Derrygreenagh

Infrastructure Application:

Landscape Mitigation Strategy

January 2024

Delivering a better world

Limitations

Copyright

Contents

01 Introduction

Overview

The 'Proposed Development' for which planning consent is being sought, comprises a Power Plant Area with Combined Cycle Gas Turbine (CCGT) and Open Cycle Gas Turbine (OCGT) plant and associated infrastructure, and an Electricity Grid Connection which comprises substations, associated buildings and transmission infrastructure ('Proposed Development').

The Proposed Development is located entirely within Co. Offaly, primarily on land within a subset of the Derrygreenagh bog group, with the exception of agricultural land required for a loop-in connection to the Oldstreet-Woodland 400kV line. A connection to the high-pressure gas network will be required as part of the Overall Project. A Gas Connection Corridor has been considered as part of the 'Overall Project'. The Gas Connection Corridor will be subject to separate consenting applications which will be made by GNI.

AECOM has been appointed by Bord na Móna Powergen Limited to prepare a Landscape Mitigation Strategy to support the planning application and EIAR.

Site Location

The Proposed Development area, located between the towns of Rhode and Rochfortbridge, is situated off the R400 and approximately 2 kilometers south from Junction 3 on the M6 Motorway. The existing Derrygreenagh Site incorporates several built structures, including an office, storage facilities, a workshop complex, and hard standing, covering approximately half of the area. There are extensive areas of scrub-type vegetation, and stands of trees partially screen the view across the landscape.

The immediate land-use which surrounds the Proposed Development site is mainly regenerating bog or agricultural lands, primarily used as pastureland for livestock. Field boundaries are comprised of hedgerows with bands of trees.

NOT TO SCALE

02 Overall Site Analysis

General Site Analysis

The proposed infrastructure application comprises the following 3 key sites suitable for landscape mitigation.

Site 1: Power Plant Area
Site 2: 220 kV Substation Compound Area
Site 3: 400 kV Substation Compound Area

Land use across the different sites varies; however, the landscape possess similar geological formations, ecological systems, historical contexts, or visual qualities which create a sense of coherence and unity.

Whilst there are impacts to mitigate and compensate, there are also opportunities for landscape improvements.

Opportunities

- Regenerating Lands: Regenerating bog and agricultural lands for sustainable use.
- Existing Vegetation Screening: Large scrub areas and stands of trees naturally screen the proposed development, offering an opportunity for strategic enhancement to minimise visual impact.
- Proximity to Road Network: Located along R400 with close access to the main road network.

Constraints

- Brownfield Condition: Degraded elements on the brownfield site pose challenges.
- Residential Proximity: The site is close to some residential dwellings, making them sensitive receptors to the visual changes brought about by the proposed development.

NOT TO SCALE

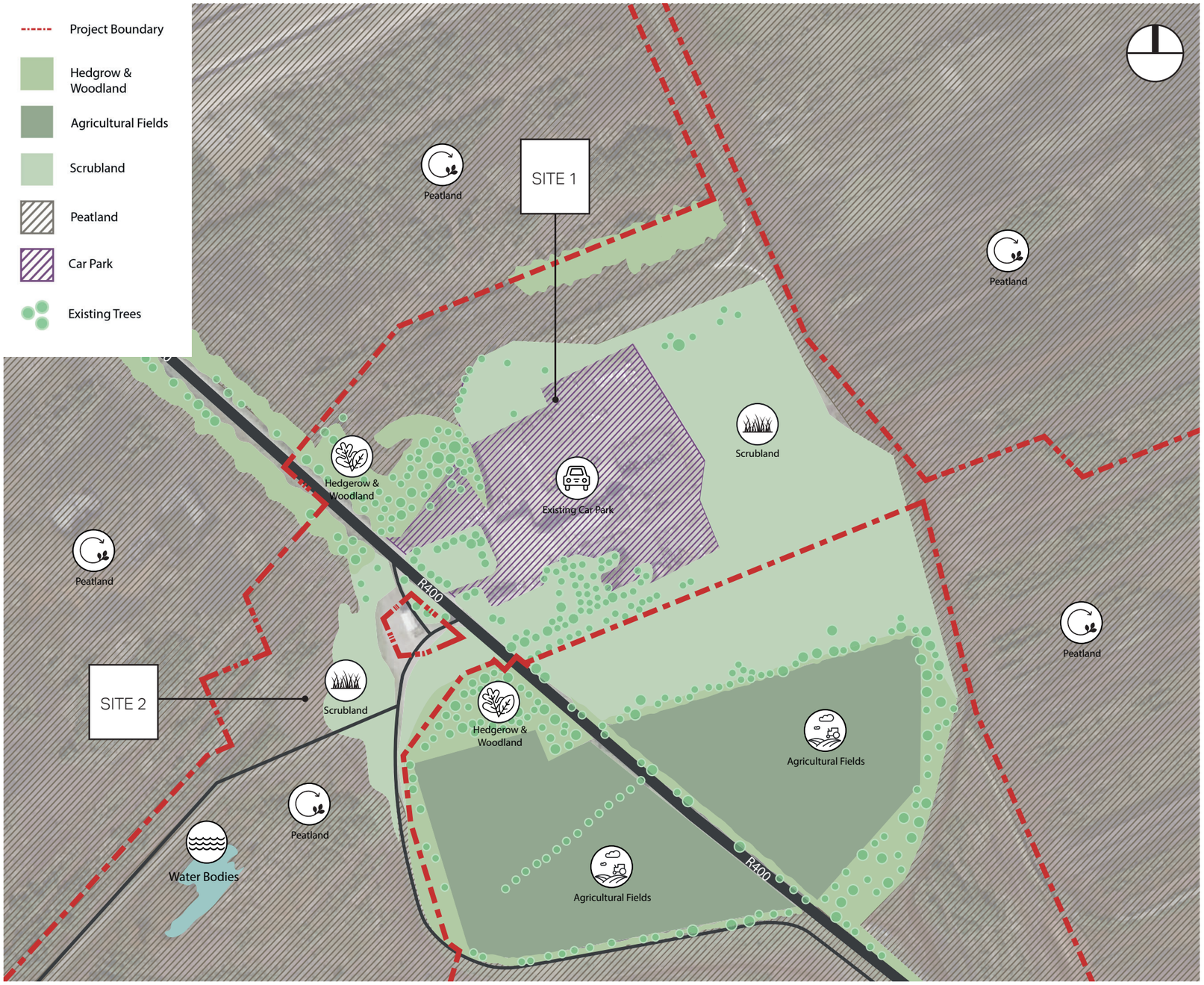
Landscape Mitigation Areas

Tree Stands & Mature Vegetation

Habitat Replacement Areas

Red Line Boundary

03 Individual Site Analysis - Power Plant Area & 220 kV Substation Compound Area



NOT TO SCALE

Site 1 - Power Plant Area Description

The Power Plant Area relates to the proposed main thermal power plant area and gas AGI located on a land parcel east of regional road R400. The process water discharge pipe will extend west of regional road R400.

The land parcel east of regional road R400 is known as the existing Derrygreenagh Works which is in a brown field condition. A number of built structures are located on the site including an office, storage facilities, workshop complex, and hard standing occupy approximately half of the area. There are large areas of scrub type vegetation and stands of trees partially screen the view across the landscape. The landscape south of the Power Plant Area is sparsely populated. There are a limited number of residential dwellings and farmsteads along the local road network. The closest residential dwelling to the Power Plant Area is located approximately 1km to the south.

Site 1 - Power Plant Area Analysis

The site predominantly comprises hard-standing areas with small amenity grass spaces and limited tree-line planting along the roads and within existing car park sites. The immediate land-use surrounding the Power Plant Area consists mainly of regenerating bog or agricultural lands, primarily employed as pastureland for livestock. Field boundaries are delineated by hedgerows with bands of trees.

The existing brownfield site is an non-designated landscape containing several deteriorating elements, resulting in a low baseline value. However, the surrounding boglands, naturally regenerating with native scrub and woodland, though not designated, offer aesthetically pleasing views with few detracting elements. These areas can be considered of good local value with a medium landscape value.

Where possible the existing landscape will be retained although the proposed development will have an affect. However, opportunities for new grassed areas, and clusters of tree planting will be explored. The landscape should be of low maintenance as the natural of development do not require a high profile visual landscape.

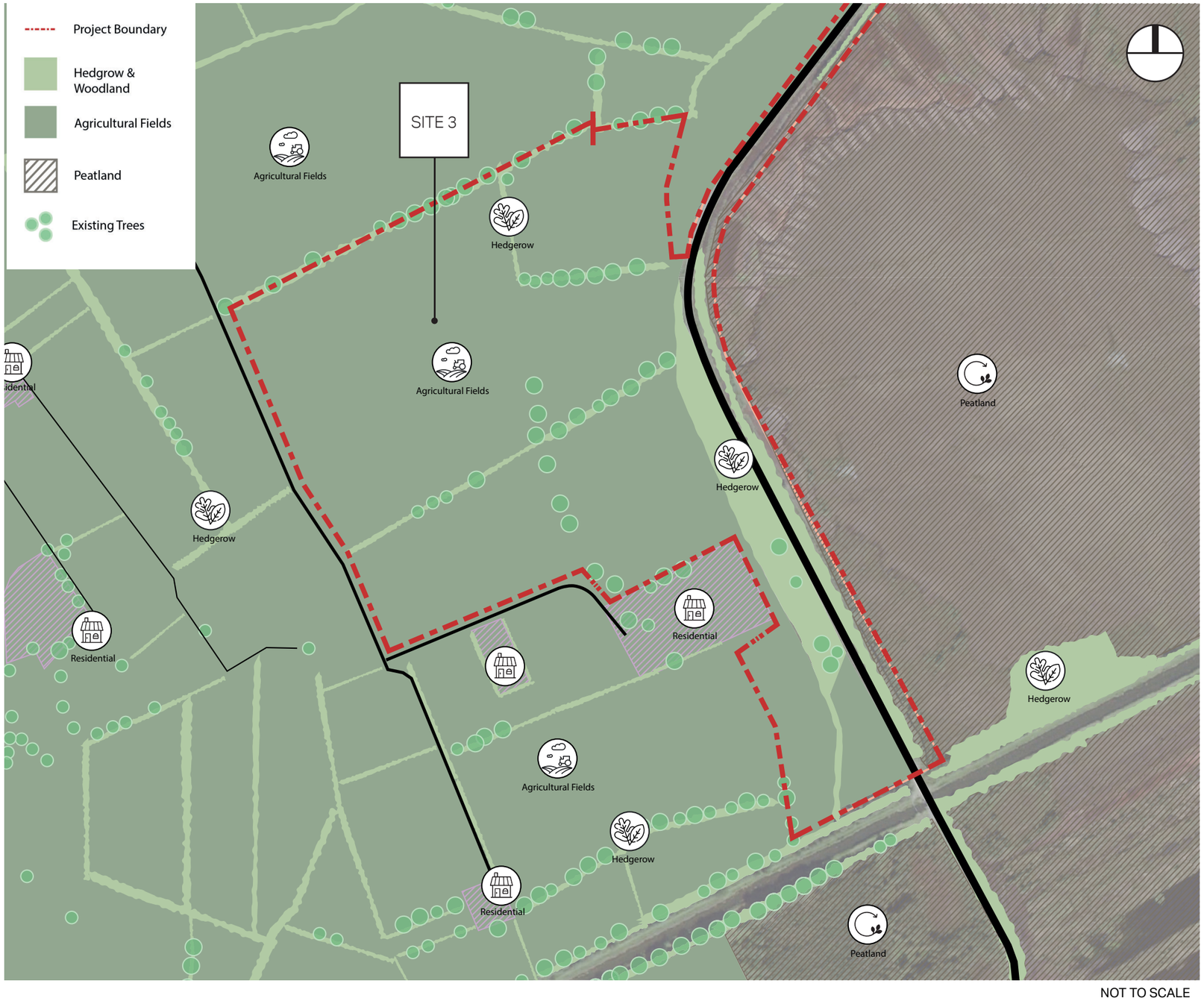
Site 2 - 220 kV Substation Compound Area Description

The Electricity Grid Connection Area will consist of the 220 kV substation west of regional road R400, pylon towers, overhead lines, Line-Cable Interface Compound, underground cabling, associated cabling and connections to Site 3 (a new 400 kV substation site and compound).

Site 2 - 220 kV Substation Compound Area Analysis

The existing environment of the Electricity Grid Connection comprises predominantly of bare cutaway peat production fields, and areas of bog woodland and scrub where natural re-vegetation has occurred in areas out of production for longer periods of time. There are a number of water bodies within the bogs due to localised flooding.

03 Individual Site Analysis - 400 kV Substation Compound Area



NOT TO SCALE

Site 3 - 400 kV Substation Compound Area Description

The proposed 400 kV substation site is located approximately 3.5km southwest of Rhode, which is the closest urban cluster. Residential dwellings closest to the substation site are located towards the southern end of the proposed cable route. Particularly, local road L1010 intersects the Electricity Grid Connection at Togher, continuing south towards the 400 kV substation.

Site 3 - 400 kV Substation Compound Area Analysis

The site is improved agricultural grassland. Vegetation within or surrounding the site includes scattered trees, hedgerows, tree-lines and scrub,.

The proposed development will have a significant impact on these existing landscape features, and will require vegetation replacement and enhancement where possible, and/or mitigation elsewhere within the vicinity of the site boundary.

04 Opportunities & Constraints

Opportunities

Ecological, Archaeological & Cultural Heritage

To protect the peatland areas and to conserve their ecological, archaeological and cultural heritage and to develop educational heritage.

Green Infrastructure

To preserve and enhance native and semi-natural woodlands, groups of trees and individual trees. Planting of native, deciduous, pollinator friendly trees where possible.

New Habitats

New habitats will be created to mitigate losses on site with native species and using the All Ireland Pollinator Plan in collaboration with ecologist.

Corridor Creation

To support the protection and management of existing networks of woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character.

Constraints

Biodiversity Value

There is a requirement for an increase in site biodiversity; measures need to be taken to mitigate losses and increase biodiversity value whilst reducing potential wildlife hazards.

Peatland

Expansion into adjacent fields for the new facilities and additional land for buffer treatment. Land allocation for replacement planting mitigation and biodiversity gain.

Existing Ecology

Existing ecology and habitats will require relocation and provision in mitigation on site. Measures are required to minimise potential wildlife hazards.

05 Power Plant Area

Power Plant Area:

The Power Plant Area is located east along the R400 with a low-lying landscape as a backdrop.

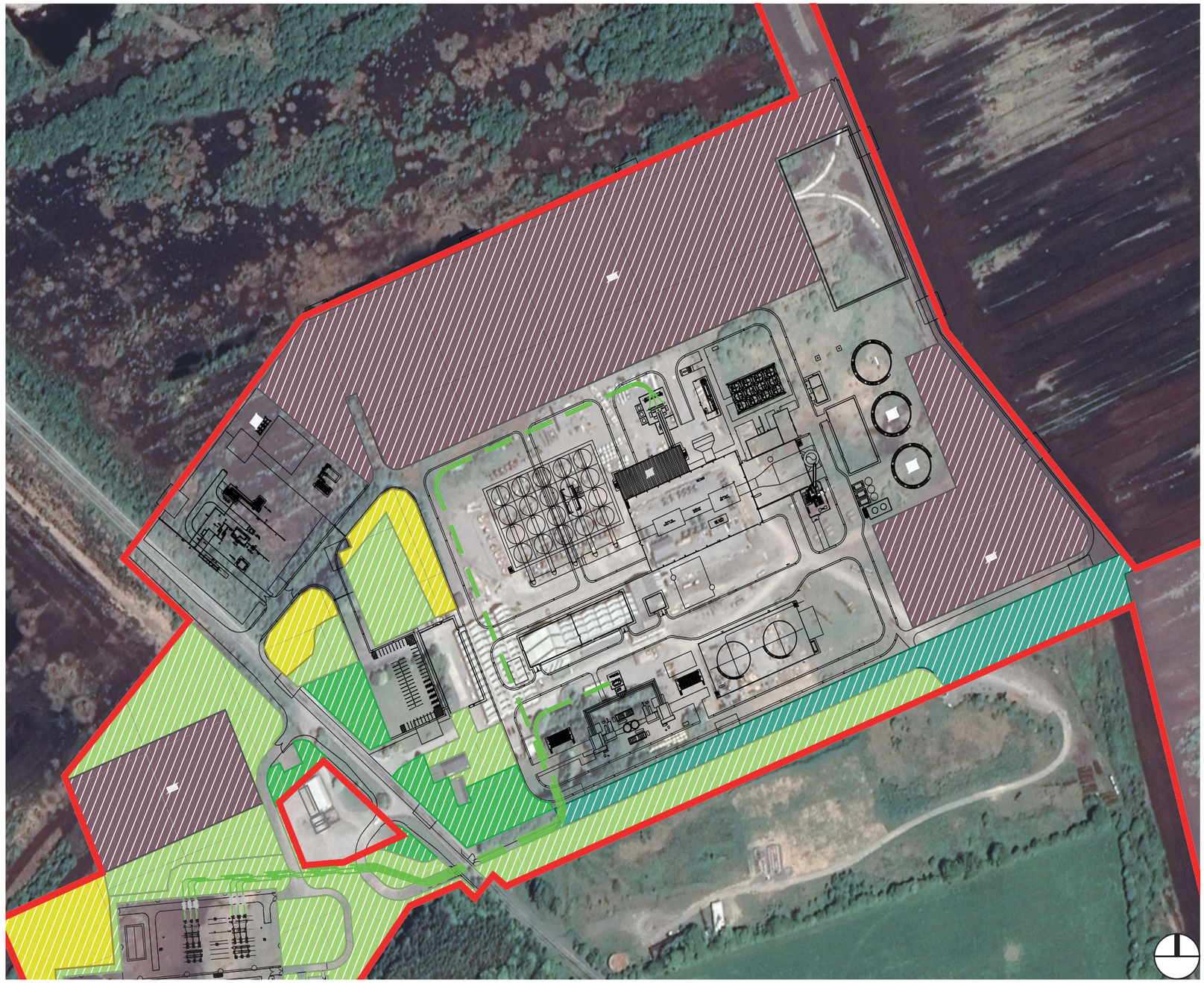
Landscape Mitigation and Enhancement Measures:

The proposed landscape mitigation and enhancement measures involve the introduction of specific elements:

- **Mix of Deciduous Trees:** Positioned to the west of the site, these clusters aim to screen the lower parts of the development and the area around the site entrance. Their placement is intended to enhance visual aesthetics and promote integration with the natural environment
- **Woodland Mix** and **Grass Mix:** To the south of the site, a combination of woodland mix and grass mix will be introduced. This aims to facilitate better integration with the existing scrubland adjacent to the site, extending beyond the site boundary, and to enhance the screening of the lower section of the PPA over time when the woodland mix matures.
- **Retention of Existing Vegetation:** Clusters of existing semi-mature and mature vegetation in the northern section of the existing site entrance east of the R400 shall be retained and protected during construction.

Planting Typologies:

WM1 Woodland Mix 1
GM1 Grass Mix 1
MDT Mix of Deciduous Trees



NOT TO SCALE

05 220 kV Substation Compound Area

Electricity Grid Connection (220 kV Substation):

The 220 kV Substation is located west of the R400 with a low-lying landscape as a backdrop.

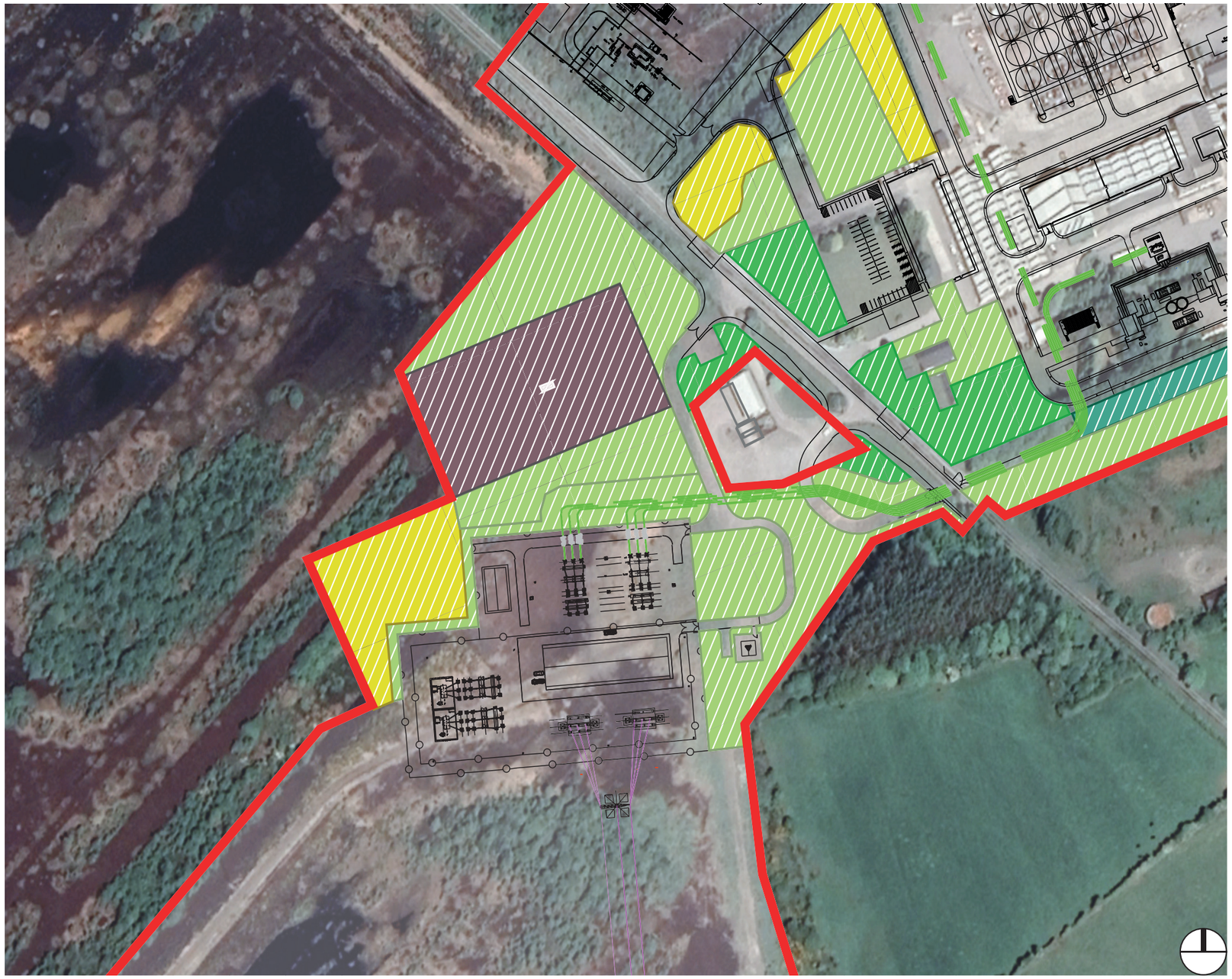
Landscape Mitigation and Enhancement Measures:

The proposed landscape mitigation and enhancement measures involve the introduction of specific elements:

- **Mix of Deciduous Trees**: Positioned to the northeast of the proposed 220 kV Substation site along the western site of the R400, additional clusters of deciduous trees will screen the lower parts of the development from the road and the area around the site entrance. Their placement is intended to enhance visual aesthetics and promote integration with the natural environment..
- **Grass Mix** : Areas to the north and east of the substation compound shall be planted with a grass mix. This aims to increase the biodiversity in this area which his currently mostly hard-standing. Considering the required underground services and overground lattice structures, the establishment of a woodland mix will not be feasible in the vicinity of the substation.
- **Retention of Existing Vegetation**: Existing regenerating bog vegetation west of the proposed substation compound shall be retained and protected during construction works.

Planting Typologies:

WM1	Woodland Mix 1
GM1	Grass Mix 1
MDT	Mix of Deciduous Trees



NOT TO SCALE

05 400 kV Substation Compound Area

Electricity Grid Connection (400 kV Substation):

The 400 kV Substation is located north of the Grand Canal and south of the L1010 Togher. The site is adjacent to agricultural fields to the west, south and north. Areas of regenerating bog are located to the east.

Landscape Mitigation and Enhancement Measures:

The proposed landscape mitigation and enhancement measures involve the introduction of specific elements:

- **Woodland Mix:** A band of trees is to be planted along the southern and eastern side of the substation compound and separated by a band of grassland from the compound fence. This is to provide screening of the lower section of the substation building and to pick up the pattern of bands of trees along field boundaries. Additional screen planting in form of bands of trees will be provided along the western and southern red-line boundary in order to enhance screening in views north from the Grand Canal.
- **Grass Mix:** A band of grassland will be created along the eastern (entrance area), northern, western and southern boundary of the substation compound. Other areas associated with former access tracks and agricultural fields located within the southern tip of the red-line boundary are to become grassland.
- **Retention of Existing Vegetation:** Existing bands of trees along field boundaries north of the substation compound as well as a wide strip south of the substation compound is to be retained.

Planting Typologies:

WM2 Woodland Mix 2
GM2 Grass Mix 2

NOT TO SCALE

05 Habitat Replacement Areas

Habitat Replacement Areas:

An area of approximately 17.08 ha will be planted with trees, over five areas.

The largest within an area of bare cut-over bog to the west of the line-cable interface compound within Ballybeg Bog, and two areas of vegetated cut-over bog to the east of the 220kV overhead line, and then in two strips along the boundary with the old railway track through Derryarkin.

This is to replace for the loss of trees, in particular bog woodland, as a result of the construction of the Proposed Development, including the Power Plant Area and Electricity Grid Connection.

Replanting will aim to create an area of bog woodland aligning with the Ballybeg Cutaway Bog Decommissioning and Rehabilitation Plan and Derryarkin Cutaway Bog Decommissioning and Rehabilitation Plan (refer to Appendix 9J). Full details are presented in the Habitat Management Plan (refer to Appendix 9K).

Landscape Mitigation and Enhancement Measures:

The proposed landscape mitigation and enhancement measures involve the introduction of specific vegetation:

- **Habitat Replacement Mix:** Replanting will aim to create an area of bog woodland, dominated by Downy Birch, but include to a lesser extent Holly, Rowan, Scots pine, Oaks and Willows.

Planting Typologies:

HRM Habitat Replacement Mix

NOT TO SCALE

06 Planting Schedule

Woodland Mix 1 (WM1)				
Species	**Common Name**	**Height CM**	**Average Planting Centres / Density**	**% Mix**
Quercus robur	Pedunculate Oak	60-90	2M	20%
Pinus sylvestris	Scots Pine	60-90	2M	20%
Ilex aquifolium	Holly	60-90	2M	15%
Sorbus aucuparia	Rowan	60-90	2M	15%
Betula pubescens	Downy Birch	60-90	2M	10%
Salix caprea	Goat Willows	60-90	2M	10%

Woodland Mix 2 (WM2)				
Species	**Common Name**	**Height CM**	**Average Planting Centres / Density**	**% Mix**
Quercus robur	Pedunculate Oak	60-90	2M	20%
Pinus sylvestris	Scots Pine	60-90	2M	20%
Acer campestre	Field Maple	60-90	2M	20%
Alnus glutinosa	Common Alder	60-90	2M	15%
Crataegus monogyna	Hawthorn	60-90	2M	15%
Corylus avellana	Hazel	60-90	2M	10%

Mix of Deciduous Trees (MDT)				
Species	**Common Name**	**Height CM**	**Average Planting Centres / Density**	**% Mix**
Quercus robur	Pedunculate Oak	60-90	2M	25%
Fagus sylvatica	Common Beech	60-90	2M	25%
Prunus avium	Wild Cherry	60-90	2M	20%
Pinus sylvestris	Scots Pine	60-90	2M	15%
Betula pubescens	Downy Birch	60-90	2M	15%

Habitat Replacement Mix (HRM)				
Species	**Common Name**	**Height CM**	**Average Planting Centres / Density**	**% Mix**
Betula pubescens	Downy Birch	60-90	2M	45%
Quercus robur	Pedunculate Oak	60-90	2M	15%
Salix caprea	Goat Willows	60-90	2M	15%
Sorbus aucuparia	Rowan	60-90	2M	10%
Pinus sylvestris	Scots Pine	60-90	2M	10%
Ilex aquifolium	Holly	60-90	2M	5%

Grass Mix 1 (GM1)		
Species	**Common Name**	**% Mix**
Dactylis glomerata	Cock's-foot	20%
Centaurea nigra	Common Knapweed	15%
Molinia caerulea	Purple Moor Grass	15%
Succisa pratensis	Devil's-bit Scabious	10%
Agrostis spp.	Bent Grasses	10%
Arrhenatherum elatius	False Oat-Grass	10%
Plantago spp.	Plantains	5%
Cirsium spp.	Thistles	5%
Heracleum sphondylium	Common Hogweed	5%
Achillea millefolium	Yarrow	5%

Grass Mix 2 (GM2)		
Species	**Common Name**	**% Mix**
Dactylis glomerata	Cock's-foot	20%
Orchidaceae	Orchids	15%
Centaurea nigra	Common Knapweed	15%
Succisa pratensis	Devil's-bit Scabious	10%
Agrostis spp.	Bent Grasses	10%
Arrhenatherum elatius	False Oat-Grass	10%
Plantago spp.	Plantains	5%
Cirsium spp.	Thistles	5%
Heracleum sphondylium	Common Hogweed	5%
Achillea millefolium	Yarrow	5%

07 Maintenance Approach and Management Strategy

Management and Maintenance

It is proposed that the contractor responsible for implementing the landscape scheme will maintain the areas up to the point of handover, which is expected to be 12 months for the new trees, shrubs and ground covers after practical completion (PC).

This management plan is specifically for soft landscape areas and it is expected that hard landscape areas will have a similar management plan for their upkeep. After handover, the landscape management will be transferred over to Bord na Móna Powergen Limited.

For any management plan to succeed it is essential that:

- All operatives are appropriately skilled and experienced for the type and quality of work.
- Materials and workmanship are to the highest possible standards and are in accordance with all relevant codes of practice and British Standards.
- All machinery and tools are fit-for-purpose, are suitable for site conditions and the work to be undertaken and are only used in accordance with manufacturer's recommendations.
- All operations fully comply with relevant Health & Safety regulations.
- This management plan is to be reviewed every 5 years to respond to the changes in the plant communities to ensure the healthy development of each habitat.

The management for new planting regime differs as the planting becomes established, the schedules for planting has been split into the following time spans:

- 1-4 years
- 5-10 years

Maintenance Proposals

Establishment Phase (Years 1-4)

Existing Mature Trees

- Annual inspections to monitor health of trees and removal of dead, dying or diseased branches, or other remedial works as required.
- Dead wood to be stacked in piles in agreed locations.

Woodland

- Inspections to monitor health of trees and removal of dead, dying or diseased branches, or other remedial works as required. Two visits per annum or as required.
- Annual inspections and adjustments to tree ties and staking systems and after severe storms.
- Pruning to ensure appropriate habit and form.
- Replacement planting for all failures where necessary.
- Maintain a constant carpet of woodland groundcover. The woodland ground-cover areas shall be cut three times a year from July to late September.
- Watering during periods of dry weather for the first 4 years.
- Year 4: Remove stakes and ties (or when tree is firm on its own root system).

Deciduous Trees

- Maintenance of ground cover in weed free condition through combined techniques of herbicides, cultivation and mulching.
- Inspections to monitor health of trees and removal of dead, dying or diseased branches, or other remedial works as required. Two visits per annum or as required. Removal of all clippings from site.
- Replacement planting for all failures where necessary.
- Watering during periods of dry weather for the first 4 years.

Grassland

- Maintain a constant carpet of woodland ground cover. The woodland ground cover areas will be cut three times a year from July to late September.
- The wildflower grass areas will be cut three times a year in the first year to ensure a good establishment of the plant mix. Subsequent years will be subject to a single cut once a year during late September.
- Mowing is to be carried out using appropriate machinery.

Post Establishment Phase (Years 5 - 10)

Existing Mature Trees

- Annual inspections to monitor health of trees and removal of dead, dying or diseased branches, or other remedial works as required.
- Dead wood to be stacked in piles in agreed locations.

Deciduous Trees / Woodland

- Inspections to monitor health of trees and removal of dead, dying or diseased branches, or other remedial works as required. Two visits per annum or as required.
- Maintain a constant carpet of woodland groundcover. The woodland ground-cover areas shall be cut three times a year from July to late September.
- Thinning out of selected species where appropriate, to avoid crowding and to promote development of strong individual specimen.
- Replacement planting for all failures where necessary.
- Trimming back of growth overhanging adjacent access tracks / roads. Removal of all clippings from site.

Grassland

- Repairs to failed or worn areas.
- Cutting regime – maintain a grass sward between 30 and 65mm long.
- Maintain edges.

aecom.com

Printed on recycled paper.