

Appendix 9C  
Bat Survey Reports

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# Bat Survey Report

Derrygreenagh CCGT  
Appendix 9C

Bord na Móna

Project number: 60699676

December 2023

### Quality information

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|----------|---------------|---------|------------|------|----------|
|          |               |         |            |      |          |
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## Table of Contents

|         |  |    |
|---------|--|----|
| 1.      | Introduction.....  | 1  |
| 1.1     | Background .....   | 1  |
| 1.2     | Previous Surveys.....  | 1  |
| 1.3     | Survey Aims.....   | 1  |
| 1.4     | Quality Assurance .....                                      | 1  |
| 2.      | Legislative and Planning Policy Context.....                 | 2  |
| 2.1     | Relevant Legislation.....                                    | 2  |
| 2.2     | Relevant Planning Policy and Guidance .....                  | 2  |
| 2.2.1   | Project Ireland 2040 National Planning Framework (NPF) ..... | 2  |
| 2.2.2   | National Biodiversity Action Plan 2017-2021.....             | 2  |
| 2.2.3   | Local Area Development Plans .....                           | 3  |
| 2.2.3.1 | Offaly County Development Plan 2021 – 2027 .....             | 3  |
| 2.2.3.2 | Westmeath County Development Plan 2021 – 2027 .....          | 3  |
| 3.      | Methods .....  | 4  |
| 3.1     | Bat Emergence Surveys .....                                  | 4  |
| 3.2     | Bat Activity Surveys .....                                   | 4  |
| 3.2.1   | Bat Activity Transects.....                                  | 4  |
| 3.2.2   | Static Detectors .....                                       | 5  |
| 3.3     | Data Collection and Analysis.....                            | 5  |
| 3.4     | Survey Personnel .....                                       | 5  |
| 3.5     | Limitations .....  | 5  |
| 4.      | Results .....  | 6  |
| 4.1     | Bat Emergence Surveys .....                                  | 6  |
| 4.1.1   | Roosting Bats .....  | 12 |
| 4.1.2   | Incidental Bat Activity.....                                 | 15 |
| 4.1.3   | Bat Activity Survey .....                                    | 15 |
| 4.1.3.1 | Transect Surveys.....  | 15 |
| 4.1.4   | Static Detectors .....                                       | 16 |
| 4.1.4.1 | SD01 .....   | 17 |
| 4.1.4.2 | SD02.....  | 17 |
| 4.1.4.3 | Summary of Data Collected .....                              | 17 |
| 5.      | Summary.....   | 19 |
| 6.      | References.....  | 20 |

## Tables

|            |   |    |
|------------|---|----|
| Table 4.1: | Bat emergence survey details.....                         | 6  |
| Table 4.2: | Buildings and structure details. ....                     | 7  |
| Table 4.3: | Bat roost details.....                                    | 14 |
| Table 4.4: | Weather conditions recorded during activity surveys. .... | 15 |
| Table 4.5: | Static detector survey summary. ....                      | 16 |

# 1. Introduction

## 1.1 Background

AECOM was commissioned by Bord na Móna PLC to carry out a suite of bat surveys to inform a planning application for a Combined Cycle Gas Turbine (CCGT) unit and an Open Cycle Gas Turbine (OCGT) unit, Electricity Grid Connections including substations and associated buildings and infrastructure ('the Proposed Development') on lands within a subset of the Derrygreenagh Bog Group in Co. Offaly.

The Proposed Development comprises several individual project elements, namely the Power Plant Area, the Electricity Grid Connection, and the Gas Connection Corridor. For simplicity, the individual project elements are herein referred together as the 'Proposed Development' and their combined location as the 'Site', where relevant. Individual project elements are referred to throughout this report where relevant. Full details of the Proposed Development are presented in Chapter 5 of the EIAR (refer to EIAR Volume I).

This Report presents bat roost and activity survey data collected in 2023 by AECOM. This Report should be read in conjunction with the Biodiversity Chapter of the Environmental Statement (Chapter 9, EIAR Volume I).

## 1.2 Previous Surveys

A Preliminary Roost Assessment (PRA) and bat roost surveys were carried out by Woodrow APEM in September and October 2022 (Woodrow APEM, 2022). During the PRA, evidence of roosting bats was recorded in six buildings. Three structures of Low suitability and one structure of Moderate suitability were identified. Five trees were categorised as having Low suitability for roosting bats. Subsequent emergence / re-entry confirmed bats to be roosting within one building, with one other building identified as a potential roost. Habitats were categorised as having Moderate suitability for foraging/commuting bats around the Power Plant Area and the locations of the proposed 440kV substation for the Electricity Grid Connection. Full details of the PRA and bat roost surveys carried out by Woodrow APEM are presented in EIAR Volume II.

## 1.3 Survey Aims

The aims of the bat surveys were to gather information pertaining to use of the Site by bats by carrying out the following:

- Bat emergence surveys of buildings and structures identified as having bat roost suitability;
- Bat activity surveys to identify the baseline use by bats in the habitats determined to be suitable for foraging/commuting bats, including recording species present, activity levels, important bat habitats, and assessing landscape connectivity.

## 1.4 Quality Assurance

This project has been completed in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, its quality as well as covering all aspects of environmental and Health and Safety management. All staff members are committed to establishing and maintaining our accreditation to the relevant international standards namely BS EN ISO 9001:2008 and 14001:2004 and BS OHSAS 18001:2007. In addition, our IMS requires careful selection and monitoring of the performance of all sub consultants and contractors.

## 2. Legislative and Planning Policy Context

### 2.1 Relevant Legislation

All bats in the Republic of Ireland are listed on Annex IV of the Habitats Directive<sup>1</sup>. Listing under Annex IV requires Member States of the European Union (EU) to strictly protect these species wherever they occur. In addition, the lesser horseshoe bat *Rhinolophus hipposideros* is also listed under Annex II of the Habitats Directive, which effectively means that Member States are required to designate Special Areas of Conservation (SAC) for the further protection of this species.

The Habitats Directive is transposed into Irish law by the European Communities (Bird and Natural Habitats) Regulations 2011 (the 'Habitats Regulations'), which provide national legislation for the protection of bats. Under the Habitats Regulations it is an offence to:

- deliberately capture, injure, or kill any bat;
- deliberately disturb a bat, particularly during the period of breeding, rearing, hibernation, and migration; and,
- damage or destroy a bat breeding site or resting place.

### 2.2 Relevant Planning Policy and Guidance

#### 2.2.1 Project Ireland 2040 National Planning Framework (NPF)

The *Project Ireland 2040 National Planning Framework* (NPF) (DHPLG, 2018) sets out the Government's planning policies for Ireland and how these should be applied. NPF sets out that to achieve sustainable development, the planning system must incorporate an environmental objective, which should include:

- integrated planning for green infrastructure and ecosystem services;
- enhancing the conservation status and improve the management of protected areas and protected species;
- use natural resources prudently;
- minimising waste and pollution; and,
- mitigating and adapt to climate change, including moving to a low carbon economy.

#### 2.2.2 National Biodiversity Action Plan 2017-2021

The *National Biodiversity Plan 2017-2021* (DCHG, 2017) for Ireland outlines six main objectives to meet commitments under the Convention on Biological Diversity (CBD) and EU Biodiversity Strategy. The *National Biodiversity Plan 2023-2027* is currently being drafted. The objectives of the *National Biodiversity Plan 2017-2021* include:

- mainstream biodiversity into decision-making across all sectors;
- strengthen the knowledge base for conservation, management and sustainable use of biodiversity;
- increase awareness and appreciation of biodiversity and ecosystem services;
- conserve and restore biodiversity and ecosystem services in the wider countryside;
- conserve and restore biodiversity and ecosystem services in the marine environment;
- expand and improve management of protected areas and species; and,
- strengthen international governance for biodiversity and ecosystem services.

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<sup>1</sup> Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, which is more commonly referred to as the 'Habitats Directive'.

## 2.2.3 Local Area Development Plans

Other relevant policies that have been referred to in order to inform this report include:

- Offaly County Development Plan 2021 – 2027;
- Offaly Heritage Plan 2023-27; and
- Westmeath County Development Plan 2021 – 2027.

### 2.2.3.1 Offaly County Development Plan 2021 – 2027

The County Development Plan for County Offaly is contained within the *Offaly County Development Plan 2021 – 2027* (CDP) (refer to Chapter 2: Policy, EIAR Volume I for details on planning policy). The CDP sets out the aims, policies, and objectives for topics such as development, green infrastructure, and natural heritage for County Offaly in accordance with the Planning Acts. The strategic aim of this plan relative to the natural environment is set out in Chapter 4: Biodiversity and Landscape, and is to:

- Protect and enhance Offaly's natural assets of clean water, biodiversity, landscape, green infrastructure, heritage and agricultural land.

Chapter 4 of the CDP also includes specific policy objectives for a number of themes and environmental features, including: designated and non-designated sites, peatlands, waterways, lakes and wetland landscapes, trees forestry and hedgerows, green infrastructure, invasive species, areas of high amenity, landscape, high nature value (HNV) farming projects, and wilderness corridors.

### 2.2.3.2 Westmeath County Development Plan 2021 – 2027

The *Westmeath County Development Plan 2021 - 2027* is available in draft and sets out the County Council's proposed policies and objectives for the development of the County over the Plan period. The aims of this plan in relation to biodiversity is set out in Chapter 12. Natural Heritage and Green Infrastructure, and is to:

- Continue to protect and enhance the County's natural heritage and biodiversity and ensure that networks of green infrastructure are identified, created, protected and enhanced to provide a wide range of environmental, social and economic benefits to communities.

## 3. Methods

### 3.1 Bat Emergence Surveys

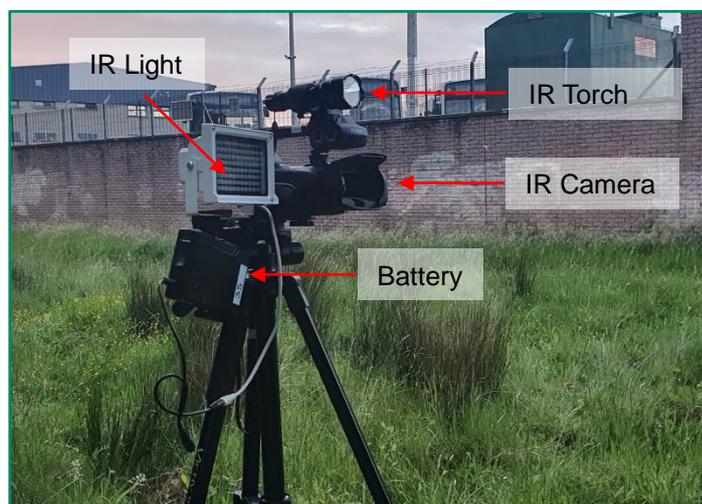
Survey methods were devised following standard methodology in accordance and following recommendations and good practice as highlighted in Bat Surveys: Good Practice Guidelines (3<sup>rd</sup> Edition), produced by BCT (Collins, 2016). In addition, the survey method has been informed by the recent Interim Guidance Note (BCT, 2022) which supersedes Collins (2016) and details the new requirement for night vision aids (NVA; e.g. infrared (IR) cameras) during roost surveys (to be phased-in in full by 2024) and provides comments on the efficacy of pre-dawn surveys.

Following Collins (2016) and BCT (2022), structures / buildings of High bat roosting potential were subjected to three dusk surveys, structures / buildings of Moderate bat roosting potential were subjected to two dusk surveys and structures / buildings of Low bat roosting potential were subjected to one dusk survey. Dusk emergence surveys commenced at least 15 minutes prior to sunset and ended 1.5 to 2 hours after sunset.

Surveyors positioned themselves with clear views of potential access features identified during the PRA prior to dusk. The building was watched and if any bats emerged or re-entered, the surveyors attempted to pinpoint the roost location, and identify and count the number of bats emerging / re-entering, where light conditions permitted. Bat detectors were employed as a means of recording bat echolocation calls and identifying species present. Surveyors listened for bats using detectors and on hearing a bat, they attempted to identify species, flight direction, height, and bat behaviour.

In addition, to supplement the surveys, IR cameras and a thermal camera were deployed. The cameras were set up to face potential access features and IR cameras were equipped with a torch-style IR light (for pin-pointing features) and a larger IR light to give a wider field of view. An indication of the camera setup is presented in Plate 1.

**Plate 1: Indicative IR Camera setup (not from within the Site).**



### 3.2 Bat Activity Surveys

#### 3.2.1 Bat Activity Transects

A single transect was walked, one-way, monthly between June and August 2023. The area of the transect is associated with the Electricity Grid Connection area of the Proposed Development. The transect primarily extends along hedgerows through cattle-grazed agricultural grassland set on a large hill. The southern section of the transect runs alongside an area of bog and follows a railroad track.

Surveys commenced at sunset and ended approximately two hours after sunset (though occasionally earlier or later, depending on the time it took to complete the transect). Suitable spot count locations were determined along the transect route, located within habitats of elevated value to bats (e.g. dark locations) where surveyors listened at a stationary position for five minutes. The surveyors listened for

bats using detectors and on hearing a bat, they attempted to identify species, number, flight direction, and bat behaviour.

### 3.2.2 Static Detectors

To provide information on bat activity within the Power Plant Area of the Proposed Development, data was collected using static automated bat detectors. Around buildings located within the Power Plant Area requiring emergence surveys, activity was well-recorded in some areas of the Site, and with much of the remainder comprising unsuitable hardstanding, the deployment of two strategically placed static detectors was deemed enough to have sufficient bat activity data for the Power Plant Area.

Static detectors were deployed at two separate locations within the Power Plant Area. These were located at the north of the Power Plant Area within an area of scrub, and at the south of the Power Plant Area within a small woodland. Static detectors were deployed for between 1 – 2 nights monthly from June to August 2023 and were programmed to continuously record from sunset to sunrise.

## 3.3 Data Collection and Analysis

All bat calls were digitally recorded. The equipment used for the survey comprised Batlogger M and Batlogger M2 handheld detectors as well as SM4 and SM mini static detectors. Data collected during surveys were stored and subsequently analysed using both Kaleidoscope Pro specialist software, to identify any bats detected in the field and to confirm species identifications made in the field.

Weather details were recorded using the Batlogger's inbuilt thermometer, and descriptions of other conditions were recorded subjectively.

All spatial survey data were recorded onto a mobile mapper in the field. By using the inbuilt device GPS and in context with recognisable features on the ground visible from downloaded orthophotography, this allows for generally accurate locational data of evidence to be recorded.

## 3.4 Survey Personnel

Bat surveys were carried out by AECOM Ecologists Dr Emma Boston, Scott McCollum, Paul Donaghey and Seanin Maxwell. Surveyor experience is presented in EIAR Volume II Appendix 1B.

## 3.5 Limitations

Whilst surveys were scheduled to take place under good weather conditions for bats, rain occurred throughout the bat activity survey carried out on 1 August 2023. Despite this, bats were both heard and seen during the rain, and all other activity surveys were carried out under suitable weather conditions. Weather is considered to pose a slight constraint to the results of the August bat activity survey, however not significantly so.

The bat activity surveys carried out in July and August were partly limited by some areas of inaccessibility due to health and safety issues, namely the presence of cattle (including a bull) within fields. During both surveys, the transect route was changed to account for the presence of cattle. This poses a slight constraint to overall analysis of bat activity, however not significantly so.

No other limitations were identified that would pose a constraint to the findings of the surveys.

## 4. Results

### 4.1 Bat Emergence Surveys

Emergence surveys were conducted on six buildings and one structure within and in the vicinity of the Power Plant Area. All other building and structures in the Site were classified as Negligible (Woodrow APEM, 2022), or it was determined that these would not be impacted by the Proposed Development and therefore did not require further survey. During the initial survey, a further structure was identified as a bat roost adjacent to building B4 (hereafter named B4a). This was a storage box, set approximately 2m in front of the roller door of building B4. Table 4.1 presents the bat emergence survey conditions. Table 4.2 presents details of the buildings and structures surveyed. Plate 2 shows stills from the IR cameras, taken at the darkest point of the survey for each feature. The locations of buildings, structures, surveyors, and IR cameras are presented in Figure 1.

**Table 4.1: Bat emergence survey details.**

| Date       | Structure / building reference* | Start | End   | Sunset | Weather conditions   |
|------------|---------------------------------|-------|-------|--------|--|
| 06/06/2023 | B4, B5, B6                      | 21:37 | 23:22 | 21:52  | 10°C, dry, clear sky, light air  |
| 07/06/2023 | B1, B2, B3, S1                  | 21:38 | 23:53 | 21:53  | 16°C, dry, clear sky, light air  |
| 04/07/2023 | B4 / B4a, B5**, B6              | 21:44 | 23:30 | 21:09  | 15°C, dry but some light rain during survey, overcast, moderate breeze |
| 05/07/2023 | B1, B2, B3, B5**                | 21:43 | 22:50 | 21:58  | 15°C, dry, overcast, still air   |
| 02/08/2023 | B4 / B4a, B5, B6                | 21:09 | 23:09 | 21:24  | 17°C, dry, overcast, gentle breeze,                                    |
| 03/08/2023 | B1, B3***                       | 21:06 | 23:09 | 21:21  | 13°C, dry, scattered clouds, light breeze                              |

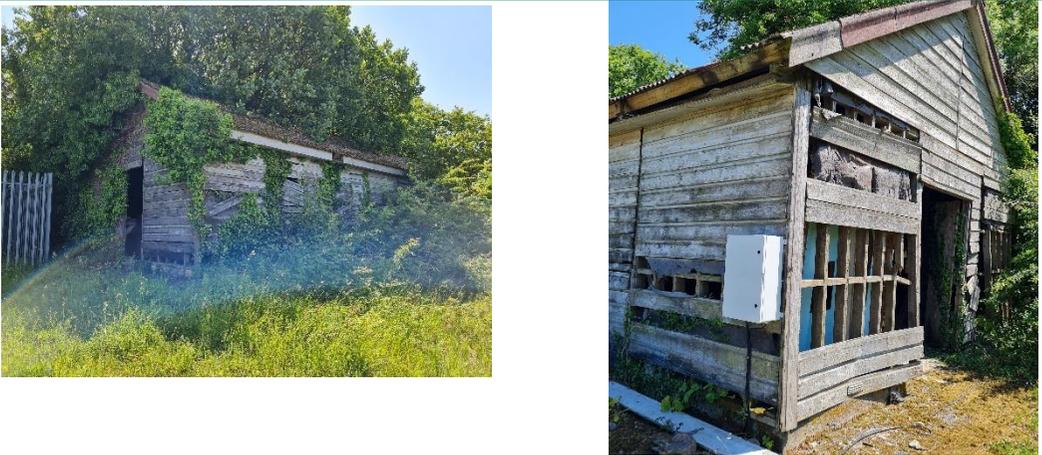
\*Structures / buildings and surveyor locations are indicated in Figure 1.

\*\*During July survey different PRFs on B5 were covered on separate nights.

\*\*\*B2 was not surveyed again in August as it had already been classified as a roost during the July survey.

**Table 4.2: Buildings and structure details.**

| Refs. | Description  | Suitability (Woodrow APEM)  | Features noted   | Photographs  |
|-------|--|---|--|--|
| B1    | <p>Disused single-story workshop of cinder block construction with no cladding or render. Flat steel roof with wooden rafters. No attic space present. Windows with steel grid cage present on north, west and south faces. A steel sliding door is present on the west face</p> | <p>Droppings and feeding remains found in the interior.</p> <p>Likely night / foraging roost.</p> | <p>Broken windows and gaps around sliding shutter door provide access to interior of building.</p>             |   |
| B2    | <p>Disused single-story storage shed of cinder block construction with no cladding or render. Flat steel roof with two large, open entryways on the east face. No attic space present.</p>   | <p>Droppings found at southern most entrance.</p> <p>Likely night / foraging roost.</p>           | <p>Large open entryways allow access.</p> <p>Cracks in mortar lead to cavities both interior and exterior.</p> |  |

| Refs. | Description   | Suitability (Woodrow APEM)   | Features noted   | Photographs  |
|-------|---|--|--|--|
| B3    | <p>Disused, single story timber framed building currently used for storage. Composed of four separate rooms with access to the east and west rooms through open doorways. Access to central two rooms through closed wooden door. East and west rooms have wooden rafters and have no attic space. Central rooms have attic space and ceilings.</p> | <p>Large number of droppings found at southern most entrance.</p> <p>Likely night / foraging roost.</p>    | <p>Numerous access features leading to interior of building.</p>   |   |
| B4    | <p>One story boiler room building. Block construction with render. Steel framed and pitched steel roof. Windows present on North and south faces are open and / broken allowing access. Rolling shutter door present on west face. Interior and exterior lighting present and in use.</p>   | <p>Confirmed roost due to two pipistrelles and two brown long-eared bats present behind a fuel hopper.</p> | <p>Open windows, broken widows and gaps around metal rolling door provides access to interior of building.</p> |  |

| Refs. | Description   | Suitability (Woodrow APEM)   | Features noted  | Photographs  |
|-------|---|--|---|--|
| B4a   | <p>Metal storage container present in carpark adjacent to B4. Small gaps are present on each cardinal face behind information plaques. These gaps provide access into the interior of the structure and reveal a polystyrene lined roof.</p>  | Not assessed.  | <p>Small gaps present behind information plaques providing access to interior of structure.</p>       |   |
| B5    | <p>Main offices. Comprised of two single story structure linked by a flat roof corridor. One orientated north-south and one orientated east-west.</p> <p>Single story block and render structures. Pitched timber framed and tiled roofs. Generally well-sealed buildings with few obvious entry points from exterior. Artificial lights on exterior of building.</p> | <p>Confirmed roost due to droppings present in the attic with clusters of ca. 40 droppings at both the eastern and western gable ends.</p> | <p>Gaps present at north, east and west apexes of building providing access to attic of building.</p> |  |

| Refs.       | Description   | Suitability (Woodrow APEM)   | Features noted   | Photographs   |
|-------------|---|--|--|---|
| B6          | Fuel store. Single storey block and render building. Steel framed and clad roof. Comprised of two rooms divided by block wall. Both rooms open to the roof. | Potential feeding remains found in east room and low density feeding remains and droppings found in west room.<br><br>Likely night / foraging roost. | Numerous access features consisting of broken and open windows, gaps in doors and gaps between roof and walls leading to interior of building.   |    |
| S1 (Bridge) | Concrete railway bridge with one underpass c. 4m wide and 3m height. Piped holes near the roof of the external walls for excess water egress.               | Low Suitability  | Large gaps at the base of the spandrel wall where it meets the supporting wall. Several large holes are present underneath the structure. These holes are most likely used for water drainage but could provide opportunities for roosting bats. |   |

**Plate 2: IR camera still taken at darkest point of survey.**

**a) B1**



**b) B2**



**c) B3 – West**



**d) B3 – East**



**e) B4 – North**



**f) B4 - South (Thermal)**



**g) B5 – North**



**h) B5 – East**



**i) B5 – West**



**j) B6**



### 4.1.1 Roosting Bats

A total of eight bat roosts have been identified on Site, comprising three maternity roosts, five transitional/occasional roosts and two likely night perches/feeding roosts. The bat emergence surveys conducted in 2023 confirmed roosts within six buildings / structures: B2, B4, B4a, B5, B6 and S1, including those identified previously by Woodrow APEM (2022). Species confirmed as roosting comprise common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus* and natterer's bat *Myotis nattereri*. A summary of bat roosts is presented in Table 4.3 and indicative roost locations are shown on Figure 2.

Two soprano pipistrelle maternity roosts were confirmed on Site, in structure B4a and a bridge, S1. With respect to the bridge (S1), 26 no. soprano pipistrelles were observed emerging from a gap behind a pipe during the June survey (3a). A single bat was incidentally recorded emerging from B4a during a survey of B4 in June, with 9 and 10 no. soprano pipistrelles recorded emerging from two access points in the metal frame during the July and August surveys respectively (Plate 3b).

A Natterer's bat maternity roost was confirmed within building B2. During the July survey, 8 no. bats emerged from a small gap in an internal breezeblock wall (Plate 3c), with scattered droppings identified below the roost access point.

All other confirmed roosts are considered to be transitional or occasional roosts. B5 supported a small number of pipistrelle bats transitional throughout the surveys, with soprano pipistrelle recorded emerging from the north (2 no.) and east (1 no.) apexes and a single common pipistrelle noted emerging noted from the west apex (Plate 3d). A single common pipistrelle was recorded emerging from the southwest of building B6 during the July survey.

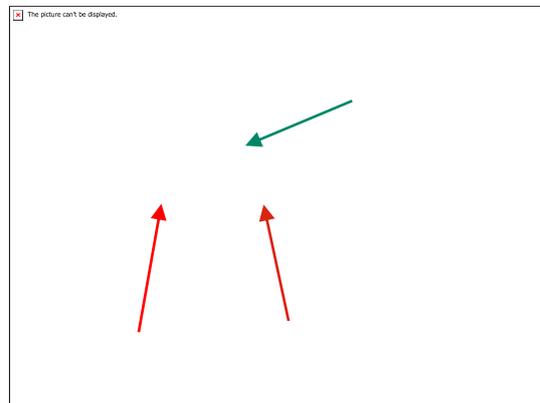
With respect to B4, during the original PRA by Woodrow APEM (2022) two pipistrelle bats and two brown long-eared bats were observed in situ, roosting behind a fuel hopper. During a daytime inspection in 2023, a small number of droppings scattered across internal surfaces were noted, including those based on size and appearance looked to be from brown long-eared bat. A single soprano pipistrelle was recorded emerging from the corner of the roller door during the first survey in June, however, no other bats were observed emerging from this building on subsequent surveys (Plate 3b). B4 is therefore considered to comprise an transitional/occasional of both brown long-eared bat and soprano pipistrelle.

No bats were recorded roosting within B1 or B3 during the emergence survey, nor were any bats observed using these buildings as feeding perches throughout the night, despite the droppings and feeding remains present. Incidental bat activity recorded during emergence surveys recorded brown long-eared bats during the surveys around B3, but not close to B1. Regardless, these buildings are considered to be used as occasional night perches/feeding roosts for brown long-eared bats.

**Plate 3: Roost locations.**

**a) S1 – soprano pipistrelle maternity colony access point**

**b) Access point at top of roller door (B4, green arrow) and in holes in frame of metal storage container (B4a, red arrow)**



**c) B2 – Access point in gap in breezeblock**

**d) North apex of B5 – all the apexes on this**

wall.



e) B6 – Access point for building is gap present where wall meets roof on western side of building.



building are similar in character.



f) B6 – Access point continued.



**Table 4.3: Bat roost details.**

| Ref. | Date(s)                                | Species                                   | Type   | Description  | Notes   | No. of Bats |
|------|--|---|--|--|---|-------------|
| B1   | N/A                                    | Brown long-eared                          | Potential feeding perch                      | Droppings found internally during inspection by Woodrow.   | No emergences/or bat activity found during surveys.   | 0           |
| B2   | 05/07/2023                             | Natterer's Bat                            | Confirmed Maternity roost.                   | Crack within brick of interior wall.   | Four Natterer's bats emerged between 22:33 and 22:35. Two Natterer's bats emerged at 22:46. One Natterer's bat emerged at 22:50 with a final two Natterer's bats emerging at 22:58 and 23:37. Bats flew directly from the interior of the building to the exterior with some foraging within the building before exiting. | 8           |
| B3   | N/A                                    | Brown long-eared                          | Potential feeding perch                      | Droppings found internally during inspection by Woodrow and AECOM.   | No emergences/ or bat activity found during surveys.  | 0           |
| B4   | 07/06/2023                             | Soprano pipistrelle<br>Brown long-eared   | Confirmed<br>Transitional / Occasional roost | From gap in rolling shutter door. Brown long-eared bats and droppings found internally during inspection by Woodrow. | A single soprano pipistrelle emerged at 22:09 and flew towards the treeline present to the south.   | 1           |
| B4a  | 07/06/2023<br>04/07/2023<br>02/08/2023 | Soprano pipistrelle                       | Confirmed<br>Maternity roost                 | Gaps above information plaques.  | One soprano pipistrelle was noted emerging from this structure during the June survey. Nine Soprano pipistrelle emerged during the July survey at 22:18, 22:23 and 22:27 – 22:28. During the August survey ten bats emerged between 21:50 and 22:00.  | 9           |
| B5   | 05/07/2023<br>02/08/2023               | Soprano pipistrelle<br>Common pipistrelle | Confirmed<br>Transitional / Occasional roost | Gaps present at the north, east and west apexes of the building lead to a common attic space.                        | During the July survey a single soprano pipistrelle emerged from the east apex at 22:24 and two common pipistrelles emerged from the west apex at 22:31. During the August survey two bats emerged from the north apex at 21:56 and one bat emerged at 22:20.   | 3           |
| B6   | 05/07/2023                             | Common pipistrelle                        | Confirmed<br>Transitional / Occasional roost | Large gap where wall meets roof on west face of building.  | A single soprano pipistrelle emerged from the gap between the wall and the roof at 22:14.   | 1           |
| S1   | 07/06/2023                             | Soprano pipistrelle                       | Confirmed<br>Maternity roost                 | From drainage pipe present at west of structure.   | 26 bats emerged from 22:39 consistently until 23:12. Due to the high amount of calls at this time it is impossible to get exact numbers of emergences per species. One common pipistrelle re-entered the roost at 23:33.  | 26          |

## 4.1.2 Incidental Bat Activity

Incidentally recorded bat activity recorded during emergence surveys consisted of bats foraging within and commuting through the site. Species recorded incidentally include soprano pipistrelle, common pipistrelle, Leisler’s bat *Nyctalus leisleri*, brown long-eared bat, Daubenton’s bat *M. daubentonii*, natterer’s bat and whiskered bat *M. mystacinus*.

## 4.1.3 Bat Activity Survey

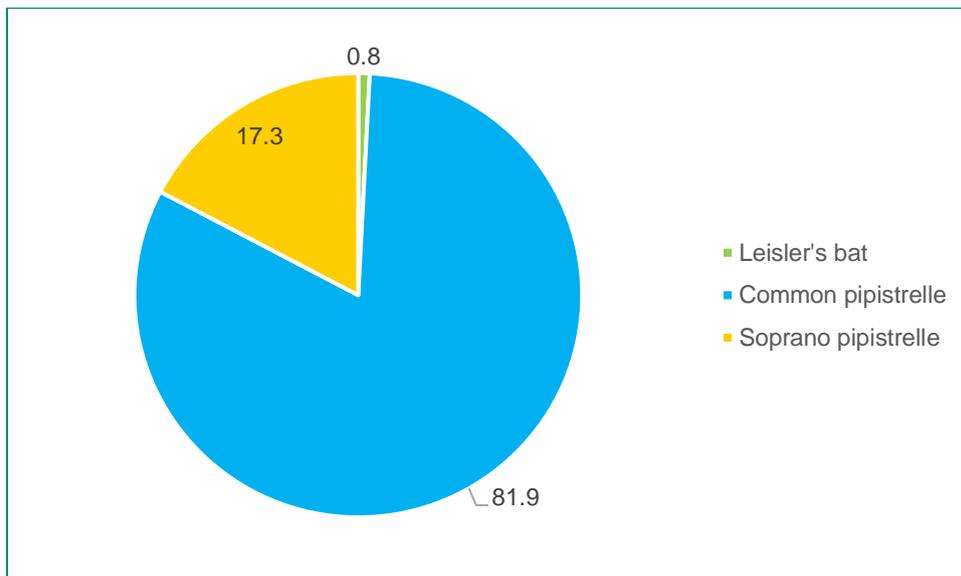
### 4.1.3.1 Transect Surveys

A transect route was walked monthly between June – August 2023. Surveys were carried out under suitable weather conditions for survey, with the exception of the August survey (see Section 3.5 for further detail). Survey dates, weather conditions and start and end times are presented in Table 4.4. Bat activity survey results are displayed in Figure 3.

**Table 4.4: Weather conditions recorded during activity surveys.**

| Time              | Temperature (°C) | Cloud cover (%)               | Wind description   | Precipitation |
|-------------------|------------------|-------------------------------|--------------------|---------------|
| <b>08/06/2023</b> | <b>Sunset:</b>   | <b>21:53</b>                  | <b>Transect: 1</b> |               |
| Start: 21:53      | 16               | 60–90 (Broken / heavy clouds) | Moderate breeze    | Dry           |
| End: 00:02        | 12               | 10-30 (Few clouds)            | Light air          | Dry           |
| <b>06/07/2023</b> | <b>Sunset:</b>   | <b>21:57</b>                  |                    |               |
| Start: 21:57      | 16               | 60–90 (Broken / heavy clouds) | Moderate breeze    | Recent rain   |
| End: 00:01        | 15               | 100 (Overcast)                | Gentle breeze      | Dry           |
| <b>01/08/2023</b> | <b>Sunset:</b>   | <b>21:25</b>                  |                    |               |
| Start: 21:25      | 15               | 100 (Overcast)                | Moderate breeze    | Dry           |
| End: 23:15        | 14               | 100 (Overcast)                | Moderate breeze    | Heavy rain    |

Three bat species were recorded across all activity surveys: common and soprano pipistrelle and Leisler’s bat. Activity was generally low-moderate across the surveys. Common pipistrelle was the most commonly encountered bat with 199 no. registrations (81.9% of total registrations) recorded across all surveys (Chart 4.1). The next most frequently encountered species was soprano pipistrelle with 42 no. registrations (17.3% of total registrations), followed by Leisler’s bat with 2 no. registrations (0.8% of total registrations). It must be noted that number of registrations is the number of bat call registrations recorded on the bat detector and does not equate to the number of bats present and provides an indication of bat activity to supplement the number of bats actually observed.



**Chart 4.1: Proportion of bats (%) recorded across all survey months.**

Activity peaked during the June survey, with a total of 112 no. registrations recorded, with common pipistrelle accounting for just less half of all bats encountered, followed by soprano pipistrelle. The July survey had the next highest activity levels, with 70 no. registrations, and activity was again dominated by common pipistrelle followed by common pipistrelle. The August survey had the lowest number of registrations of any survey (61 no. registrations), with activity was dominated by common pipistrelle.

Common pipistrelle activity was recorded throughout the transect, with activity particularly concentrated along linear hedgerows corridors located to the east and south of the transect area. Common pipistrelle was recorded early during the June, July, and August surveys, between 20 and 30 minutes after sunset, within the median emergence time for this species being 32 minutes after sunset (Jones and Rydell, 1994). This suggests that there may be a common pipistrelle roost within the vicinity of the Site, albeit no roosts were incidentally identified during the transect surveys. Soprano pipistrelle was noted foraging and commuting along linear hedgerow corridors throughout the transect. Overall, soprano pipistrelle numbers were low compared to common pipistrelle, however, soprano pipistrelle activity remained constant across all surveys.

Only single Leisler's bat (recorded as two registrations) was recorded passing overhead in July.

#### 4.1.4 Static Detectors

Static detectors were deployed between 1 – 2 nights monthly between June – August 2023 at two separate locations within the Power Plant Area. Placement of these detectors was decided based on suitable bat foraging habitat and connectivity to the wider landscape beyond the placement of the Proposed Development. Locations of static detectors are presented in Figure 4.

Table 4.5 summarises locations and number of nights each detector was active, the species recorded, and mean number of passes per night at each. It is worth noting that SD01 was deployed for an additional night compared to SD02. However, this has been standardised by also considering mean passes per night.

**Table 4.5: Static detector survey summary.**

| Ref.                 | Location   | Dates Deployed   | No. Nights Deployed | Total No. Registrations Recorded | Species Recorded (Order of Abundance)   | Mean Passes per Night |
|----------------------|--|--|---------------------|----------------------------------|---|-----------------------|
| SD01<br>(Location 1) | Scrub at the north of the Power Plant Area (N 49484) | 06/06/2023 – 07/06/2023<br>05/07/2023 – 06/07/2023<br>02/08//2023 – 04/08/2023 | 4                   | 319                              | Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat, Myotis sp., brown long-eared bat | 46                    |

| Ref.                 | Location  | Dates Deployed  | No. Nights Deployed | Total No. Registrations Recorded | Species Recorded (Order of Abundance)   | Mean Passes per Night |
|----------------------|---|---|---------------------|----------------------------------|---|-----------------------|
|                      |   | 38412)  |                     |                                  |   |                       |
| SD02<br>(Location 2) | Tree in woodland at the south of the Power Plant Area (N 49524 38137) | 07/06/2023 – 08/06/2023<br>04/06/2023 – 05/06/2023<br>03/08/2023 – 04/08/2023 | 3                   | 954                              | Soprano pipistrelle, common pipistrelle, whiskered bat, Myotis sp., Leisler's bat, Natterer's bat, brown long-eared bat | 159                   |

#### 4.1.4.1 SD01

SD01 was placed on a disused train at the north of the Power Plant Area (Location 1) within and adjacent to areas of scrub. Cutover bog is present to the north of this location. This detector recorded 319 no. registrations from five species plus unidentified Myotis species comprising, in order of abundance, soprano pipistrelle (158 no. registrations), common pipistrelle (105 no. registrations), Leisler's bat (50 no. registrations), Daubenton's bat (3 no. registrations), Myotis sp. (2 no. registrations) and brown long-eared bat (1 no. registration). Overall activity at this location was low compared to SD02.

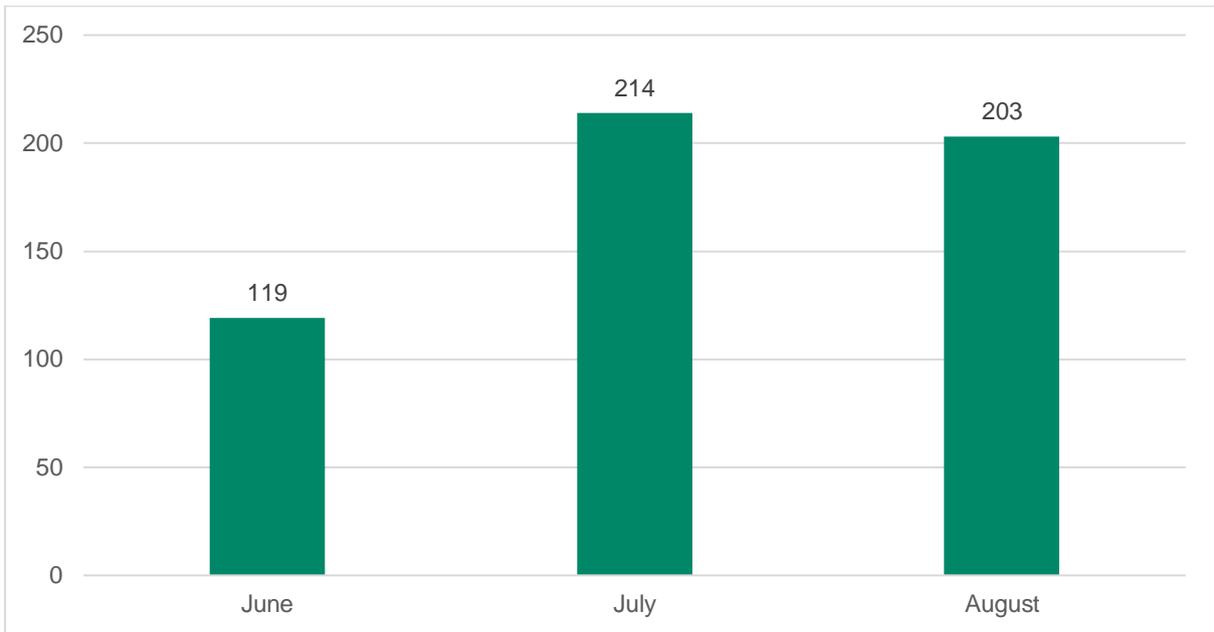
#### 4.1.4.2 SD02

SD02 was placed on a tree within a small woodland at the south of the Power Plant Area (Location 2). A disused railway line is present to the south of this location beyond which lies areas of scrub and tussocky, unmanaged grass and agricultural fields. This detector recorded 954 no. registrations from six species plus unidentified Myotis species comprising, in order of abundance, soprano pipistrelle (439 no. registrations), common pipistrelle (264 no. registrations), whiskered bat (114 no. registrations), Myotis sp. (60 no. registrations), Leisler's bat (58 no. registrations), Natterer's bat (16 no. registrations) and brown long-eared bat (3 no. registrations). Overall activity at this location was high compared to SD01.

#### 4.1.4.3 Summary of Data Collected

Overall, the most commonly recorded species was soprano pipistrelle which accounted for c. 47% of all registrations recorded. This was followed by common pipistrelle with c. 29% of all registrations recorded.

In contrast to the activity transects June recorded the lowest number of bat registrations and July recorded the highest. In terms of mean number of bat registrations per night SD02 recorded over three times more registrations than SD01, likely due to the better habitat and linear connectivity present in this area. The small woodland and disused railway line provide strong linear features for commuting and foraging bats.



**Chart 4.2: Mean bat registrations per night per month from both static detectors.**

## 5. Summary

A suite of bat dusk emergence surveys was carried out between June and August 2023. In addition to those carried out in 2022 by Woodrow APEM, eight bat roosts were confirmed within six buildings / structures in the Power Plant Area. Of these, two soprano pipistrelle and a single Natterer's bat maternity roost were confirmed. All other roosts are considered to be transitional/occasional roosts or night roosts/ feeding perches.

Seven species of bat were identified across the two static detector locations within the Power Plant Area: common pipistrelle, soprano pipistrelle, Leisler's bat, Natterer's bat, whiskered bat, brown long-eared bat and Daubenton's bat. The most commonly recorded species was soprano pipistrelle, followed by common pipistrelle. A relatively large amount of activity was recorded at the south of the Power Plant Area, with this area being well-connected to the wider landscape via strong linear corridors.

Three walked bat activity surveys were carried out monthly between June – July 2023 in the area for the proposed 440kV substation. Bat activity was generally low. Three species were recorded across all walked transect surveys comprising, in order of abundance, common pipistrelle, soprano pipistrelle and Leisler's bat. Activity was dominated by common pipistrelle throughout all surveys. Bat activity was concentrated on linear hedgerow corridors to the east and south of the transect area.

## 6. References

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