphthalene	<100 µg/kg	TM157	<100	<100				
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100				
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			-	-	-	-	-	-
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	100 @	101 @	93.9 @	108	101 @	99.6
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10	<10 @	<10
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10	<10 @	<10
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10	<10 @	<10
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	1270 #	<1000 #	<1000 #	1580 #	<1000 #	<1000 #
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10	<10 @	<10
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10	<10 @	<10
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10 @	<10 @	<10 @	<10	<10 @	<10
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	2240 #	<1000 #	<1000 #	<1000 #	<1000 #	<1000 #
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50	<50 @	<50
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50 @	<50 @	<50 @	<50	<50 @	<50
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20 @	<20 @	<20 @	<20	<20 @	<20

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHSS107	BHSS108				
Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
GRO Surrogate % recovery**	%	TM089	103	102				
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10				
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	2960 #				
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000				
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10				
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 #				
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000				
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000				
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000				
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50				
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50				
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20				

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			-	-	-	-	-	-
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	110 @	117	112 @	115	101 @	115
Toluene-d8**	%	TM116	99.7 @	101	101 @	102	101 @	101
4-Bromofluorobenzene**	%	TM116	86 @	98.4	93.7 @	96.2	91.4 @	96.4
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 @ #	<0.5 #	<0.5 @ #	<0.5 #	<0.5 @ #	<0.5 #
Chloromethane	<2 µg/kg	TM116	<2 @ #	<2 #	<2 @ #	<2 #	<2 @ #	<2 #
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 @ M
Bromomethane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Chloroethane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 @ #	<0.5 #	<0.5 @ #	<0.5 #	<0.5 @ #	<0.5 #
Carbon Disulphide	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Dichloromethane	<5 µg/kg	TM116	<5 @ #	<5 #	<5 @ #	<5 #	<5 @ #	<5 #
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
2,2-Dichloropropane	<1 µg/kg	TM116	<1 @	<1	<1 @	<1	<1 @	<1
Bromochloromethane	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Chloroform	<3 µg/kg	TM116	<3 @ M	<3 M	<3 @ M	<3 M	<3 @ M	<3 M
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
1,2-Dichloroethane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Benzene	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Trichloroethene	<1 µg/kg	TM116	<1 @ #	<1 #	<1 @ #	<1 #	<1 @ #	<1 #
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
Dibromomethane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Bromodichloromethane	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M	<0.5 @ M	<0.5 M
Toluene	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1 @	<1	<1 @	<1	<1 @	<1
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
1,3-Dichloropropane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			.	.	.	.	.	.
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Dibromochloromethane	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
1,2-Dibromoethane	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
Chlorobenzene	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 @ M	<1 @ M	<1 @ M	<1 M	<1 @ M	<1 M
Ethylbenzene	<1 µg/kg	TM116	<1 @ M	<1 M	<1 @ M	<1 M	<1 @ M	<1 M
p/m-Xylene	<2 µg/kg	TM116	<2 @ #	<2 #	<2 @ #	<2 #	<2 @ #	<2 #
o-Xylene	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #	<2 @ #
Bromoform	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Isopropylbenzene	<2 µg/kg	TM116	<2 @ #	<2 #	<2 @ #	<2 #	<2 @ #	<2 #
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 @ #	<2 #	<2 @ #	<2 #	<2 @ #	<2 #
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Bromobenzene	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Propylbenzene	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
2-Chlorotoluene	<3 µg/kg	TM116	<3 @ M	<3 M	<3 @ M	<3 M	<3 @ M	<3 M
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
4-Chlorotoluene	<3 µg/kg	TM116	<3 @ M	<3 M	<3 @ M	<3 M	<3 @ M	<3 M
tert-Butylbenzene	<2 µg/kg	TM116	<2 @ #	<2 #	<2 @ #	<2 #	<2 @ #	<2 #
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 @ #	<3 #	<3 @ #	<3 #	<3 @ #	<3 #
sec-Butylbenzene	<1 µg/kg	TM116	<1 @	<1	<1 @	<1	<1 @	<1
4-Isopropyltoluene	<2 µg/kg	TM116	<2 @	<2	<2 @	<2	<2 @	<2
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 M	<5 @ M	<5 M	<5 @ M	<5 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 M	<5 @ M	<5 M	<5 @ M	<5 M
n-Butylbenzene	<3 µg/kg	TM116	<3 @	<3	<3 @	<3	<3 @	<3
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 @ M	<5 M	<5 @ M	<5 M	<5 @ M	<5 M
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 @ M	<2 M	<2 @ M	<2 M	<2 @ M	<2 M
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 @ #	<1 @ #	<1 @ #	<1 #	<1 @ #	<1 #
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7 @	<7	<7 @	<7	<7 @	<7
Hexachlorobutadiene	<4 µg/kg	TM116	<4 @	<4	<4 @	<4	<4 @	<4
Naphthalene	<8 µg/kg	TM116	<8 @ M	<8 M	<8 @ M	<8 M	<8 @ M	<8 M
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 @ #	<10 #	<10 @ #	<10 #	<10 @ #	<10 #
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106
Depth (m)			1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			17/07/2023	18/07/2023	17/07/2023	19/07/2023	14/07/2023	20/07/2023
Sample Time			.	.	.	.	.	.
Date Received			26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023	26/07/2023
SDG Ref			230726-72	230726-72	230726-72	230726-72	230726-72	230726-72
Lab Sample No.(s)			28383943	28383948	28383953	28383958	28383964	28383969
AGS Reference			ES18	ES13	ES15	ES15	ES7	ES16
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02 @	<0.02	<0.02 @	<0.02	<0.02 @	<0.02
Sum of BTEX	<7 µg/kg	TM116	<7 @	<7	<7 @	<7	<7 @	<7

15:40:22 02/08/2023

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	123	105				
Toluene-d8**	%	TM116	98.3	97.7				
4-Bromofluorobenzene**	%	TM116	106	98.8				
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<0.5 #	<0.5 #				
Chloromethane	<2 µg/kg	TM116	<2 #	<2 #				
Vinyl Chloride	<0.5 µg/kg	TM116	<0.5 @ M	<0.5 @ M				
Bromomethane	<1 µg/kg	TM116	<1 M	<1 M				
Chloroethane	<1 µg/kg	TM116	<1 M	<1 M				
Trichlorofluorormethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
1,1-Dichloroethene	<0.5 µg/kg	TM116	<0.5 #	<0.5 #				
Carbon Disulphide	<1 µg/kg	TM116	<1 M	<1 M				
Dichloromethane	<5 µg/kg	TM116	<5 #	<5 #				
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<1 M	<1 M				
1,1-Dichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
2,2-Dichloropropane	<1 µg/kg	TM116	<1	<1				
Bromochloromethane	<2 µg/kg	TM116	<2 M	<2 M				
Chloroform	<3 µg/kg	TM116	<3 M	<3 M				
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
1,1-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
Carbontetrachloride	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
1,2-Dichloroethane	<1 µg/kg	TM116	<1 M	<1 M				
Benzene	<1 µg/kg	TM116	<1 M	<1 M				
Trichloroethene	<1 µg/kg	TM116	<1 #	<1 #				
1,2-Dichloropropane	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
Dibromomethane	<1 µg/kg	TM116	<1 M	<1 M				
Bromodichloromethane	<2 µg/kg	TM116	<2 M	<2 M				
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<0.5 M	<0.5 M				
Toluene	<1 µg/kg	TM116	<1 M	<1 M				
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<1	<1				
1,1,2-Trichloroethane	<1 µg/kg	TM116	<1 M	<1 M				
1,3-Dichloropropane	<1 µg/kg	TM116	<1 M	<1 M				

VOC MS (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<2 M	<2 M				
Dibromochloromethane	<2 µg/kg	TM116	<2 M	<2 M				
1,2-Dibromoethane	<1 µg/kg	TM116	<1 M	<1 M				
Chlorobenzene	<2 µg/kg	TM116	<2 M	<2 M				
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<1 M	<1 M				
Ethylbenzene	<1 µg/kg	TM116	<1 M	<1 M				
p/m-Xylene	<2 µg/kg	TM116	<2 #	<2 #				
o-Xylene	<2 µg/kg	TM116	<2 M	<2 M				
Styrene	<2 µg/kg	TM116	<2 @ #	<2 @ #				
Bromoform	<2 µg/kg	TM116	<2 M	<2 M				
Isopropylbenzene	<2 µg/kg	TM116	<2 #	<2 #				
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<2 #	<2 #				
1,2,3-Trichloropropane	<2 µg/kg	TM116	<2 M	<2 M				
Bromobenzene	<2 µg/kg	TM116	<2 M	<2 M				
Propylbenzene	<2 µg/kg	TM116	<2 M	<2 M				
2-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M				
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<2 M	<2 M				
4-Chlorotoluene	<3 µg/kg	TM116	<3 M	<3 M				
tert-Butylbenzene	<2 µg/kg	TM116	<2 #	<2 #				
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<3 #	<3 #				
sec-Butylbenzene	<1 µg/kg	TM116	<1	<1				
4-Isopropyltoluene	<2 µg/kg	TM116	<2	<2				
1,3-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
n-Butylbenzene	<3 µg/kg	TM116	<3	<3				
1,2-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M				
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<2 M	<2 M				
Tert-amyl methyl ether	<1 µg/kg	TM116	<1 #	<1 #				
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<7	<7				
Hexachlorobutadiene	<4 µg/kg	TM116	<4	<4				
Naphthalene	<8 µg/kg	TM116	<8 M	<8 M				
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<10 #	<10 #				
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<7	<7				

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BHSS107	BHSS108				
Depth (m)			2.50 - 2.50	3.00 - 3.00				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			20/07/2023	20/07/2023				
Sample Time			.	.				
Date Received			26/07/2023	26/07/2023				
SDG Ref			230726-72	230726-72				
Lab Sample No.(s)			28383974	28383979				
AGS Reference			ES9	ES12				
Component	**LOD/Units**	**Method**						
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02	<0.02				
Sum of BTEX	<7 µg/kg	TM116	<7	<7				

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Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS101ES18 1.00 - 1.50 SOLID 17/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383943 TM048	01/08/2023	Alex Horner	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS102ES13 3.00 - 3.80 SOLID 18/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383948 TM048	01/08/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS103ES15 3.00 - 3.50 SOLID 17/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383953 TM048	01/08/2023	Paul Poynton	N/A	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS104ES15 2.00 - 2.50 SOLID 19/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383958 TM048	01/08/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS105ES7 1.00 - 1.50 SOLID 14/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383964 TM048	01/08/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS106ES16 3.00 - 3.50 SOLID 20/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383969 TM048	01/08/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS107ES9 2.50 - 2.50 SOLID 20/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383974 TM048	01/08/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHSS108ES12 3.00 - 3.00 SOLID 20/07/2023 00:00:00 26/07/2023 10:00:00 230726-72 28383979 TM048	01/08/2023	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	15.7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86.4
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383943
Sampled Date	17-Jul-2023
Customer Sample Ref.	BHSS101 ES18
Depth (m)	1.00 - 1.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	1.19	3	5	6
Loss on Ignition (%)	3.63	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.21	-	>6	-
ANC to pH 6 (mol/kg)	0.0387	-	-	-
ANC to pH 4 (mol/kg)	0.525	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0219	<0.0002	0.219	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.0016	<0.0003	0.016	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.007	<0.003	0.07	<0.03	0.5	10	30
Nickel	0.00119	<0.0004	0.0119	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	75.3	<10	753	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.4	<3	54	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.20
Conductivity (µS/cm)	100
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.102	**Natural Moisture Content (%)**	12.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88.9
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383948
Sampled Date	18-Jul-2023
Customer Sample Ref.	BHSS102 ES13
Depth (m)	3.00 - 3.80

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	1.67	3	5	6
Loss on Ignition (%)	4.31	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.78	-	>6	-
ANC to pH 6 (mol/kg)	0.131	-	-	-
ANC to pH 4 (mol/kg)	2.06	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.000579	<0.0005	0.00579	<0.005	0.5	2	25
Barium	0.0738	<0.0002	0.738	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00115	<0.0003	0.0115	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00982	<0.003	0.0982	<0.03	0.5	10	30
Nickel	0.00127	<0.0004	0.0127	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00481	<0.001	0.0481	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00164	<0.001	0.0164	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	84.8	<10	848	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.34	<3	33.4	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.62
Conductivity (µS/cm)	112
Volume Leachant (Litres)	0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	14.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383953
Sampled Date	17-Jul-2023
Customer Sample Ref.	BHSS103 ES15
Depth (m)	3.00 - 3.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	3	3	5	6
Loss on Ignition (%)	3.09	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.73	-	>6	-
ANC to pH 6 (mol/kg)	0.169	-	-	-
ANC to pH 4 (mol/kg)	2.79	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0376	<0.0002	0.376	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00091	<0.0003	0.0091	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00393	<0.003	0.0393	<0.03	0.5	10	30
Nickel	0.000679	<0.0004	0.00679	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00151	<0.001	0.0151	<0.01	0.06	0.7	5
Selenium	0.00127	<0.001	0.0127	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	72.9	<10	729	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.23
Conductivity (µS/cm)	96
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.104	**Natural Moisture Content (%)**	14.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87.5
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383958
Sampled Date	19-Jul-2023
Customer Sample Ref.	BHSS104 ES15
Depth (m)	2.00 - 2.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.415	3	5	6
Loss on Ignition (%)	3.06	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.44	-	>6	-
ANC to pH 6 (mol/kg)	0.135	-	-	-
ANC to pH 4 (mol/kg)	2.31	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.000701	<0.0005	0.00701	<0.005	0.5	2	25
Barium	0.075	<0.0002	0.75	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00218	<0.0003	0.0218	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0165	<0.003	0.165	<0.03	0.5	10	30
Nickel	0.00247	<0.0004	0.0247	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00375	<0.001	0.0375	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	110	<10	1100	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.82	<3	58.2	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.30
Conductivity (µS/cm)	146
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

02/08/2023 15:40:36

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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	15.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86.6
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383964
Sampled Date	14-Jul-2023
Customer Sample Ref.	BHSS105 ES7
Depth (m)	1.00 - 1.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.335	3	5	6
Loss on Ignition (%)	2.95	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.38	-	>6	-
ANC to pH 6 (mol/kg)	0.0609	-	-	-
ANC to pH 4 (mol/kg)	2.14	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0483	<0.0002	0.483	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00128	<0.0003	0.0128	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0051	<0.003	0.051	<0.03	0.5	10	30
Nickel	0.000996	<0.0004	0.00996	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00157	<0.001	0.0157	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	96.3	<10	963	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.33
Conductivity (µS/cm)	127
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.102	**Natural Moisture Content (%)**	12.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88.8
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383969
Sampled Date	20-Jul-2023
Customer Sample Ref.	BHSS106 ES16
Depth (m)	3.00 - 3.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	11.4	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.72	-	>6	-
ANC to pH 6 (mol/kg)	0.118	-	-	-
ANC to pH 4 (mol/kg)	2.51	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.000627	<0.0005	0.00627	<0.005	0.5	2	25
Barium	0.0734	<0.0002	0.734	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00716	<0.003	0.0716	<0.03	0.5	10	30
Nickel	0.00147	<0.0004	0.0147	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00354	<0.001	0.0354	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00321	<0.001	0.0321	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	85.4	<10	854	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.16	<3	51.6	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.22
Conductivity (µS/cm)	113
Volume Leachant (Litres)	0.889

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.102	**Natural Moisture Content (%)**	14.2
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87.5
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383974
Sampled Date	20-Jul-2023
Customer Sample Ref.	BHSS107 ES9
Depth (m)	2.50 - 2.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.511	3	5	6
Loss on Ignition (%)	2.27	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.4	-	>6	-
ANC to pH 6 (mol/kg)	0.257	-	-	-
ANC to pH 4 (mol/kg)	2.5	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0881	<0.0002	0.881	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000533	<0.0003	0.00533	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.006	<0.003	0.06	<0.03	0.5	10	30
Nickel	0.000731	<0.0004	0.00731	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00348	<0.001	0.0348	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	2.1	<2	21	<20	1000	20000	50000
Total Dissolved Solids	91.6	<10	916	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.22
Conductivity (µS/cm)	121
Volume Leachant (Litres)	0.888

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
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CERTIFICATE OF ANALYSIS

SDG: 230726-72 **Report Number:** 698813 **Superseded Report:**
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	11.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	89.7
Particle Size <4mm	>95%		

Case	
SDG	230726-72
Lab Sample Number(s)	28383979
Sampled Date	20-Jul-2023
Customer Sample Ref.	BHSS108 ES12
Depth (m)	3.00 - 3.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	0.913	3	5	6
Loss on Ignition (%)	3.24	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.72	-	>6	-
ANC to pH 6 (mol/kg)	0.0823	-	-	-
ANC to pH 4 (mol/kg)	1.66	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00979	<0.0002	0.0979	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00647	<0.003	0.0647	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	69.7	<10	697	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	26-Jul-2023
pH (pH Units)	8.21
Conductivity (µS/cm)	92
Volume Leachant (Litres)	0.890

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
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Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM019	Determination of Anions in Soils using Ion Chromatography
TM104	Determination of Fluoride using the Kone Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM218	The determination of PAH in soil samples by GC-MS
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM282	Extraction of Magnesium by BRE Method
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28383943	28383948	28383953	28383958	28383964	28383969	28383974	28383979
Customer Sample Ref.	BHSS101	BHSS102	BHSS103	BHSS104	BHSS105	BHSS106	BHSS107	BHSS108
AGS Ref.	ES18	ES13	ES15	ES15	ES7	ES16	ES9	ES12
Depth	1.00 - 1.50	3.00 - 3.80	3.00 - 3.50	2.00 - 2.50	1.00 - 1.50	3.00 - 3.50	2.50 - 2.50	3.00 - 3.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	01-Aug-2023	28-Jul-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	28-Jul-2023	01-Aug-2023	01-Aug-2023
Anions by Kone (soil)	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	02-Aug-2023	01-Aug-2023	31-Jul-2023	31-Jul-2023
Anions by Kone (w)	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Anions in soil by IC	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023
Asbestos ID in Solid Samples	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023
CEN 10:1 Leachate (1 Stage)	27-Jul-2023	27-Jul-2023	27-Jul-2023	27-Jul-2023	27-Jul-2023	27-Jul-2023	27-Jul-2023	27-Jul-2023
CEN Readings	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Chromium III	01-Aug-2023	31-Jul-2023	01-Aug-2023	28-Jul-2023	31-Jul-2023	31-Jul-2023	01-Aug-2023	01-Aug-2023
Coronene	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Cyanide Comp/Free/Total/Thiocyanate	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Dissolved Metals by ICP-MS	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Dissolved Organic/Inorganic Carbon	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023
EPH by GCxGC-FID	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023	29-Jul-2023
EPH CWG GC (S)	29-Jul-2023	31-Jul-2023	29-Jul-2023	31-Jul-2023	31-Jul-2023	28-Jul-2023	31-Jul-2023	31-Jul-2023
Fluoride	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
GRO by GC-FID (S)	01-Aug-2023	01-Aug-2023	01-Aug-2023	31-Jul-2023	31-Jul-2023	01-Aug-2023	02-Aug-2023	01-Aug-2023
Hexavalent Chromium (s)	31-Jul-2023	31-Jul-2023	27-Jul-2023	27-Jul-2023	31-Jul-2023	31-Jul-2023	27-Jul-2023	27-Jul-2023
Loss on Ignition in soils	31-Jul-2023	28-Jul-2023	31-Jul-2023	28-Jul-2023	01-Aug-2023	28-Jul-2023	01-Aug-2023	31-Jul-2023
Magnesium (BRE)	01-Aug-2023	01-Aug-2023	01-Aug-2023	31-Jul-2023	31-Jul-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023
Mercury Dissolved	01-Aug-2023	01-Aug-2023	01-Aug-2023	02-Aug-2023	01-Aug-2023	02-Aug-2023	02-Aug-2023	01-Aug-2023
Metals in solid samples by OES	02-Aug-2023	31-Jul-2023	01-Aug-2023	28-Jul-2023	31-Jul-2023	28-Jul-2023	01-Aug-2023	01-Aug-2023
Moisture at 105C	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023
PAH 16 & 17 Calc	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023
PAH by GCMS	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023
PCBs by GCMS	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023
pH	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023
pH Value of Filtered Water	31-Jul-2023	31-Jul-2023	31-Jul-2023	01-Aug-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Phenols by HPLC (S)	28-Jul-2023	28-Jul-2023	28-Jul-2023	28-Jul-2023	28-Jul-2023	28-Jul-2023	28-Jul-2023	28-Jul-2023
Phenols by HPLC (W)	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
Sample description	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023	26-Jul-2023
Semi Volatile Organic Compounds	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023
Total Organic Carbon	31-Jul-2023	31-Jul-2023	31-Jul-2023	01-Aug-2023	31-Jul-2023	01-Aug-2023	31-Jul-2023	31-Jul-2023
Total Sulphate	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	02-Aug-2023	31-Jul-2023	02-Aug-2023	02-Aug-2023
Total Sulphur	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023	31-Jul-2023
TPH CWG GC (S)	02-Aug-2023	02-Aug-2023	02-Aug-2023	31-Jul-2023	31-Jul-2023	02-Aug-2023	02-Aug-2023	01-Aug-2023
VOC MS (S)	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023	01-Aug-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	21 August 2023
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	230811-69
Your Reference:	2023OY104
Location:	Derrygreenagh
Report No:	700849
Order Number:	12380

This report has been revised and directly supersedes 700779 in its entirety.

We received 3 samples on Friday August 11, 2023 and 3 of these samples were scheduled for analysis which was completed on Monday August 21, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan
Operations Manager

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28466319	BHT16A	ES1	1.50 - 1.50	01/08/2023
28466326	BHT17A	ES1	3.00 - 3.00	31/07/2023
28466331	BHT18A	ES1	3.00 - 3.00	03/08/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28466319			28466326			28466331		
Customer Sample Reference			BHT16A			BHT17A			BHT18A		
AGS Reference			ES1			ES1			ES1		
Depth (m)			1.50 - 1.50			3.00 - 3.00			3.00 - 3.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 3		X			X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 3	X			X			X		
Anions in soil by IC	All	NDPs: 0 Tests: 3		X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X		
CEN Readings	All	NDPs: 0 Tests: 3	X			X			X		
Chromium III	All	NDPs: 0 Tests: 3		X			X			X	
Coronene	All	NDPs: 0 Tests: 3		X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X			X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X			X			X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 3	X			X			X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3		X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
Fluoride	All	NDPs: 0 Tests: 3	X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X			X

15:37:58 21/08/2023

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
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SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28466319			28466326			28466331		
Customer Sample Reference			BHT16A			BHT17A			BHT18A		
AGS Reference			ES1			ES1			ES1		
Depth (m)			1.50 - 1.50			3.00 - 3.00			3.00 - 3.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 3		X			X			X	
Magnesium (BRE)	All	NDPs: 0 Tests: 3		X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 3	X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 3		X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
pH	All	NDPs: 0 Tests: 3		X			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 3	X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3		X			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 3	X			X			X		
Sample description	All	NDPs: 0 Tests: 3		X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3		X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 3		X			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			28466319			28466326			28466331		
Customer Sample Reference			BHT16A			BHT17A			BHT18A		
AGS Reference			ES1			ES1			ES1		
Depth (m)			1.50 - 1.50			3.00 - 3.00			3.00 - 3.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Total Sulphate	All	NDPs: 0 Tests: 3		X			X			X	
Total Sulphur	All	NDPs: 0 Tests: 3		X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 3			X			X			X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28466319	BHT16A	1.50 - 1.50	Dark Brown	Loamy Sand	Stones	Vegetation
28466326	BHT17A	3.00 - 3.00	Light Brown	Silty Sand	Stones	Vegetation
28466331	BHT18A	3.00 - 3.00	Light Brown	Silty Sand	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT16A	BHT17A	BHT18A			
Customer Sample Ref.								
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Moisture Content Ratio (% of as received sample)	%	PM024	4.8	12	24			
Loss on ignition	<0.7 %	TM018	1.12 M	1.84 M	3.13 M			
Nitrate as NO3, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.00033	0.000296	0.000314			
Sulphate, 2:1 water soluble (BRE)	<0.0002 g/l	TM019	0.0382	0.0149	0.0169			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	0.106 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 @ M	0.0132 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 @ M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 @ M	0.119 M			
Organic Carbon, Total	<0.2 %	TM132	0.67 M	0.424 M	1.69 M			
Sulphur, Total	<0.02 %	TM132	0.0656 #	<0.02 #	<0.02 #			
Organic Matter, Total	<0.35 %	TM132	1.16 #	0.731 #	2.91 #			
Sulphate, Total potential	<0.06 %	TM132	0.197	0.06	0.06			
pH	1 pH Units	TM133	8.77 M	8.42 M	8.04 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 M	<0.6 M	<0.6 M			
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 @ M	<1 M			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21			
PCB congener 81	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 77	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 123	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 114	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 105	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 126	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 167	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 156	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 157	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
PCB congener 169	<3 µg/kg	TM168	<3 M	<3 M	<3 M			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
PCB congener 189	<3 µg/kg	TM168	<3 M	<3 M	<3 M			
Sum of detected WHO 12 PCBs	<36 µg/kg	TM168	<36	<36	<36			
Chromium, Trivalent	<0.9 mg/kg	TM181	1.8	6.25	8.04			
Arsenic	<0.6 mg/kg	TM181	0.663 M	1.96 M	2.32 M			
Barium	<0.6 mg/kg	TM181	9.39 #	38.3 #	26.6 #			
Beryllium	<0.01 mg/kg	TM181	0.105 M	0.275 M	0.325 M			
Cadmium	<0.02 mg/kg	TM181	0.221 M	0.569 M	0.445 M			
Chromium	<0.9 mg/kg	TM181	1.8 M	6.25 M	8.04 M			
Copper	<1.4 mg/kg	TM181	1.79 M	8.4 M	4.96 M			
Lead	<0.7 mg/kg	TM181	0.996 M	5.69 M	6.7 M			
Mercury	<0.1 mg/kg	TM181	<0.1 M	<0.1 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181	4.3 M	17.3 M	18.8 M			
Selenium	<1 mg/kg	TM181	1.1 #	1.28 #	<1 #			
Vanadium	<0.2 mg/kg	TM181	4.45 #	9.16 #	10.1 #			
Zinc	<1.9 mg/kg	TM181	12.1 M	45.5 M	45.4 M			
ANC @ pH 4	<0.03 mol/kg	TM182	0.179	1.44	0.323			
ANC @ pH 6	<0.03 mol/kg	TM182	0.0674	0.119	0.0409			
Sulphate, acid soluble (total)	<0.0048 %	TM221	0.0459 M	0.0134 M	0.0123 M			
Chloride 2:1 water/soil extract BRE	<0.0025 g/l	TM243	0.0437 M	0.0079 M	0.0072 M			
Magnesium (BRE)	<0.008 g/l	TM282	<0.008	<0.008	<0.008			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10	<10	<10			
Coronene	<200 µg/kg	TM410	<200	<200	<200			
EPH Surrogate % recovery**	%	TM415	102	102	99			
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415	<5	<5	79.9			

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

PAH by GCMS

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	97.1	95.8	95.5			
Acenaphthene-d10 % recovery**	%	TM218	96.1	93.2	93.8			
Phenanthrene-d10 % recovery**	%	TM218	94.9	92	93.3			
Chrysene-d12 % recovery**	%	TM218	88.8	87.2	91.4			
Perylene-d12 % recovery**	%	TM218	88.4	86.9	92.2			
Naphthalene	<9 µg/kg	TM218	<9 M	<9 @ M	<9 M			
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 @ M	<12 M			
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 @ M	<8 M			
Fluorene	<10 µg/kg	TM218	<10 M	<10 @ M	<10 M			
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 M			
Anthracene	<16 µg/kg	TM218	<16 M	<16 @ M	<16 M			
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 @ M	<17 M			
Pyrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 M			
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 @ M	<14 M			
Chrysene	<10 µg/kg	TM218	<10 M	<10 @ M	<10 M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 @ M	<14 M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 @ M	<15 M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 @ M	<18 M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 @ M	<23 M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 @ M	<24 M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118			

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Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100	<100	<100			
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100			
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100			
Nitrobenzene	<100 µg/kg	TM157	<100	<100	<100			
Isophorone	<100 µg/kg	TM157	<100	<100	<100			
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100			
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
Dibenzofuran	<100 µg/kg	TM157	<100	<100	<100			
Carbazole	<100 µg/kg	TM157	<100	<100	<100			
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100	<100			
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100			
Azobenzene	<100 µg/kg	TM157	<100	<100	<100			
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
4-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100			
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100			
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100			
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100			
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100			
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100			
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

Semi Volatile Organic Compounds

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
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- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100			
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100			
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100			
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100			
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthylene	<100 µg/kg	TM157	<100	<100	<100			
Acenaphthene	<100 µg/kg	TM157	<100	<100	<100			
Anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(b)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(k)fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(a)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Benzo(g,h,i)perylene	<100 µg/kg	TM157	<100	<100	<100			
Chrysene	<100 µg/kg	TM157	<100	<100	<100			
Fluoranthene	<100 µg/kg	TM157	<100	<100	<100			
Fluorene	<100 µg/kg	TM157	<100	<100	<100			
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100			
Phenanthrene	<100 µg/kg	TM157	<100	<100	<100			
Pyrene	<100 µg/kg	TM157	<100	<100	<100			
Naphthalene	<100 µg/kg	TM157	<100	<100	<100			
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100			
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157	<100	<100	<100			

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CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
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- aq Aqueous / settled sample.
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- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	88.1	94.9 @	89.3			
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10			
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10			
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089	<10	<10 @	<10			
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414	2320 #	<1000 @ #	50700 #			
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414	<1000	<1000 @	6620			
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	<5000	<5000 @	57500			
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414	<10000	<10000	62900			
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10			
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10			
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089	<10	<10 @	<10			
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000 #	<1000 @ #	<1000 #			
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414	4490 #	<1000 @ #	3890 #			
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	1250	<1000 @	<1000			
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414	<1000	<1000 @	<1000			
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414	6460	<5000	5350			
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414	<10000	<10000	62900			
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089	<50	<50 @	<50			
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089	<50	<50 @	<50			
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089	<20	<20 @	<20			

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend
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- 1-4♦§@ Sample deviation (see appendix)

Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	110 @	122 @	117			
Toluene-d8**	%	TM116	98.2 @	101 @	97.8			
4-Bromofluorobenzene**	%	TM116	93.6 @	90.2 @	94			
Dichlorodifluoromethane	<0.5 µg/kg	TM116	<10 @ #	<0.5 @ #	<5 #			
Chloromethane	<2 µg/kg	TM116	<40 @ #	<2 @ #	<20 #			
Vinyl Chloride	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 @ M			
Bromomethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Chloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Trichlorofluorormethane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
1,1-Dichloroethene	<0.5 µg/kg	TM116	<10 @ #	<0.5 @ #	<5 #			
Carbon Disulphide	<1 µg/kg	TM116	<20 @ M	1.95 @ M	<10 M			
Dichloromethane	<5 µg/kg	TM116	<100 @ #	<5 @ #	<50 #			
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
trans-1,2-Dichloroethene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
1,1-Dichloroethane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
cis-1,2-Dichloroethene	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
2,2-Dichloropropane	<1 µg/kg	TM116	<20 @	<1 @	<10			
Bromochloromethane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
Chloroform	<3 µg/kg	TM116	<60 @ M	<3 @ M	<30 M			
1,1,1-Trichloroethane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
1,1-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
Carbontetrachloride	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
1,2-Dichloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Benzene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Trichloroethene	<1 µg/kg	TM116	<20 @ #	<1 @ #	<10 #			
1,2-Dichloropropane	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
Dibromomethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Bromodichloromethane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
cis-1,3-Dichloropropene	<0.5 µg/kg	TM116	<10 @ M	<0.5 @ M	<5 M			
Toluene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
trans-1,3-Dichloropropene	<1 µg/kg	TM116	<20 @	<1 @	<10			
1,1,2-Trichloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
1,3-Dichloropropane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			

VOC MS (S)

Results Legend
- # ISO17025 accredited.
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Customer Sample Ref.			BHT16A	BHT17A	BHT18A			
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Component	**LOD/Units**	**Method**						
Tetrachloroethene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
Dibromochloromethane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
1,2-Dibromoethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Chlorobenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
1,1,1,2-Tetrachloroethane	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
Ethylbenzene	<1 µg/kg	TM116	<20 @ M	<1 @ M	<10 M			
p/m-Xylene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<20 #			
o-Xylene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
Styrene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<20 @ #			
Bromoform	<2 µg/kg	TM116	<100 @ M	<5 @ M	<60 M			
Isopropylbenzene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<20 #			
1,1,2,2-Tetrachloroethane	<2 µg/kg	TM116	<40 @ #	<2 @ #	<20 #			
1,2,3-Trichloropropane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
Bromobenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
Propylbenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
2-Chlorotoluene	<3 µg/kg	TM116	<60 @ M	<3 @ M	<30 M			
1,3,5-Trimethylbenzene	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
4-Chlorotoluene	<3 µg/kg	TM116	<60 @ M	<3 @ M	<30 M			
tert-Butylbenzene	<2 µg/kg	TM116	<40 @ #	<2 @ #	<20 #			
1,2,4-Trimethylbenzene	<3 µg/kg	TM116	<60 @ #	<3 @ #	<30 #			
sec-Butylbenzene	<1 µg/kg	TM116	<20 @	<1 @	<10			
4-Isopropyltoluene	<2 µg/kg	TM116	<40 @	<2 @	<20			
1,3-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<50 M			
1,4-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<50 M			
n-Butylbenzene	<3 µg/kg	TM116	<60 @	<3 @	<30			
1,2-Dichlorobenzene	<5 µg/kg	TM116	<100 @ M	<5 @ M	<50 M			
1,2-Dibromo-3-chloropropane	<2 µg/kg	TM116	<40 @ M	<2 @ M	<20 M			
Tert-amyl methyl ether	<1 µg/kg	TM116	<20 @ #	<1 @ #	<10 #			
1,2,4-Trichlorobenzene	<7 µg/kg	TM116	<140 @	<7 @	<70			
Hexachlorobutadiene	<4 µg/kg	TM116	<80 @	<4 @	<40			
Naphthalene	<8 µg/kg	TM116	<160 @ M	<8 @ M	<80 M			
1,2,3-Trichlorobenzene	<10 µg/kg	TM116	<200 @ #	<10 @ #	<100 #			
1,3,5-Trichlorobenzene	<7 µg/kg	TM116	<140	<7	<70			

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+§@ Sample deviation (see appendix)

Component	LOD/Units	Method	BHT16A	BHT17A	BHT18A			
Customer Sample Ref.								
Depth (m)			1.50 - 1.50	3.00 - 3.00	3.00 - 3.00			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			01/08/2023	31/07/2023	03/08/2023			
Sample Time			.	.	.			
Date Received			11/08/2023	11/08/2023	11/08/2023			
SDG Ref			230811-69	230811-69	230811-69			
Lab Sample No.(s)			28466319	28466326	28466331			
AGS Reference			ES1	ES1	ES1			
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4 @	<0.02 @	<0.2			
Sum of BTEX	<7 µg/kg	TM116	<140 @	<7 @	<70			

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Asbestos Actinolite	Asbestos Anthophyllite	Asbestos Tremolite	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT16AES1 1.50 - 1.50 SOLID 01/08/2023 00:00:00 11/08/2023 10:00:00 230811-69 28466319 TM048	16/08/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT17AES1 3.00 - 3.00 SOLID 31/07/2023 00:00:00 11/08/2023 10:00:00 230811-69 28466326 TM048	16/08/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BHT18AES1 3.00 - 3.00 SOLID 03/08/2023 00:00:00 11/08/2023 10:00:00 230811-69 28466331 TM048	16/08/2023	Odhran McLernon	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.106	**Natural Moisture Content (%)**	17.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85
Particle Size <4mm	>95%		

Case	
SDG	230811-69
Lab Sample Number(s)	28466319
Sampled Date	01-Aug-2023
Customer Sample Ref.	BHT16A ES1
Depth (m)	1.50 - 1.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.67	3	5	6
Loss on Ignition (%)	1.12	-	-	10
Sum of BTEX (mg/kg)	<0.14	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.77	-	>6	-
ANC to pH 6 (mol/kg)	0.0674	-	-	-
ANC to pH 4 (mol/kg)	0.179	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00187	<0.0005	0.0187	<0.005	0.5	2	25
Barium	0.0101	<0.0002	0.101	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000997	<0.0003	0.00997	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00307	<0.003	0.0307	<0.03	0.5	10	30
Nickel	0.00191	<0.0004	0.0191	<0.004	0.4	10	40
Lead	0.000203	<0.0002	0.00203	<0.002	0.5	10	50
Antimony	0.00213	<0.001	0.0213	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00271	<0.001	0.0271	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	99.8	<10	998	<100	4000	60000	100000
Total Monohydric Phenols (W)	0.03	<0.016	0.3	<0.16	1	-	-
Dissolved Organic Carbon	7.51	<3	75.1	<30	500	800	1000

Leach Test Information

Date Prepared	12-Aug-2023
pH (pH Units)	8.33
Conductivity (µS/cm)	131
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	17.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85.2
Particle Size <4mm	>95%		

Case	
SDG	230811-69
Lab Sample Number(s)	28466326
Sampled Date	31-Jul-2023
Customer Sample Ref.	BHT17A ES1
Depth (m)	3.00 - 3.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits: Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.424	3	5	6
Loss on Ignition (%)	1.84	-	-	10
Sum of BTEX (mg/kg)	<0.007	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.42	-	>6	-
ANC to pH 6 (mol/kg)	0.119	-	-	-
ANC to pH 4 (mol/kg)	1.44	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00123	<0.0005	0.0123	<0.005	0.5	2	25
Barium	0.0339	<0.0002	0.339	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00151	<0.0003	0.0151	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00363	<0.003	0.0363	<0.03	0.5	10	30
Nickel	0.0018	<0.0004	0.018	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	0.00726	<0.001	0.0726	<0.01	0.06	0.7	5
Selenium	0.00137	<0.001	0.0137	<0.01	0.1	0.5	7
Zinc	0.00158	<0.001	0.0158	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	72.9	<10	729	<100	4000	60000	100000
Total Monohydric Phenols (W)	0.05	<0.016	0.5	<0.16	1	-	-
Dissolved Organic Carbon	5.26	<3	52.6	<30	500	800	1000

Leach Test Information

Date Prepared	12-Aug-2023
pH (pH Units)	8.52
Conductivity (µS/cm)	96
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
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CERTIFICATE OF ANALYSIS

SDG: 230811-69 **Report Number:** 700849 **Superseded Report:** 700779
Client Ref.: 2023OY104 **Location:** Derrygreenagh

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Derrygreenagh
Mass Sample taken (kg)	0.109	**Natural Moisture Content (%)**	21.2
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.5
Particle Size <4mm	>95%		

Case	
SDG	230811-69
Lab Sample Number(s)	28466331
Sampled Date	03-Aug-2023
Customer Sample Ref.	BHT18A ES1
Depth (m)	3.00 - 3.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits** Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	1.69	3	5	6
Loss on Ignition (%)	3.13	-	-	10
Sum of BTEX (mg/kg)	<0.07	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	79.9	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.04	-	>6	-
ANC to pH 6 (mol/kg)	0.0409	-	-	-
ANC to pH 4 (mol/kg)	0.323	-	-	-

Eluate Analysis	**C2 Concⁿ in 10:1 eluate (mg/l)**		**A2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00438	<0.0002	0.0438	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000687	<0.0004	0.00687	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00101	<0.001	0.0101	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	1.17	<0.5	11.7	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	80.1	<10	801	<100	4000	60000	100000
Total Monohydric Phenols (W)	0.06	<0.016	0.6	<0.16	1	-	-
Dissolved Organic Carbon	3.09	<3	30.9	<30	500	800	1000

Leach Test Information

Date Prepared	12-Aug-2023
pH (pH Units)	8.46
Conductivity (µS/cm)	106
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Table of Results - Appendix

Method No	Description
TM019	Determination of Anions in Soils using Ion Chromatography
TM104	Determination of Fluoride using the Kone Analyser
TM157	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM182	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM048	Identification of Asbestos in Bulk Material
TM062 (S)	Determination of Phenols in Soils by HPLC
TM152	Analysis of Aqueous Samples by ICP-MS
TM153	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM218	The determination of PAH in soil samples by GC-MS
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM282	Extraction of Magnesium by BRE Method
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
PM115	Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	Determination of Loss on Ignition
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	28466319	28466326	28466331
Customer Sample Ref.	BHT16A	BHT17A	BHT18A
AGS Ref.	ES1	ES1	ES1
Depth	1.50 - 1.50	3.00 - 3.00	3.00 - 3.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	15-Aug-2023	15-Aug-2023	17-Aug-2023
Anions by Kone (soil)	16-Aug-2023	16-Aug-2023	17-Aug-2023
Anions by Kone (w)	17-Aug-2023	17-Aug-2023	17-Aug-2023
Anions in soil by IC	16-Aug-2023	16-Aug-2023	17-Aug-2023
Asbestos ID in Solid Samples	16-Aug-2023	16-Aug-2023	16-Aug-2023
CEN 10:1 Leachate (1 Stage)	12-Aug-2023	12-Aug-2023	12-Aug-2023
CEN Readings	17-Aug-2023	17-Aug-2023	17-Aug-2023
Chromium III	16-Aug-2023	16-Aug-2023	16-Aug-2023
Coronene	15-Aug-2023	15-Aug-2023	15-Aug-2023
Cyanide Comp/Free/Total/Thiocyanate	16-Aug-2023	16-Aug-2023	16-Aug-2023
Dissolved Metals by ICP-MS	16-Aug-2023	16-Aug-2023	16-Aug-2023
Dissolved Organic/Inorganic Carbon	21-Aug-2023	21-Aug-2023	21-Aug-2023
EPH by GCxGC-FID	15-Aug-2023	15-Aug-2023	16-Aug-2023
EPH CWG GC (S)	15-Aug-2023	15-Aug-2023	16-Aug-2023
Fluoride	17-Aug-2023	17-Aug-2023	17-Aug-2023
GRO by GC-FID (S)	15-Aug-2023	15-Aug-2023	17-Aug-2023
Hexavalent Chromium (s)	16-Aug-2023	16-Aug-2023	16-Aug-2023
Loss on Ignition in soils	16-Aug-2023	15-Aug-2023	16-Aug-2023
Magnesium (BRE)	16-Aug-2023	16-Aug-2023	16-Aug-2023
Mercury Dissolved	17-Aug-2023	17-Aug-2023	17-Aug-2023
Metals in solid samples by OES	16-Aug-2023	16-Aug-2023	16-Aug-2023
Moisture at 105C	12-Aug-2023	12-Aug-2023	12-Aug-2023
PAH 16 & 17 Calc	15-Aug-2023	15-Aug-2023	15-Aug-2023
PAH by GCMS	15-Aug-2023	15-Aug-2023	16-Aug-2023
PCBs by GCMS	15-Aug-2023	15-Aug-2023	15-Aug-2023
pH	16-Aug-2023	16-Aug-2023	16-Aug-2023
pH Value of Filtered Water	17-Aug-2023	17-Aug-2023	17-Aug-2023
Phenols by HPLC (S)	15-Aug-2023	15-Aug-2023	16-Aug-2023
Phenols by HPLC (W)	17-Aug-2023	17-Aug-2023	17-Aug-2023
Sample description	12-Aug-2023	12-Aug-2023	12-Aug-2023
Semi Volatile Organic Compounds	15-Aug-2023	15-Aug-2023	15-Aug-2023
Total Organic Carbon	15-Aug-2023	15-Aug-2023	16-Aug-2023
Total Sulphate	17-Aug-2023	17-Aug-2023	17-Aug-2023
Total Sulphur	16-Aug-2023	16-Aug-2023	16-Aug-2023
TPH CWG GC (S)	15-Aug-2023	15-Aug-2023	17-Aug-2023
VOC MS (S)	16-Aug-2023	15-Aug-2023	16-Aug-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Appendix 12
Photographs (Trial Pits)

Figure 1 H:\23OY104_ derrygreenagh tp photos\Tp216dg,.jpg

Figure 3 H:\23OY104_ derrygreenagh tp photos\Tp216dg.jpg

Figure 2 H:\23OY104_ derrygreenagh tp photos\Tp216dg..jpg

Figure 4 H:\23OY104_ derrygreenagh tp photos\Tp217dg,.jpg

Figure 5 H:\23OY104_ derrygreenagh tp photos\Tp217dg..jpg

Figure 7 H:\23OY104_ derrygreenagh tp photos\Tp218dg,.jpg

Figure 6 H:\23OY104_ derrygreenagh tp photos\Tp217dg.jpg

Figure 8 H:\23OY104_ derrygreenagh tp photos\Tp218dg..jpg

Figure 9 H:\23OY104_ derrygreenagh tp photos\Tp218dg.jpg

Figure 10 H:\23OY104_derrygreenagh trial pit photos\Tp219dg,.jpg

Figure 11 H:\23OY104_derrygreenagh trial pit photos\Tp219dg..jpg

Figure 12 H:\23OY104_derrygreenagh trial pit photos\Tp219dg.jpg

Figure 13 H:\23OY104_derrygreenagh trial pit photos\Tp220dg...jpg

Figure 15 H:\23OY104_derrygreenagh trial pit photos\Tp220dg.jpg

Figure 14 H:\23OY104_derrygreenagh trial pit photos\Tp220dg..jpg

Appendix 13
Photographs (Rotary Core)

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 108
Box
1.2.3.

Derrygreenagh
Power,
Co. Offally
2023 OY 104
BH 113
Box
1.2.

Irish Drilling Ltd: Core Photos:

Appendix 14
Site Plans

LEGEND:

- TRIAL PIT LOCATION
- BOREHOLE LOCATION
- INFILTRATION TEST LOCATION
- CONE PENETRATION TEST LOCATION

Rev.	DESCRIPTION	DATE
P01	First Draft	19/09/23

IRISH DRILLING LIMITED
OLD GALWAY ROAD, LOUGHREA, CO.GALWAY
Email : info@irishdrilling.ie
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Project
DERRYGREENAGH THERMAL POWER PLANT

Client

Drawing Title
IDL (AS BUILT) SITE INVESTIGATION
SOUTH SITE AREA

Date	Scale (A1)	Drawn by	Checked by	Approved by
13/04/23	NTS	MM	RK	RK

Status
PLANNING ☐ FOR APPROVAL ☐
TENDER ☐ FOR CONSTRUCTION ☐
AS BUILT X

Dwg. No.

Appendix 15
Digital Data
Refer to Folder Appendix 15