APPENDIX 6-2

BAT REPORT

DOCUMENT DETAILS

Client:	**Cunlaghfadda Green Energy Ltd.**
Project Title:	**Cunlaghfadda Green Energy Project**
Project Number:	**220825-h**
Document Title:	**Appendix 6-2 – Bat Report**
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Planning and Environmental Consultants

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1. INTRODUCTION

MKO was commissioned to undertake bat surveys and prepare a bat assessment in relation to the proposed renewable energy development at Cunlaghfadda and adjacent townlands, near Claremorris, Co. Mayo.

This report presents the results of bat surveys undertaken in 2025, including details of survey design, methodologies, and findings. This report also provides an assessment of the potential effects of the Proposed Project on bats and outlines mitigation measures designed to avoid or minimise significant impacts.

Surveys were carried out throughout 2025 based on the proposed layout comprising seven turbines. Survey methodology followed industry best practice guidance, primarily NatureScot (2021), and employed a combination of approaches, including desk study, bat habitat appraisal, roost surveys, manual activity surveys, and static detector surveys at ground level.

The assessment of potential effects and the development of recommended mitigation measures have been undertaken in accordance with NatureScot (2021), with additional consideration given, where relevant, to guidance issued by the Northern Ireland Environment Agency (NIEA) Natural Environment Division (August 2021, amended March 2024).

As detailed in Section 1.1.1 of Chapter 1 of the EIAR, the following terminology is used throughout this report:

- Where the 'Proposed Wind Farm' is referred to, this refers to turbines and associated foundations and hardstanding areas, including access tracks, underground cabling, permanent meteorological mast, temporary construction compound, peat and spoil management, biodiversity enhancement, tree felling, site drainage, operational stage signage, turbine delivery route and junction accommodation works, and all ancillary works and apparatus. The Proposed Wind Farm is described in detail in Chapter 4, Section 4.4.1 of this EIAR.
- Where the 'Proposed Grid Connection' is referred to, this refers to the proposed 110kV onsite substation, underground 110kV cabling and end masts connecting the proposed 110kV substation to the 110kV Castlebar to Cloon overhead line, access tracks and all ancillary works and apparatus. The Proposed Grid Connection Route is described in detail in Chapter 4, Section 4.4.2 of this EIAR.
- Where the 'Proposed Project' is referred to, this encompasses the entirety of the project (Proposed Wind Farm and Proposed Grid Connection) for the purposes of this EIA in accordance with the EIA Directive. The Proposed Project is described in detail in Chapter 4 of this EIAR.
- Where 'the Site' is referred to, this relates to the primary study area for the EIAR, as delineated by the EIAR Site Boundary in green as shown on Figure 1-2 of the EIAR and encompasses an area of approximately 165 hectares.

1.1 Background

Wind energy is a key component of Ireland's renewable energy strategy. However, operational wind farms have the potential to affect bats through direct mortality and indirect impacts such as habitat loss, disturbance and displacement. Global reviews of bat-wind farm interactions have documented bat fatalities at operational wind farms and highlight the potential for cumulative, population-level effects (Arnett *et al.*, 2016).

Bats are considered particularly sensitive to wind energy developments due to their flight behaviour and ecological requirements. Many species commute and forage along linear landscape features such as hedgerows, treelines and woodland edges, which may overlap with areas suitable for turbine placement. In addition, some bat species are known to fly at heights within the rotor-swept zone, particularly during seasonal movements and mating activity in late summer and autumn (Cryan & Barclay, 2009; Rydell *et*

al., 2010). These behaviours increase the potential for interaction with wind turbines and may lead to collision mortality or barotrauma. Consequently, wind farm developments require careful assessment of bat activity patterns and habitat use to inform appropriate mitigation measures.

In a European context, a review of studies by Voigt *et al.* (2022) estimated that between approximately 1.5 and 30 bats may be killed per turbine per year. Carcass-search data from the UK indicate mortality rates ranging from 0 to 5.25 bats per turbine per month during peak bat activity (July–October), although substantial variation occurs between sites (Mathews *et al.,* 2016). While these figures are not directly transferable to the Irish context, the broadly similar bat assemblages present in Ireland and Britain make them a useful reference point when considering potential risks.

Known mechanisms of bat mortality at wind farms include collisions with rotating turbine blades (Horn *et al.,* 2008; Cryan *et al.,* 2014) and barotrauma (Baerwald *et al.,* 2008), whereby rapid changes in air pressure near turbine blades can cause internal injuries. Bats may also be attracted to turbines due to behavioural and environmental factors, including habitat associations, mating activity and weather conditions.

Robust pre-construction bat surveys are therefore undertaken to establish baseline bat activity levels and inform the assessment of potential impacts associated with both the construction and operational phases of wind farm developments, including collision risk, habitat loss and disturbance. Survey design and impact assessment were guided by relevant legislation, scientific literature, and current best-practice guidance, with consideration given to spatial, temporal, and behavioural patterns in bat activity.

1.2 Bat Survey and Assessment Guidance

A range of guidance documents exist for surveying bats in the context of onshore wind energy developments across Europe, the UK and Ireland, reflecting a hierarchy of strategic, technical and national best practice guidance.

At a European level, the Advisory Committee to the EUROBATS Agreement (to which Ireland is a signatory) published the *Guidelines for Consideration of Bats in Wind Farm Projects* (Rodrigues *et al.*, 2015). These provide a structured framework for assessing potential impacts on bats during the planning, construction and operational phases of wind energy developments. While informed by continental European bat assemblages, which differ in some respects from those in Ireland, the guidance provides an important strategic framework and continues to underpin subsequent national and regional guidance.

In the UK, wind farm-specific recommendations were previously included in Chapter 10 of the second edition of *Bat Surveys: Good Practice Guidelines* (Hundt, 2012). These were removed from the third edition (Collins, 2016) due to limitations in the available evidence base at that time. Natural England (2014) subsequently issued interim guidance interpreting EUROBATS advice for the UK context. Further technical discussion and interpretation have been provided through publications by the Chartered Institute of Ecology and Environmental Management (CIEEM), including technical guidance notes and practitioner updates.

The most comprehensive and widely applied technical guidance for onshore wind energy developments is currently *Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation* (NatureScot, 2021). This document replaced earlier guidance produced by NatureScot and Natural England and provides detailed, evidence-based recommendations on survey design, impact assessment (including collision risk and displacement), and mitigation, including curtailment.

In Ireland, Bat Conservation Ireland (2012) published *Bat Survey Guidelines for Wind Turbine/Wind Farm Developments in Ireland*, which outline surveyor competencies, health and safety considerations, survey methods and reporting standards. These guidelines provide a useful national context but pre-date the substantial growth in the evidence base relating to bat activity and mortality at wind farms and are therefore now considered to be of limited applicability as a standalone source of technical guidance.

Further Ireland-specific clarification has been provided by the Northern Ireland Environment Agency (NIEA) Natural Environment Division (NED) in its guidance on bats and onshore wind energy (NIEA,

2021; amended 2024), which builds on the NatureScot framework and provides additional direction on survey effort, seasonal coverage and mitigation design.

A more recent Irish-specific guidance document, *Bat Survey, Assessment and Mitigation Guidelines for Onshore Wind Turbines in Ireland* (Bat Conservation Ireland, 2026), was published during the preparation of this report, following completion of the baseline bat surveys for the Proposed Project. This document provides a consolidated, Ireland-specific framework for bat survey, assessment and mitigation, drawing together and building upon established guidance including NatureScot (2021), NIEA (2021; amended 2024), NPWS (2022), EUROBATS (2014/2015) and *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, 2023). It introduces a more structured and standardised approach in areas such as site risk categorisation, survey effort, quantitative interpretation of bat activity and post-construction monitoring.

The survey scope and impact assessment presented in this report have been undertaken in accordance with NatureScot (2021), with additional reference to NIEA (2021; amended 2024), and informed by Collins (2023), ensuring current best practice was applied throughout. The Bat Conservation Ireland (2026) guidance has been considered in the preparation of this report and has informed the approach to mitigation and post-construction monitoring only; it has not altered the baseline surveys or the impact assessment presented.

1.3 Irish Bats: Legislation, Policy and Status

Ireland supports nine resident bat species, comprising more than half of Ireland's native terrestrial mammals (Montgomery *et al.,* 2014). All Irish bats are protected under European legislation, namely the Habitats Directive (92/43/EEC) (as amended). All Irish species are listed under Annex IV of the Directive, requiring strict protection for individuals, their breeding sites, and resting places. The lesser horseshoe bat (*Rhinolophus hipposideros*) is further listed under Annex II of the Directive, requiring the designation of conservation areas for the species. Under this Directive, Ireland is obliged to maintain the favourable conservation status of Annex-listed species. This Directive has been transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011, as amended).

In addition, Irish species are further protected by national legislation (Wildlife Acts 1976, as amended). Under this legislation, it is an offence to intentionally disturb, injure or kill a bat, or disturb its roost. Works that may disturb bats or affect roosts require a derogation licence issued by the National Parks and Wildlife Service (NPWS).

The NPWS monitors the conservation status of European protected habitats and species and reports their findings to the European Commission every 6 years in the form of an Article 17 Report. The most recent Article 17 report for Ireland was submitted in 2025. Table 1-1 summarises the current conservation status of Irish bat species and identified threats to Irish bat populations.

Table 1-1 Irish bat species conservation status and threats (NPWS, 2025). 'Influence' of pressures and threats are ranked from Low to High in the 2025 Article 17 report

Bat Species	Conservation Status	Principal Pressures and Threats
Common pipistrelle *Pipistrellus pipistrellus*	Favourable	**PX04** No pressures or threats
Soprano pipistrelle *Pipistrellus pygmaeus*	Favourable	**PX04** No pressures or threats
Nathusius' pipistrelle *Pipistrellus nathusii*	Unknown	**PD01** Wind, wave and tidal power (including infrastructure)
Leisler's bat *Nyctalus leisleri*	Favourable	**PD01** Wind, wave and tidal power (including infrastructure) *Low* **PF02** Construction or modification (e.g. of housing and settlements) in existing built-up areas *Low*
Daubenton's bat *Myotis daubentoni*	Favourable	**PA22** Drainage for use as agricultural land *Medium*

Bat Species	Conservation Status	Principal Pressures and Threats
		PF12 Residential, commercial and industrial activities and structures generating noise, light, heat or other forms of pollution *Medium*
Natterer's bat *Myotis nattereri*	Favourable	**PA04** Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) - *Low* **PB09** Clear-cutting, removal of all trees - *Low* **PE01** Roads, paths, railroads and related infrastructure - *Low* **PF01** Conversion from other land uses to built-up areas - *Low* **PF02** Construction or modification (e.g. of housing and settlements) in existing built-up areas - *Low*
Whiskered bat *Myotis mystacinus*	Favourable	**PA04** Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) - *Low* **PB09** Clear-cutting, removal of all trees - *Low* **PE01** Roads, paths, railroads and related infrastructure - *Low* **PF01** Conversion from other land uses to built-up areas - *Low* **PF02** Construction or modification (e.g. of housing and settlements) in existing built-up areas - *Low*
Brown long-eared bat *Plecotus auritus*	Favourable	**PX04** No pressures or threats
Lesser horseshoe bat *Rhinolophus hipposideros*	Inadequate	**PA04** Removal of small landscape features for agricultural land parcel consolidation (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) - *Medium* **PA15** Use of other pest control methods in agriculture (excluding tillage) - *Medium* **PB09** Clear-cutting, removal of all trees - *Medium* **PE01** Roads, paths, railroads and related infrastructure - *Medium* **PF01** Conversion from other land uses to built-up areas - *Medium* **PF02** Construction or modification (e.g. of housing and settlements) in existing built-up areas - *Medium* **PF13** Drainage, land reclamation and conversion of wetlands, marshes, bogs, etc. for built-up areas - *Low* **PH04** Vandalism or arson (incl. human introduced wildfire) - *Low* **PJ01** Temperature changes and extremes due to climate change - *Low* **PM07** Natural processes without direct or indirect influence from human activities or climate change - *Low*

Understanding the conservation status and pressures affecting Irish bat populations provides important context when assessing potential impacts associated with wind energy developments.

1.4 Statement of Authority

MKO's Ecology team includes a dedicated bat unit with expertise in scoping, conducting, and reporting bat surveys, as well as preparing impact assessments. All ecologists hold relevant academic qualifications, licences, and training to meet required survey standards.

Scope development and project management were overseen by Aoife Joyce. Bat surveys were carried out by Clare Mifsud, Marie Greaney, and Kate Leahy. Manual identification of bat data was carried out by Marie Greaney. This report was prepared by Clare Mifsud and Kate Leahy and reviewed and approved by Aoife Joyce. Staff roles and relevant qualifications, training and experience are presented in Table 1-2.

Table 1-2 Qualifications, bat-specific training and wind farm development experience of ecologists involved in the surveys and assessment

Staff	Role	Qualifications, bat-specific training and wind farm development experience

Aoife Joyce (BSc, MSc, MCIEEM)	Project Director – Bat Ecologist	BSc (Hons) Environmental Science, University of Galway, Ireland MSc (Hons) Agribioscience, University of Galway, Ireland Full member of Chartered Institute of Ecology and Environmental Management. Ecological Impact Assessments, Appropriate Assessment Screening Reports, Natura Impact Statements, Advanced Bat Survey Techniques (BCI), Bat Impacts and Mitigation (CIEEM), Bat Tree Roost Identification and Endoscope Training (BCI), Bats in Heritage Structures (BCI), Bats and Lighting (BCI), Kaleidoscope Pro Analysis (Wildlife Acoustics). Extensive experience in leading, managing and reviewing bat assessments for wind farm developments, including survey design, impact assessment, mitigation strategy development and technical review of EIAR documentation in line with current guidance.
Clare Mifsud (PhD)	Project Manager - Bat Ecologist	BSc (Hons) Biology and Chemistry (Hons), University of Malta MSc Bat Ecology and Conservation, University of Malta PhD Bat Ecology, Genetics and Conservation, University of Malta Bat Habitat Appraisal, Acoustic surveys (manual transects and static deployment), Echolocation analysis and species identification (Kaleidoscope, Wildlife Acoustics), Roost survey techniques and winter bat hibernation census surveys (Wroclaw University, Poland). Preliminary Roost Assessments (PRA) - buildings and trees. Thermal Imaging for bat surveys. Bat capture, tissue sampling and handling techniques (University of Leeds, UK). Extensive experience in bat survey design, data analysis and impact assessment for wind farm developments, including baseline surveys, collision risk assessment and preparation of EIAR bat reports.
Marie Greaney (BSc, MSc)	Bat Ecologist	BSc (Hons) Zoology, University of Galway, Ireland MSc (Hons) Conservation Behaviour, Atlantic Technological University, Galway, Ireland Kaleidoscope Pro Analysis (Wildlife Acoustics), Structure and Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal). Introduction to Bats and Using Detectors (BCI). Experience in undertaking bat surveys for wind farm developments, including static detector deployment, manual transect surveys, bat habitat appraisal and acoustic data analysis.
Kate Leahy (BSc)	Bat Ecologist	BSc (Hons) Zoology, University of Galway, Ireland Structure and Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal), Kaleidoscope Pro Analysis (Internal), Winter Tree Identification (Internal), Introduction to Bats and Using Detectors (BCI). Experience supporting bat surveys for wind farm developments, including static detector deployment, manual transect surveys, bat habitat appraisal and acoustic data analysis, and contribution to technical reporting.

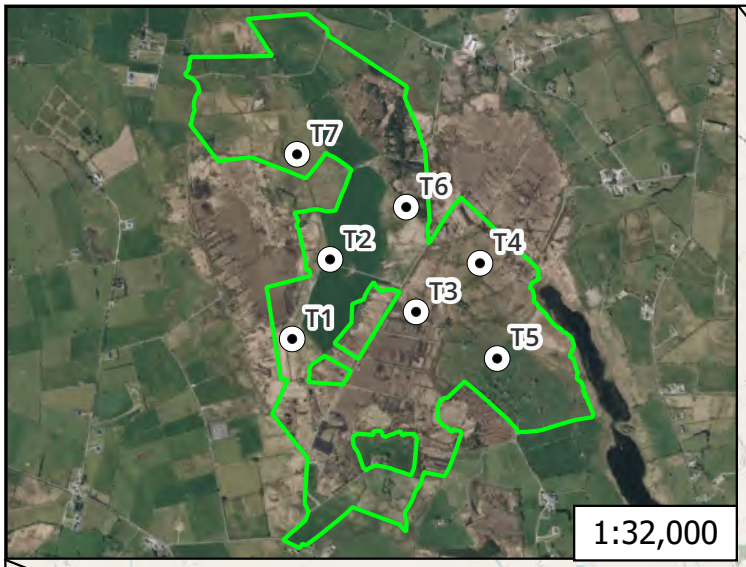
2. PROJECT DESCRIPTION

The Proposed Project is located within a rural setting in south-east Mayo, approximately 5 km north-west of Claremorris. The N60 National Road runs in a north-south direction to the east of the Site. Current land-use on the Proposed Project site comprises predominantly agricultural pastures and cutover peatland, with private forestry also present. Land-use in the wider landscape is agricultural and residential. Proposed access is via the L1505 and the L15053 local roads to the south. The Site falls within the townlands of Cunlaghfadda, Cloonbaul, Harefield, Knockaunakill and Knockroe.

The site location context is shown in Figure 2-1.

The Proposed Wind Farm includes the construction of seven wind turbines, each with an overall blade tip height of 160 metres, hub height of 92 metres, rotor diameter of 136 metres along with all associated infrastructure. The works also include upgrades to tracks/roads, tree felling and vegetation removal, biodiversity enhancement measures, site drainage, site signage and all related site works and ancillary development. Minor accommodating works are required as part of the turbine delivery route which involves temporary road widening, vegetation clearance and wall removal.

The Proposed Grid Connection includes the construction of a permanent 110kV substation compound, site access tracks, new end masts, 110kV underground grid connection cabling along with all associated infrastructure. The Proposed Project is described in detail in Chapter 4 of this EIAR.



Claremorris

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout

N

Drawing Title

Site Location

Project Title: Cunlaghfadda Green Energy Project	
Drawn By: KL	Checked By: CM
Project No.: 220825-h	Drawing No.: Figure 2-1
Scale: 1:60,000	Date: 19/03/2026

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3. METHODS

3.1 Consultation

A scoping exercise was undertaken as part of the EIAR for the Proposed Project. A Scoping Document, providing details of the Proposed Project, was prepared by MKO and circulated to consultees in May 2023, with an update being circulated in February 2026. As part of this exercise, relevant stakeholders were contacted, including Bat Conservation Ireland (BCI) and the Department of Housing, Local Government and Heritage – Development Applications Unit (DAU), who were invited to comment on the potential for the Proposed Project to affect bats.

Details of consultation responses specifically related to bats are provided in Section 4.1 below.

3.2 Desk Study

A desk study was undertaken prior to the field surveys to provide context for the Proposed Project and to inform bat survey planning and assessment. The desk study included a review of relevant published information and the identification of designated sites, species of interest and other potential ecological constraints within the Site and the surrounding area. The results of the desk study, including the information sources consulted, are presented below.

3.2.1 County Development Plans

The Mayo County Development Plan 2022–2028, published in 2022, sets out key objectives for consideration in the county's development. This document was reviewed to identify any references specifically relating to the protection of bats.

3.2.2 Previous Baseline Surveys (2023)

Bat surveys at the Site were undertaken by MKO in 2023. These included a bat habitat appraisal, seasonal dusk transect surveys, emergence surveys and deployment of static detectors. Although now outside the valid temporal scope for this EIAR, the data are presented as supplementary information to provide additional context on baseline conditions and to complement the 2025 survey results. Full methods and summary results from the 2023 surveys are provided in **Appendix 4**.

3.2.3 Bat Records

Bat Conservation Ireland

The National Bat Database of Ireland holds records of bat observations received and maintained by Bat Conservation Ireland (BCI). These records include results of national monitoring schemes, roost records as well as ad-hoc observations. The most recent search examined bat presence and roost records within a 10 km radius of a central point within the Site (IG Ref: M 28679 78275) (NatureScot, 2021; BCI, 2026). Available bat records were provided by BCI on the 15th of August 2025. A follow up request was sent on the 26th March 2026 and confirmed no additional records on the 14th April 2026.

National Biodiversity Data Centre

The National Biodiversity Data Centre online database was searched for bat records within the relevant 10 km grid squares (M18, M28, M38, M17, M27, M37, M26 and M35). The 10 km search radius follows established best-practice guidance for wind farm bat assessments (NatureScot, 2021; BCI, 2026) (last search 24th February 2026).

Lesser Horseshoe Bat Database

The Lesser Horseshoe Bat Database holds records of lesser horseshoe bat roosts, provided by the National Parks and Wildlife Service. This database was searched for records of roosts within a 10 km radius of the Site as per best-practice guidelines (NatureScot, 2021; BCI, 2026) (last search 24th February 2026).

3.2.4 Bat Species' Range

EU member states are obliged to monitor the conservation status of natural habitats and species listed in the Annexes of the Habitats Directive. Under Article 17, they are required to report to the European Commission every six years. In August 2025, Ireland submitted the fourth assessment of conservation status for Annex-listed habitats and species, including all species of bats (NPWS, 2025).

The 2025 Article 17 Reports were reviewed for information on bat species' range and distribution in relation to the location of the Proposed Project. The aim was to identify any high-risk species at the edge of their range (NatureScot, 2021).

3.2.5 Designated Sites

The National Parks and Wildlife Service (NPWS) map viewer and website provides information on rare and protected species, sites designated for nature conservation and their conservation objectives. A search was undertaken of sites designated for the conservation of bats within a 10 km radius of the Site central point (NatureScot, 2021; BCI, 2026). This included European designated sites, i.e. SACs, and nationally designated sites, i.e. NHAs and pNHAs.

Where SACs designated for lesser horseshoe bat roosts were found within 10 km of the Proposed Project, the potential foraging grounds and foraging ranges as detailed in the site-specific Conservation Objectives document were reviewed.

3.2.6 Landscape Features

3.2.6.1 Ordnance Survey Mapping

Ordnance survey maps (OSI 1:5,000 and 1:50,000) and aerial photographs were reviewed to identify any habitats and features likely to be used by bats. Maps and images of the Site and general landscape were examined for suitable foraging or commuting habitats including woodlands and forestry, hedgerows, treelines and watercourses. In addition, any potential roost sites, such as buildings and bridges, were noted for further investigation.

3.2.6.2 Underground Sites

The Geological Survey Ireland (GSI) online mapping tool and University of Bristol Speleological Society (UBSS) Cave Database for the Republic of Ireland were consulted for any indication of natural subterranean bat sites, such as caves, within a 10 km radius of the Site central point (NatureScot, 2021) (last searched on the 24th February 2026). Furthermore, the archaeological database of national monuments was reviewed for any evidence of manmade underground structures, e.g. souterrains, that may be used by bats (last searched on the 24th February 2026).

3.2.6.3 National Biodiversity Data Centre Bat Landscape Mapping

The National Biodiversity Data Centre (NBDC) map viewer presents "Bat Landscape" maps for individual species and for all species combined. Lundy *et al.* (2011) used Maximum Entropy Models to examine the relative importance of bat landscape and habitat associations in Ireland. The resulting map provides a 5-point scale, ranging from highest habitat suitability index (presented in red) to lowest

suitability index (presented in green). However, squares highlighted as less favourable may still have local areas of abundance.

The location of the Proposed Project was reviewed in relation to bat habitat suitability indices. The aim of this was to assess habitat suitability for all bat species within the Proposed Project. It is worth noting that these results are based on a modelling exercise and not confirmed bat species records. Regardless, they may provide a useful indication of potential favourable bat associations within the Proposed Project.

3.2.6.4 Additional Projects in the Wider Landscape

A search for proposed, existing and permitted wind energy developments within 15 km of the Proposed Project was undertaken (BCI, 2026). The Wind Energy Ireland (WEI) interactive wind map (windenergyireland.com) was reviewed in conjunction with planning application register portals of Mayo County Council and An Coimisiún Pleanála. Other infrastructure developments and proposals (e.g. large road projects) were also noted. Information on the location and scale of these developments was gathered to inform cumulative effects. More details on other infrastructure developments within the vicinity of the Proposed Project can be found in Chapter 2 of the main EIAR.

3.3 Field Surveys

3.3.1 Multidisciplinary Surveys

Multidisciplinary walkover surveys were undertaken as part of the wider ecological assessment of the Site. These surveys informed habitat classification and mapping, in accordance with Fossitt (2000), which were subsequently used to assess habitat suitability for bats, including potential commuting routes, foraging areas and roosting opportunities.

Multidisciplinary walkover surveys were undertaken throughout 2023, 2024, 2025 and 2026 on the dates listed in Table 3-1 below.

Table 3-1 Summary of multidisciplinary and dedicated bat survey effort

Multidisciplinary Survey	Dedicated Bat Survey
22nd June 2023	17th April 2025
28th June 2023	7th May 2025
11th July 2023	4th June 2025
25th July 2023	26th June 2025
10th August 2023	21st August 2025
20th September 2023	9th September 2025
28th September 2023	25th February 2026
19th October 2023	
7th December 2023	
31st July 2024	
11th September 2024	
25th April 2025	
17th June 2025	
7th July 2025	
22nd September 2025	
25th February 2026	

3.3.2 Bat Habitat Suitability Appraisal

Bat walkover surveys were carried out throughout 2025. During these surveys, habitats within the Site were assessed for their suitability to support roosting, foraging and commuting bats. Connectivity of suitable habitats with the wider landscape was also considered. Suitability was assessed according to Collins (2023) which provides a grading protocol for roosting habitats and for commuting and foraging areas. Suitability categories are divided into *High, Moderate, Low*, *Negligible* and *None* and are described fully in **Appendix 1**.

3.3.3 Roost Surveys

Daytime Roost Inspections

A search for roosts was undertaken within 200 m plus the rotor radius (i.e., 68 m) of the proposed turbine locations (NatureScot, 2021). The aim was to determine the presence of roosting bats and the need for further survey work or mitigation.

Three structures were identified as potential roost features within the 268 m roost search buffer (Table 3-2). These were subject to a roost assessment which comprised a detailed inspection of the interiors and exteriors to look for evidence of bat use, including live and dead specimens, droppings, feeding remains, urine splashes, fur oil staining and noises. Location of inspected structures are presented in Figure 3-1.

Table 3-2 Structures inspected within the Site

Structure No.	Description	Irish Grid Reference	Nearest Turbine	Distance to nearest turbine (m)
1	Farm Shed	M 29077 77801	T5	140
2	Building Ruins	M 29112 77849	T5	100
3	Derelict House and Associated Ruins	M 29248 77610	T5	150

Targeted ground-level inspections were undertaken of trees within the Proposed Project development footprint including the Turbine Delivery Route Accommodation (TDA) works areas, with particular emphasis on trees which require felling (Table 3-3).

Trees within a small area of commercial conifer plantation (c. 0.50 ha) within the Site were subject to a Bat Habitat Appraisal. The stand comprised densely planted, relatively young coniferous trees with occasional scrub species (e.g. hawthorn, willow and gorse), forming a structurally uniform plantation with limited structural diversity. In accordance with a habitat-based appraisal approach, representative areas of the plantation were visually assessed during daytime bat walkover surveys to identify any potential roost features (PRFs). No features such as cavities, splits or lifted bark were identified.

The plantation is characterised by young trees with simple growth form and no specimen trees, which are associated with a reduced likelihood of supporting roosting bats (Marnell *et al.* 2022). On this basis, and in the absence of any PRFs, the plantation was assessed as having *Negligible* suitability for roosting bats, and detailed inspection of individual trees was not considered necessary.

All other trees scheduled for felling or pruning/trimming were systematically inspected for rot holes, hazard beams, cracks and splits, partially detached bark, knot holes, gaps between overlapping branches and other potential roost features (PRFs), in accordance with Collins (2023) and informed by Andrews (2018).

Inspections were undertaken from ground level using a high-output torch, thermal imaging camera and endoscope, with ladder access used where required to facilitate closer inspection of features at height. No tree climbing or aerial inspection by an arborist was undertaken as all features were considered to be accessible and adequately assessed from ground level.

Table 3-3 Trees inspected within the Proposed Project

Hedgerow/ Treeline ID	Nearest Proposed Project Element	Inspection Dates	Description of Works	Grid Reference
Hedgerow 1	Turbine (T1)	17th April 2025	Proposed removal for bat buffer and construction of new tracks	M 28419 77848
Hedgerow 2 & Hedgerow 3	Turbine (T4)	17th April 2025	Proposed removal for bat buffer and construction of new tracks	M 29106 78078 & M 29142 78008
Hedgerow 4 & Hedgerow 5	Turbine (T5)	17th April 2025	Proposed removal for bat buffer	M 29199 77777 & M 29296 77740
Hedgerow 6	Turbine (T6)	25th February 2026	Proposed removal for bat buffer	M 28851 78415

Hedgerow 7 & 8	Turbine (T7)	25th February 2026	Proposed removal for bat buffer	M 28348 78545 & M 28306 78632
Treeline 1	Proposed Grid Connection – 110kV Substation	25th February 2026	Proposed removal for substation construction	M 28279 79024
Treeline 2 & Hedgerow 9	Proposed Grid Connection –New tracks	25th February 2026	Proposed removal for new tracks	M 28352 78909 & M 28420 78796
Hedgerow 10	Temporary Site Entrance	25th February 2026	Hedgerow to be removed for temporary site entrance works	M 28350 76977
Treeline 3	Turbine Delivery Route Accommodation (TDA)	25th February 2026	Trees to be removed as part of the TDA works area	M 31133 74969
Treeline 4 to Treeline 13	Turbine Delivery Route Accommodation (TDA)	25th February 2026	Trees to be pruned as part of the TDA works area	M 34940 76120, M 32094 74760, M 32082 74744, M 32003 74775, M 31938 74812, M 31673 75039, M 31202 74942, M 31143 74952, M 31121 74972, M 31137 75043

Emergence Surveys

Structures identified during daytime roost inspections as supporting Potential Roost Features (PRFs) were subject to presence/absence surveys in the form of dusk emergence surveys. During these surveys, surveyors were equipped with Bat Logger M bat detectors (Elekon AG, Lucerne, Switzerland). The emergence surveys commenced at least 15 minutes before sunset and concluded 90 minutes after sunset and were carried out in favourable weather conditions. Table 3-4 summarises survey effort in relation to emergence surveys carried out in 2025. Where possible, bat species identification was made in the field. Other relevant information was also noted during the survey, e.g., numbers of bats present, behaviour, features used, etc. All bat echolocation was recorded for subsequent analysis to confirm species identifications.

Table 3-4 Details of emergence surveys carried out during the 2025 survey period

Date	Surveyors	Sunset	Weather Conditions
7th May 2025	Clare Mifsud & Marie Greaney	21:18	10 – 12˚C; dry; calm
4th June 2025	Marie Greaney & Kate Leahy	21:57	09 – 13˚C; dry; light – moderate breeze
9th September 2025	Marie Greaney & Kate Leahy	20:06	14 – 16˚C; dry; calm

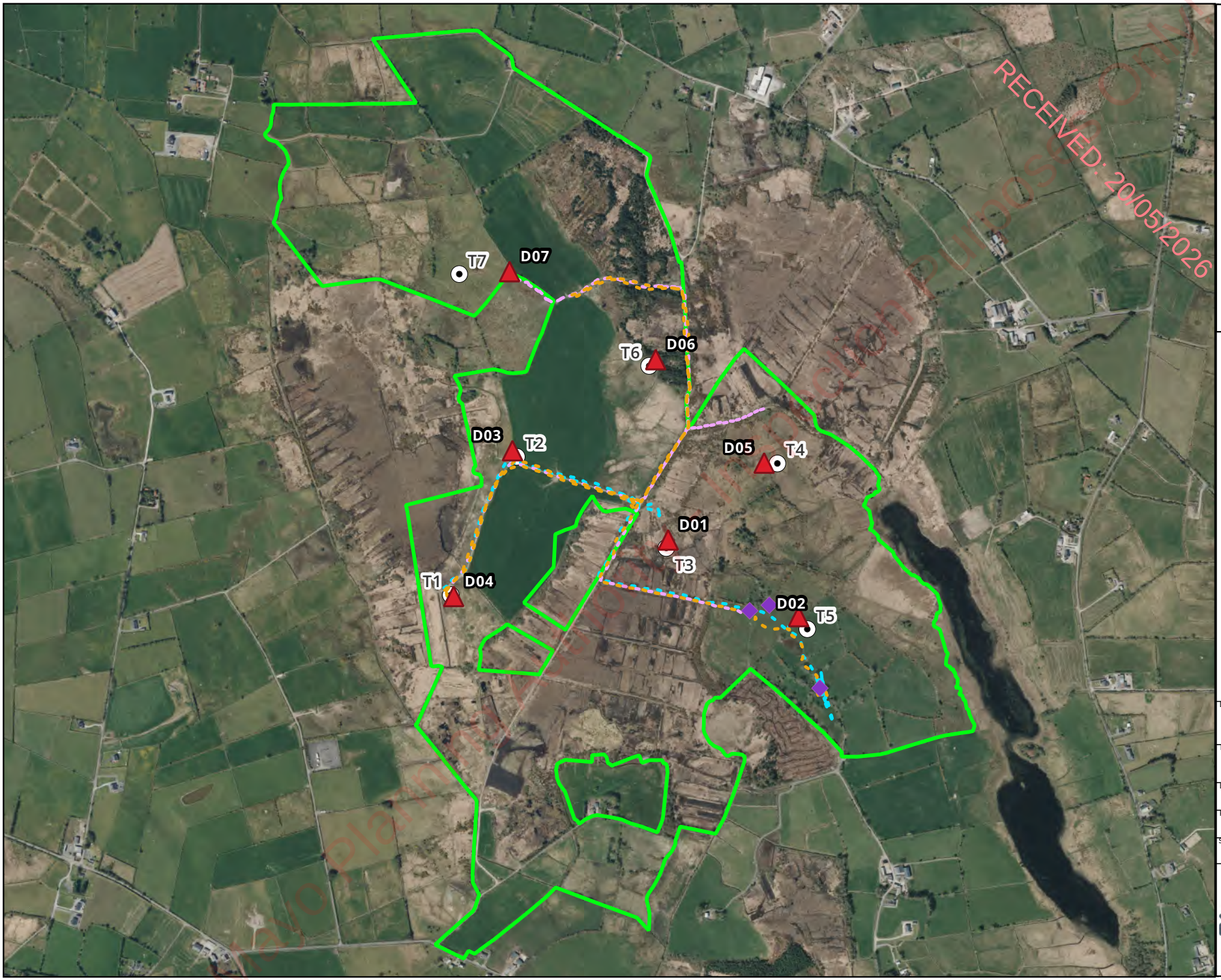
3.3.4 Manual Activity Surveys

Manual activity surveys comprised of walked or driven transects following emergence surveys. A series of representative transect routes were selected throughout the Site. The aim of these surveys was to identify bat species using the Site and gather any information on bat behaviour and important features used by bats. Transect routes were prepared with reference to the proposed turbine layout, desktop and walkover survey results as well as any health and safety considerations and access limitations. As such, transect routes mainly followed existing roads and tracks. Transect routes undertaken in 2025 are presented in Figure 3-1.

Transects were walked or driven by two surveyors, recording bats in real time. Transects commenced immediately after the dusk emergence surveys and were completed for up to 3 hours after sunset. Surveyors were equipped with active full spectrum bat detectors, the Batlogger M bat detector (Elekon AG, Lucerne, Switzerland), and all bat activity was recorded for subsequent analysis to confirm species identifications. Driven transects were undertaken in accordance with the methodology described by Roche *et al.* (2012). Transects surveys were undertaken in spring, summer and autumn 2025. Table 3-5 summarises survey effort in relation to manual activity surveys.

Table 3-5 Details of walked and driven transect surveys carried out during the 2025 survey period

Date	Surveyors	Sunset	Survey Time	Weather Conditions	Transect Length (km)
7th May 2025	Clare Mifsud & Marie Greaney	21:18	22:45 – 00:18	10 – 12˚C; dry; calm	3.9
4th June 2025	Marie Greaney & Kate Leahy	21:57	23:30 – 00:40	09 – 13˚C; dry; light – moderate breeze	4.4
9th September 2025	Marie Greaney & Kate Leahy	20:13	21:40 – 22:50	14 – 16˚C; dry; calm	2.4
Total Transect Length Surveys (km)					**10.7**



Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- Static Detector Locations
- Spring Transect 07.05.2025
- Summer Transect 04.06.2025
- Autumn Transect 09.09.2025
- Inspected Structures

Drawing Title

2025 Survey Effort

Project Title	Cunlaghfadda Green Energy Project
Drawn By: KL	Checked By: CM
Project No.: 220825-h	Drawing No.: Figure 3-1
Scale: 1:12,000	Date: 06/02/2026

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3.3.5 Ground-level Static Surveys

Where developments have less than 10 turbines, NatureScot (2021) requires one detector per turbine, while for larger developments the guide suggests an additional detector for every three turbines. Given that 7 turbines were proposed, 7 detectors were deployed to ensure compliance with NatureScot (2021) guidance. Automated bat detectors were deployed for at least 10 nights in spring (April – May), 20 nights in summer (June – mid-August) and 10 nights in autumn (mid-August – October) (NatureScot, 2021). Detector placement was based on the proposed turbine locations, and these are described in Table 3-6. Figure 3-1 presents static detector locations in relation to the final proposed turbine layout.

Table 3-6 Ground-level static detector locations (2025)

Detector ID	Location (Irish Grid Reference)	Detector Habitat Context	Linear Feature within 50 m	Corresponding/ Nearest Turbine(s)
D01	M 28879 77974	Cutover bog (PB4)	N/A	T03
D02	M 29196 77787	Wet grassland (GS4)	Treeline	T05
D03	M 28499 78191	Improved agricultural grassland (GA1)	Hedgerow	T02
D04	M 28356 77836	Wet grassland (GS4)	N/A	T01
D05	M 29112 78161	Wet grassland (GS4)	Drainage ditch	T04
D06	M 28848 78413	Conifer plantation (WD4), Scrub (WS1)	Conifer plantation edge	T06
D07	M 28494 78629	Wet grassland (GS4)	Stone wall	T07

Full spectrum bat detectors, Song Meter SM4BAT (Wildlife Acoustics, Maynard, MA, USA), were employed using settings recommended for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. Detectors were set to record from 30 minutes before sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method when provided with GPS coordinates.

Onsite weather monitoring was undertaken concurrently with static detector deployments. One Vantage Pro 2 (Davis Instruments, CA, UCS) was deployed each season and night-time hourly data was tracked remotely to ensure a sufficient number of nights (i.e. minimum 10-20) with appropriate weather conditions were captured (i.e. dusk temperatures above 8˚C, wind speeds less than 5m/s and no or only very light rainfall). Table 3-7 summarises survey effort achieved in 2025 for each of the detector location.

During the autumn period one detector, D06, corresponding to proposed turbine T6, had to be redeployed due to damage by livestock. A weather station was not available to be deployed at this time, thus weather data for this redeployment were obtained from the Visual Crossing online weather database. The survey effort of this redeployment is also summarised below in Table 3-7.

Table 3-7 Summary of ground-level static surveys survey effort achieved during the 2025 survey period

Season	Survey Period	Total Survey Nights per Deployment	Total Nights with Appropriate Weather
Spring	17th April – 7th May 2025	20	17
Summer	4th June – 26th June 2025	22	22
Autumn	21st August – 8th September 2025	19	19
Autumn Redeployment (D06)	9th – 29th September 2025	21	18
Total Number of nights		**82**	**76**

3.4 Bat Call Analysis

All sound recordings were analysed using bat call analysis software, Kaleidoscope Pro v.5.4.8 (Wildlife Acoustics, MA, USA). The aim was to identify, to a species or genus level, the bats present at the Proposed Project. All recordings were first processed using the Auto ID function of Kaleidoscope, utilising a site-specific custom classifier that included only species found within Ireland.

Echolocation signal characteristics, including signal shape, peak frequency of maximum energy, signal slope, pulse duration, start frequency, end frequency, pulse bandwidth, inter-pulse interval and power spectra, were compared against published signal characteristics for local bat species (Russ, 2012) to manually verify species identification. All recordings were manually reviewed in Kaleidoscope to determine the final species identification.

Myotis species potentially Daubenton's bat (*Myotis daubentonii*), whiskered bat (*Myotis mystacinus*) and Natterer's bat (*Myotis nattereri*) were considered as a single group, due to the difficulty in distinguishing them based on echolocation parameters alone (Russ, 2012). The echolocation of soprano pipistrelle (*Pipistrellus pygmaeus*) and common pipistrelle (*Pipistrellus pipistrellus*) are distinguished by having distinct frequencies (peak frequency of maximum energy in search flight) of ~55 kHz and ~45 kHz respectively (Jones & van Parijs, 1993).

Plate 3-1 below shows typical sonograms of echolocation pulses for the different pipistrelle bat species and lesser horseshoe bat recorded with an SM4BAT static bioacoustics recording device. The recordings are illustrated using Wildlife Acoustics Kaleidoscope software.

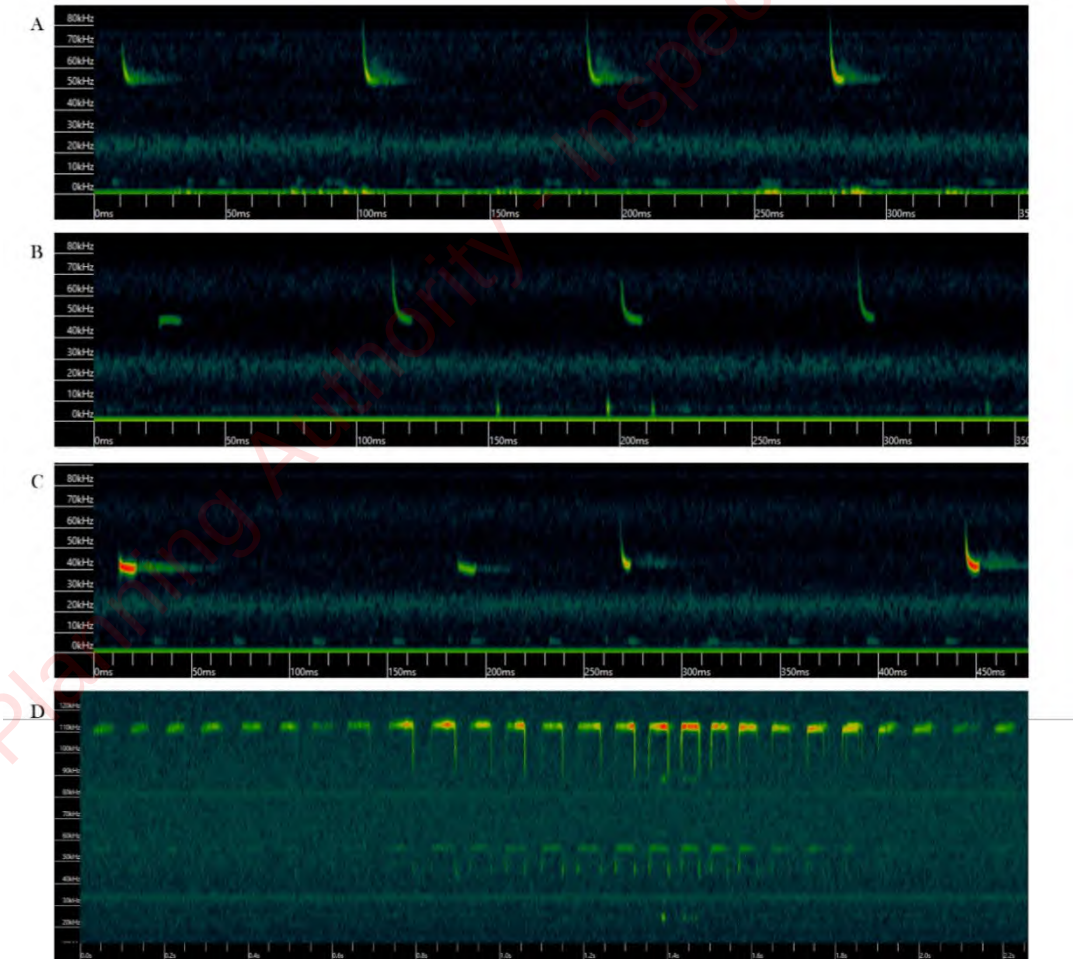


Plate 3-1 Spectrogram of echolocation pulses of (A) Soprano pipistrelle (Peak Frequency 55kHz), (B) Common pipistrelle (Peak Frequency 45kHz), (C) Nathusius' pipistrelle (Peak Frequency 39kHz) and (D) Lesser horseshoe bat (Peak Frequency 114kHz).

Echolocation calls by brown long-eared bats (*Plecotus auritus*) are intrinsically quiet and hard to record by static equipment while echolocation calls by lesser horseshoe bats (*Rhinolophus hipposideros*) are directional and can be missed by detectors, particularly manual detectors. To address this, MKO employs omni-directional microphones to limit under-recording for the latter species. Manual checking of recorded data includes also those labelled by the Kaleidoscope software as 'Noise' files and 'No ID' files. Manually verifying and checking these files ensures that all calls for hard to detect species have been captured. Despite manual checking, a level of underrepresentation is still expected for these two species, and this is accounted for in the assessment of activity levels.

Plate 3-2 shows typical spectrograms of echolocation pulses for *Myotis* spp., brown long-eared bat, Leisler's bat and a typical noise file, all recorded with the same SM4BAT recording device and illustrated using Wildlife Acoustics Kaleidoscope software.

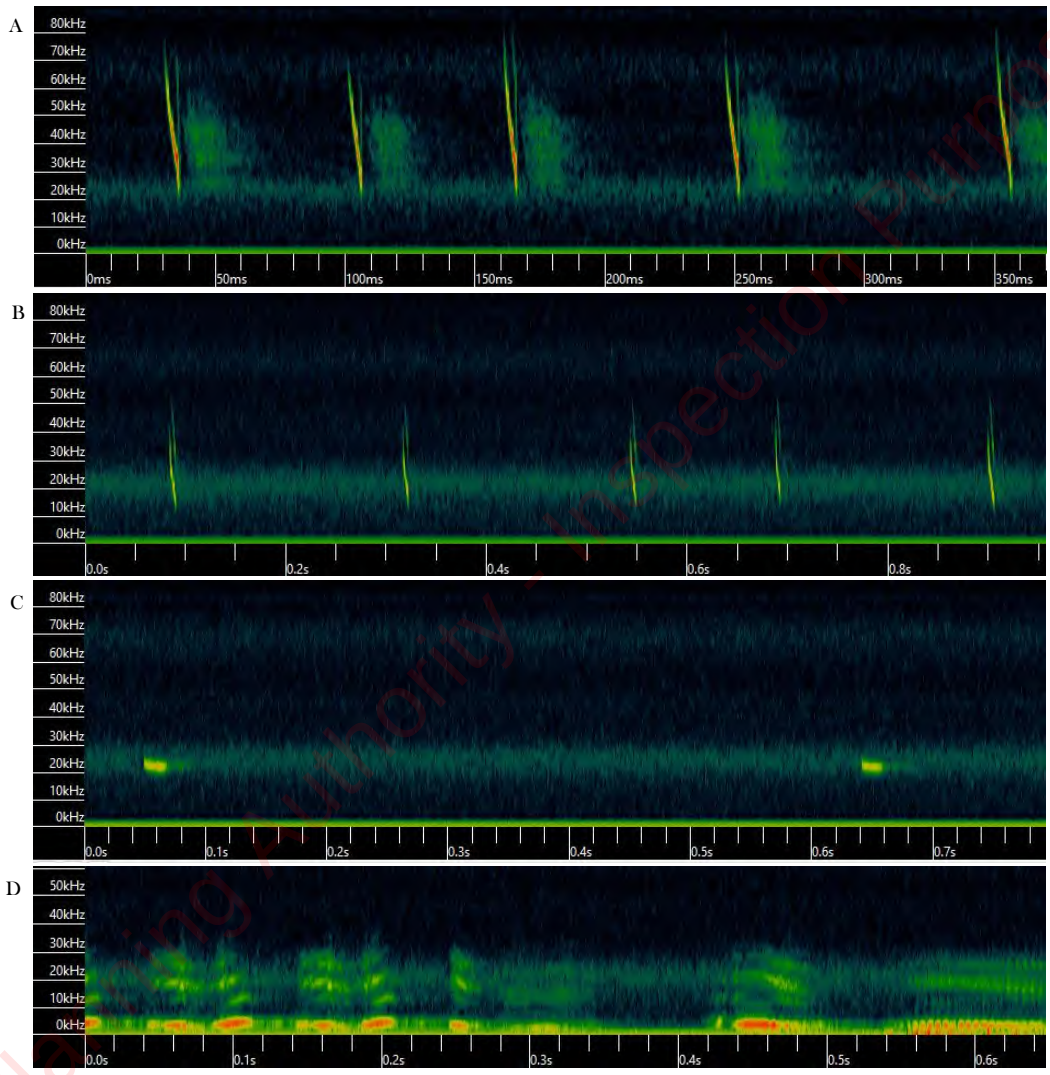


Plate 3-2 Spectrogram of typical echolocation pulses of (A) Myotis spp., *(B) Brown long-eared bat, (C) Leisler's bat and (D) typical non-bat sounds.*

Individual bats of the same species cannot be distinguished by their echolocation alone. Thus, 'bat passes' was used as a measure of activity (Collins, 2023). A bat pass was defined as a recording of an individual species/species group's echolocation containing at least two echolocation pulses and of maximum 15s duration. All bat passes recorded in the course of this study follow these criteria, allowing comparison. In some cases, more than one bat pass is within the same recording file, in such cases the final species identification of the file is assigned to the rarer or harder to record bat species of Ireland. This protocol minimises the risk of under-representing the less frequently encountered taxon in multi-bat pass recordings. This precautionary treatment ensures that activity indices are not biased toward more common, high-detectability species and supports a conservative interpretation of potential impacts within the Environmental Impact Assessment Report.

3.5 Assessment of Bat Activity Levels

Data Processing and Standardisation

Following automated classification and full manual verification using Kaleidoscope Pro, statistical analysis and data visualisation were undertaken using RStudio (version 2025.05.0+496) and R (version 4.4.2). RStudio, an integrated development environment for the R programming language, was employed for data cleaning, standardisation, exploration and visualisation. Bat activity was standardised to bat passes per hour (bpph), calculated as the total number of bat passes per night divided by the duration of each recording period, to account for seasonal variation in night length (Matthews *et al.*, 2016). As bat activity is inherently variable between survey nights, the median nightly bpph was used as the primary measure of activity at each detector location (Lintott & Mathews, 2018), with maximum nightly values used to characterise peak activity. During all calculations, values were rounded to three decimal places. When visualising seasonal activity patterns, survey effort was defined as total detector hours (i.e. the cumulative recorded hours across all detectors within a season) to account for any variation in deployment effort.

Derivation of Site-Specific Activity Thresholds

The methodology used to assess activity levels across the Site was adapted from Matthews *et al.* (2016). For widespread species (*Pipistrellus pipistrellus*, *Pipistrellus pygmaeus*, *Nyctalus leisleri*), activity ranges were determined using the average of the maximum nightly bat pass rate (bpph) across all detectors, divided into quartiles. For all other species groups (*Myotis* spp., *Plecotus auritus* and *Pipistrellus nathusii*), the maximum nightly bat pass rate (bpph) recorded across all detectors, divided into quartiles, was used.

Median and maximum nightly activity (bpph) at each detector location were categorised as *Low*, *Moderate* or *High* for each recorded season. Figures below 25% of the maximum or mean maximum nightly pass rate were classified as *Low* activity, while values above 75% were classified as *High* activity. Values falling between these two quartiles were defined as *Moderate* activity. To avoid distortion of thresholds, statistical outliers were identified using box-and-whisker plots and excluded prior to final threshold calculation. The resulting site-specific activity thresholds for each species group are presented in Table 3-8.

Table 3-8 Site-specific activity level categories based on maximum bat passes per hour (bpph)

Assessment Level	Activity Threshold as Bat Passes per Hour (bpph) for Bat Species					
	Soprano and Common pipistrelles	Leisler's bat	Nathusius' pipistrelle	*Myotis* spp.	Brown long-eared bat	Lesser horseshoe bat
Low	< 1.59	< 1.79	<0.03	< 1.13	< 0.43	< 0.03
Moderate	1.59 – 4.78	1.79 – 5.38	0.03 - 0.08	1.13 – 3.38	0.43 – 1.28	0.03 – 0.08
High	> 4.78	> 5.38	>0.08	> 3.38	> 1.28	> 0.08

Site-Specific Ranked Activity Scoring (1–5 Risk Scale)

A weighted site-specific activity score was also calculated for each detector and season. This method integrates the relative contribution of *Low*, *Moderate* and *High* activity records using a weighted mean approach, where numeric weights of 1 (*Low*), 2 (*Moderate*) and 3 (*High*), were applied to the number of records falling within each activity class. The weighted mean score was then rescaled and converted into a five-tier ranked activity scale, as shown in Table 3-9. This approach ensures that detectors with a higher proportion of moderate and high activity records receive proportionately higher ranked scores, rather than relying solely on maximum values. This ranked system provides a five-class site-specific activity framework aligned in terminology with commonly used bat activity classifications but is derived entirely from absolute site-specific bpph values rather than from regional percentile comparison. These ranked scores are applied within the subsequent collision risk and impact assessment to provide a consistent and transparent basis for comparative risk evaluation across detector locations and seasons.

Table 3-9 Site-specific ranked bat activity intensity classes for risk assessment use

Ranked Score	Bat Activity Class
1	Low
2	Low – Moderate
3	Moderate
4	Moderate – High
5	High

A site-specific activity threshold approach was adopted for this assessment in preference to reliance on third-party percentile-based tools, as it allows full transparency, reproducibility and long-term comparability of results. While regional benchmarking tools provide useful contextual summaries, they do not provide access to the underlying comparator datasets, thereby limiting independent interrogation and re-analysis of results. In contrast, the use of absolute bat pass rates (bpph), median and maximum values, together with weighted activity scoring and graphical outputs, enables clear spatial and species-specific interpretation of activity patterns in direct relation to detector locations, habitats and turbine layout.

This approach also ensures that the 2025 baseline dataset remains fully future-proofed and directly comparable with any future post-construction or long-term monitoring datasets, independent of changes in third-party platforms, reference databases or classification algorithms. For these reasons, the site-specific approach is considered the most robust and appropriate method for informing turbine-scale impact assessment and mitigation design for the Proposed Project.

3.6 Assessment of Collision Risk

3.6.1 Population Risk

NatureScot (2021) provides a generic assessment of bat collision risk for UK species, based on species behaviour and flight characteristics. In the guidelines, this measure of collision risk is used, in combination with relative abundance, to indicate the potential vulnerability of British bat populations. No such assessment is provided for Irish bat populations.

In Table 3-10, an adapted assessment of vulnerability of wind turbine collision for Irish bat populations is provided. This adaptation of the NatureScot Guidance Table 2 was based on collision risk and species abundance of Irish bat populations. Species' collision risk follows those described in NatureScot (2021). Relative abundance for Irish species was determined in accordance with Wray *et al.* (2010) using population data available in the 2025 Article 17 reports (NPWS, 2025). Feeding and commuting behaviours, and habitat preferences for bat species in Ireland were also considered.

Table 3-10 Population vulnerability of Irish bat species in relation to collision risk (adapted from NatureScot, 2021)

Relative abundance	Low Collision Risk	Medium Collision Risk	High Collision Risk
Common species			Common pipistrelle Soprano pipistrelle
Rarer species	Daubenton's bat Brown long-eared bat Lesser horseshoe bat		Leisler's bat
Rarest species	Natterer's bat Whiskered bat		Nathusius' pipistrelle

Low Population Vulnerability	Medium Population Vulnerability	High Population Vulnerability

3.6.2 Site Risk

The likely impact of a Proposed Project on bats is related to site-based risk factors, including habitat and development features. The cross-tablature result of habitat risk and project size determines the site risk (i.e. *Low*, *Medium* or *High*) **Error! Reference source not found.**(Table 3-11) i.e. Table 3a (NatureScot,

2021). Table 5-1 in the results section describes the criteria and site-specific characteristics used to determine an indicative risk level for the Proposed Project. All site assessment levels as per NatureScot (2021) are presented in **Appendix 2**.

Table 3-11 Site-risk level assessment matrix (adapted from Table 3a, NatureScot, 2021)

		Project Size		
		Small	Medium	Large
Habitat Risk	Low	1	2	3
	Moderate	2	3	4
	High	3	4	5

Low/Lowest Site Risk (1-2)	Medium Site Risk (3)	High/Highest Site Risk (4-5)

3.6.3 Overall Risk Assessment

An overall assessment of risk was made by combining the site risk level (i.e. *Medium*) and the population risk (i.e. *High*), as shown in the overall risk assessment matrix table (Table 3-12) i.e. Table 3b (NatureScot, 2021). The assessment was carried out for both median and maximum bat passes per hour in order to provide insight into typical bat activity (i.e. median values) and activity peaks (i.e. maximum values). (**Appendix 3**).

Table 3-12 Overall risk assessment matrix (adapted from Table 3b, NatureScot, 2021)

	Activity category (site-specific thresholds; EcoBat equivalent)					
Site Risk Level	Nil (0)	Low (1)	Low-Moderate (2)	Moderate (3)	Moderate-High (4)	High (5)
Lowest (1)	0	1	2	3	4	5
Low (2)	0	2	4	6	8	10
Medium (3)	0	3	6	9	12	15
High (4)	0	4	8	12	16	20
Highest (5)	0	5	10	15	20	25

Low Overall Risk (0-4)	Medium Overall Risk (5-12)	High Overall Risk (15-25)

This exercise was carried out for each high collision risk species. Overall risk assessments were also considered in the context of any potential impacts at the population level, particularly for species identified as having high population vulnerability (Table 3-10 above).

3.7 Limitations

A comprehensive suite of bat surveys has been undertaken at the Site in 2025. The surveys undertaken, in accordance with NatureScot (2021) Guidance, provide the information necessary to allow a complete, comprehensive and robust assessment of the potential impacts of the Proposed Project on bats receptors.

Access limitations can relate to static deployments and roost inspections:

- No access issues were encountered with the Site during roost inspections or during static deployments, as the detectors were deployed where intended.

Survey limitations can relate to deployment coverage, data storage, equipment failure or deployment related incidents:

- Seven detectors were deployed at seven turbine locations, in line with best practice guidance, providing good survey coverage of the Site.
- MKO employs data storage redundancy methods to ensure no data is lost from the field to final analysis and no data was lost.
- SD card corruption or fill-up can prevent data from being collected during deployments and no issues with on-site data storage were encountered.
- Bat detector's microphones are checked before every season to ensure they have good sensitivity for data collection, and detectors' software updates are installed as soon as they become available. No issues related to equipment were encountered during the surveys.
- Incidents during deployments, such as tampering or livestock interference, can prevent data from being collected effectively. One detector (D06) was found damaged due to livestock during the autumn survey period. This detector was redeployed to ensure sufficient coverage of the site.

The limitations of bat activity assessment primarily relate to data analysis procedures and a lack of standardised and Ireland-based assessment methods:

- MKO's data analysis methods include manually reviewing all recordings. This workflow also includes verifying noise files and files left without a species identification after the auto ID function has been applied. Manual verification helps address the sound analysis software's limitations in accurately identifying bat species in Ireland. Manual species identification further allows for the detection of recordings containing multiple species. To maintain methodological consistency and minimise bias across datasets, only one species is reported for each recording. When multiple species are present, priority is given to hard-to-detect species during the final manual ID, compensating for the software's limitations in recognising their echolocation calls. Although this approach may introduce some bias, it is consistently applied across all MKO bat datasets. Importantly, this bias is not expected to affect the overall conclusions of the assessment, as only commonly recorded species may be slightly underreported.
- Additionally, no activity threshold currently exists for Irish bat species to objectively assess bat activity within specific habitats, and no standardised assessment method has been established across the country.

During the redeployment period of one detector (D06) in autumn, weather data was extracted from a nearby weather monitoring station (approximately 24.1 km away), for 21 days in autumn, to assess appropriate weather conditions in the area.

The information provided in this report accurately and comprehensively describes the baseline environment; provides an accurate prediction of the likely effects of the Proposed Project; prescribes mitigation as necessary; and describes the predicted residual impacts. The specialist studies, analysis and reporting have been undertaken in accordance with the appropriate guidelines. No limitations in the scope, scale or context of the assessment have been identified. Overall, a comprehensive assessment has been achieved.

4. SURVEY RESULTS

4.1 Consultation

Bat Conservation Ireland (BCI)

Bat Conservation Ireland were invited to comment on the potential for the Proposed Project to affect bats. The organisation has previously advised that it does not have the capacity to engage in planning-related consultations. At the time of writing this report, no response had been received.

Department of Housing, Local Government and Heritage – Development Applications Unit (DAU)

The Development Applications Unit were also invited to provide any feedback, comments or suggestions they might have relating to the Proposed Project. A response was received on the 9th of March 2026, however no feedback specific to bats was included in the response.

4.2 Desk Study

4.2.1 County Development Plans

Mayo Co. Development Plan – 2022-2028

A review of the Mayo County Development Plan found the following objectives relating to the protection of bats:

CHAPTER 10 NATURAL ENVIRONMENT

Biodiversity, Designated and Non-Designated Sites Objectives:

NEO 4 - To protect and enhance biodiversity and ecological connectivity in County Mayo, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, stonewalls, geological and geo-morphological systems, other landscape features and associated wildlife, where these form part of the ecological network.

NEO 9 - Recognise the importance, in terms of their natural heritage and biodiversity, of woodlands, tree lines, hedgerows, stonewalls, watercourses and associated riparian vegetation and the role they play in supporting bat populations and where possible developments will be encouraged to retain such features

Biodiversity, Designated and Non-Designated Sites Policies:

CAP 2 - To support the National Climate Change Strategy and methods of reducing anthropogenic greenhouse gases on an ongoing basis through implementation of supporting objectives in this Plan, particularly those supporting use of alternative and renewable energy sources, sustainable transport, air quality, coastal zone management, flooding and soil erosion and promotion of the retention of, and planting of trees, hedgerows and afforestation, subject to no significant adverse effects on the environment including the integrity of the Natura 2000 network.

4.2.1 Previous Baseline Surveys (2023)

Baseline bat surveys were undertaken in 2023 in accordance with NatureScot (2021) guidance and comprised a bat habitat suitability appraisal, roost inspections, dusk emergence surveys, manual walked transects, and ground-level static detector surveys. These surveys were designed to characterise baseline bat activity within the Site and inform subsequent assessment.

Two structures within the Site (Structure Nos. 1 and 2) were identified as having potential to support roosting bats and were subject to detailed inspection and dusk emergence surveys. Both structures were assessed as having *Low* roosting potential. Emergence surveys confirmed a bat roost at Structure No. 2, where four soprano pipistrelles, two common pipistrelles and one brown long-eared bat were recorded emerging. No bats were observed emerging from Structure No. 1 during surveys.

Manual transect surveys recorded a total of 347 bat passes across the survey season. Bat activity was dominated by common pipistrelle (n = 159) and soprano pipistrelle (n = 156), with lower levels of activity recorded for Leisler's bat (n = 18), *Myotis* spp. (n = 12) and brown long-eared bat (n = 2).

Ground-level static detector surveys recorded a total of 36,661 bat passes during the 2023 survey period. Activity was dominated by common pipistrelle (n = 16,599), soprano pipistrelle (n = 12,949) and Leisler's bat (n = 5,147), with lower levels of *Myotis* spp. (n = 1,305), brown long-eared bat (n = 404), Nathusius' pipistrelle (n = 243) and lesser horseshoe bat (n = 14).

Bat activity across the Site was generally characterised as *Low* based on median nightly activity levels, with occasional *Moderate* and limited *High* activity recorded at specific locations and during certain survey periods. Activity patterns were dominated by pipistrelle species, with seasonal and spatial variation reflecting intermittent peaks rather than consistently elevated activity across the Site.

Habitats within the Site were dominated by grassland and peatland habitats, which were assessed as having *Low* suitability for commuting and foraging bats. Linear features such as hedgerows, treelines and plantation edges were assessed as having *Moderate* suitability, but these were limited across the Site. Trees across the Site were assessed as having *Negligible* roosting potential, and no tree roosts were identified.

A full summary of methods and results from the 2023 survey period is provided in **Appendix 4**.

4.2.2 Bat Records

Bat Conservation Ireland

Available bat records were provided by Bat Conservation Ireland (BCI) on 15th August 2025. A follow-up request was issued on 26th March 2026, and BCI subsequently confirmed on 14th April 2026 that no additional records were reported.

The search included roosts, transects and ad-hoc observations, with eleven roosts, three transects and fifty-nine ad-hoc observations identified. Based on these previous bat records, at least eight of Ireland's nine resident bat species were recorded within 10 km of the Site. The results of the database search are provided in Table 4-1 and Table 4-2.

Table 4-1 National Bat Database of Ireland roost and transect records within 10 km of the Site

Record Type	Species	Irish Grid Reference	Approximate distance from Site (km)	Location
Roost	*Rhinolophus hipposideros*	M 19100 74600	9.5	Moorehall, Muckloon, Ballyglass, Co. Mayo
	Rhinolophus hipposideros	M 22000 82000	6.6	Ballinafad, Balla, Co. Mayo
	Rhinolophus hipposideros	M 25000 70000	7.7	Hollymount, Co. Mayo
	Rhinolophus hipposideros	M 26000 68000	9.3	Hollymount, Co. Mayo
	Rhinolophus hipposideros	M 20800 75900	7.6	Towerhill House, Carrownagreggaun, Co. Mayo
	Rhinolophus hipposideros, Nyctalus leisleri	M 19100 74300	9.6	Moorehall, County Mayo
	Plecotus auritus	M 24000 87000	8.8	Prison, Balla, Co. Mayo
	Plecotus auritus	M 19000 82000	9.5	Carrajames, Belcarra, Castlebar, County Mayo

	Rhinolophus hipposideros	M 20200 75500	8.2	Towerhill Cottage, Carrownagreggaun, Ballyglass, Co.Mayo
	Rhinolophus hipposideros	M 20300 75600	8.1	Towerhill, Carrownagreggaun, Ballyglass, Co. Mayo
	Myotis nattereri, Pipistrellus pygmaeus, Pipistrellus pipistrellus	M 34000 75000	5	Claremorris, County Mayo
Transect	*Myotis daubentonii*	M 20100 85400	N/A	Belcarra River Walk Transect
	Myotis daubentonii	M 33861 70962	N/A	Crossboyne Bridge Transect
	Nyctalus leisleri, Pipistrellus pygmaeus, Pipistrellus pipistrellus, Pipistrellus spp.	M 27800 68800	N/A	M24 (8) 2003-

Table 4-2 National Bat Database of Ireland ad-hoc observations within 10 km of the Site

Survey Type	Species	Number of Records	Location
Ad-hoc	*Pipistrellus pipistrellus*	23	Consultancy Surveys, BATLAS 2010, BATLAS 2020, Carrajames, National Biodiversity Data Centre Bat Records
	Pipistrellus pygmaeus	53	Consultancy Surveys, BATLAS 2010, BATLAS 2020, Carrajames, National Biodiversity Data Centre Bat Records
	Pipistrellus nathusii	2	Carrajames, National Biodiversity Data Centre Bat Records
	Pipistrellus spp.	4	Consultancy Surveys, National Biodiversity Data Centre Bat Records
	Nyctalus leisleri	22	Consultancy Surveys, BATLAS 2010, BATLAS 2020, Carrajames, National Biodiversity Data Centre Bat Records
	Myotis daubentonii	10	Consultancy Surveys, BATLAS 2010, BATLAS 2020
	Myotis nattereri	3	Consultancy Surveys, National Biodiversity Data Centre Bat Records
	Myotis spp.	5	Consultancy Surveys, BATLAS 2010
	Plecotus auritus	19	Consultancy Surveys, Carrajames, National Biodiversity Data Centre Bat Records
	Rhinolophus hipposideros	2	Consultancy Surveys

National Biodiversity Data Centre

The National Bat Database of Ireland was searched for records of bat activity and roosts within a 10 km hectad of the Site (Irish Grid Reference: M 28679 78275; last search on the 24th February 2026). Hectads M18, M28, M38, M17, M27, M37, M26 and M35 lie within 10 km of the Site. Eight of Ireland's nine resident bat species were recorded within 10 km of the Site. The results of the database search are provided in Table 4-3.

Table 4-3 NBDC bat records within 10 km of the Site

Hectad	Species	Database	Designation
M18, M28, M17, M27, M37, M26	Brown long-eared bat (*Plecotus auritus*)	National Bat Database of Ireland	HD Annex IV, WA
M18, M28, M38, M27, M37, M26, M36	Common pipistrelle (*Pipistrellus pipistrellus*)	National Bat Database of Ireland	HD Annex IV, WA
M18, M28, M38, M17, M27, M37, M26	Daubenton's bat (*Myotis daubentonii*)	National Bat Database of Ireland	HD Annex IV, WA

Hectad	Species	Database	Designation
M18, M28, M38, M17, M27, M37, M26, M36	Leisler's bat (*Nyctalus leisleri*)	National Bat Database of Ireland	HD Annex IV, WA
M18, M28, M38, M17, M27, M37, M26, M36	Soprano pipistrelle (*Pipistrellus pygmaeus*)	National Bat Database of Ireland	HD Annex IV, WA
M18, M28, M37	Natterer's bat (*Myotis nattereri*)	National Bat Database of Ireland	HD Annex IV, WA
M27	Nathusius' pipistrelle (*Pipistrellus nathusii*)	National Bat Database of Ireland	HD Annex IV, WA
M18, M28, M17, M27, M26, M36	Lesser horseshoe bat (*Rhinolophus hipposideros*)	National Bat Database of Ireland	HD Annex II, EU & Annex IV, WA

Lesser Horseshoe Bat Database

Six lesser horseshoe bat roosts were found within 10 km of the Site. The results of the database search are provided in Table 4-4. All recorded roosts were situated more than 6 km from the Site, which is beyond the 2.5 km core foraging range of the lesser horseshoe bat (as defined by NPWS, 2018).

Table 4-4 NPWS bat roost records within 10 km of the Site

Species	Distance to EIAR Site Boundary (km)	Closest Proposed Turbine	Distance to Turbine (km)
Lesser horseshoe bat (*Rhinolophus hipposideros*)	5.7	T7	6.3
Lesser horseshoe bat (*Rhinolophus hipposideros*)	6.4	T1	7.2
Lesser horseshoe bat (*Rhinolophus hipposideros*)	7.4	T1	7.6
Lesser horseshoe bat (*Rhinolophus hipposideros*)	8.1	T1	8.9
Lesser horseshoe bat (*Rhinolophus hipposideros*)	8.5	T1	8.8
Lesser horseshoe bat (*Rhinolophus hipposideros*)	9.3	T1	10.1

4.2.3 Bat Species Range

The potential for negative impacts is likely to increase where there are high risk species at the edge of their range (NatureScot, 2021). Therefore, range maps presented in the 2025 Article 17 Reports (NPWS, 2025) were reviewed in relation to the location of the Site.

The Site is located outside the current known range for Whiskered bat and Natterer's bat and is within the range of all other species.

4.2.4 Designated Sites

Within Ireland, the lesser horseshoe bat is the only bat species requiring the designation of Special Areas of Conservation (SACs) and the proposed site is situated within the known range of this species. Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) may be designated for any bat species. A search of SACs, NHAs and pNHAs within a 10 km radius of the Site found four SACs designated for the conservation of bats, which are outlined in Table 4-5 below. No NHAs or pNHAs with bats as feature of interests were found within 10 km of the Site.

All recorded roosts were situated more than 2.5 km from the Site, which is beyond the core foraging range of the lesser horseshoe bat (as per NPWS, 2018).

Table 4-5 SACs designated for conservation of bats within 10 km of the Site

Designated Site	Description	Approximate Population Size (No. of individuals)	Approximate Distance to Designated Site (km)	Approximate Distance to Designated Roost (km)
Ballinafad SAC (002081)	Lesser horseshoe bat summer roost	62	6.5	6.5
Towerhill House SAC (002179)	Lesser horseshoe bat summer roost	373	7.2	8.3
	Lesser horseshoe bat winter roost	-	7.2	7.6
Moore Hall (Lough Carra) SAC (000527)	Lesser horseshoe bat summer roost	129	9.6	9.6
	Lesser horseshoe bat winter roost	455	9.6	9.6
Lough Carra/ Lough Mask Complex SAC (002179)	Lesser horseshoe bat summer roost	-	8.9	21.2
	Lesser horseshoe bat summer roost	467	8.9	18.7
	Lesser horseshoe bat summer roost	140	8.9	27.0

4.2.5 Landscape Features and Habitat Suitability

A review of mapping and photographs provided insight into the habitats and landscape features present at the Site. In summary, the primary land use within the Site comprises predominantly agricultural grassland,cutover peatland and smaller areas of private forestry.

A review of the GSI online mapper did not indicate the possible presence of any subterranean sites within the Site and a search of the National Monuments Database did not reveal the presence of any manmade subterranean sites within the Site. However, there are a number of national monuments present within 10 km of the Site, including 47 souterrains, many of which were no longer visible, collapsed or inaccessible. A list of the accessible souterrains within 10 km are provided in Table 4-6. Descriptions of these souterrains do not mention presence of bats.

A search of the UBSS Cave Database for the Republic of Ireland found no caves within the Site or within 10 km of the Site.

A review of the NBDC bat landscape map provided a habitat suitability index of 21 (green). This indicates that the Site has low habitat suitability for bat species.

Table 4-6 Accessible or existing national monuments within 10 km of the Site

National Monument	Description	Distance to Site (km)
MA08628	Souterrain	2.5
MA06635	Souterrain	7.4
MA06401	Souterrain	9.9
MA05849	Souterrain	7.8

4.2.6 Additional Projects in the Wider Landscape

The Wind Energy Ireland (WEI) interactive wind map (windenergyireland.com) was searched in January 2026 for proposed, existing and permitted wind energy developments within 15 km of the Proposed Project, as per BCI 2026 guidelines. Additionally, Mayo County Council and An Coimisiún Pleanála planning portals were reviewed for other large infrastructure developments and proposals (e.g. large road projects). Table 4-7 provides an overview of wind farms within 15 km of the Site. No wind farms are located within 5 km of the Site.

Table 4-7 Wind farm developments within 15 km of the Proposed Project

Wind Farm	Status	No. of Turbines	Turbine Tip Height (m)
Within 5 – 10 km			
Mace Upper Wind Farm	Existing	3	81
Magheramore Wind Farm	Existing	6	156.5
Cloontooa Wind Farm	Existing	6	156.5
Ballykinava Wind Farm	Existing	6	156.5
Cuillalea Wind Farm	Existing	4	62.8
Within 10 – 15 km			
Connaught GAA	Permitted	3	24
Cuillalea Wind Farm Extension	Existing	2	81

Additional projects with potential to contribute to cumulative effects on bats within 15 km of the Site

Plans and projects within 15 km of the Site with the potential to contribute to cumulative effects on bats include the following planning applications:

- EIA Portal Ref: 2020053 - Quarry of 13.0Ha. which will be subject to removal of overburden, extraction of rock down to 1mOD and processing of rock using mobile plant over a 25-yr period.
- ACP Case ID: 315133 - Construction of 60 apartments with all associated site works.
- ACP Case ID: 310963 - Construction of a 21-metre-high free-standing communications structure
- ACP Case ID: 311200 - Erection of a 21m high monopole telecommunications support structure together with antennas, dishes and associated telecommunications equipment.
- ACP Case ID: 313681 - Claremorris Closed Landfill Remediation Project
- ACP Case ID: 302850 - 10-year permission for construction of an energy storage facility, includes electrical substation building and electrical compound, electrical transformer/inverter station modules.
- ACP Case ID: 312379 - N17 Milltown to Gortnagunned Realignment Scheme
- ACP Case ID: 309903 - 30 metre high free standing communications structure (total height with antennas 30.05 metres) with its associated antennae, communication dishes, ground equipment.
- EIA Portal Ref: 2024110 - Anaerobic digestion facility to produce renewable biomethane, CO2 (which will be captured), and a bio-based fertiliser from organic material.
- EIA Portal Ref: 2024124 - The demolition of 4 No. broiler chicken houses, feed silos, and utility shed and construction of 4 No replacement broiler chicken houses with a combined capacity for 160,000 birds (40,000 birds per house), and feed silos.

4.3 Field Surveys

4.3.1 Bat Habitat Suitability Appraisal

4.3.1.1 Proposed Wind Farm

A total of fifteen habitats were recorded within the Proposed Wind Farm site, including;

- Stone walls and other stonework (BL1)
- Spoil and bare ground (ED2)
- Drainage ditches (FW4)
- Improved agricultural grassland (GA1)
- Dry meadows and grassy verges (GS2)
- Wet grassland (GS4)
- Wet heath (HH3)
- Cutover bog (PB4)
- Transition mire and quaking bog (PF3)
- Mixed broadleaved/ conifer woodland (WD2)
- Mixed conifer woodland (WD3)
- Conifer plantation (WD4)
- Recolonising bare ground (ED3)
- Pond (Other)
- Tilled land (BC3)
- Hedgerows (WL1)
- Treelines (WL2)
- Scrub (WS1) (Including transitioning scrub woodland)

Habitats within the Proposed Wind Farm site are dominated by improved agricultural grassland and peatland habitats. Other habitats include smaller areas of wet grassland, dry meadows and grassy verges, wet heath, scrub and buildings and artificial surfaces.

Results from the desktop review and walkover surveys were used to assess habitats for their suitability to support foraging and commuting bats, and roosting bats, according to Collins (2023). Suitability categories, divided into *High, Moderate, Low, Negligible* and *None*, are described fully in **Appendix 1**.

Areas of spoil and bare ground (ED2), tilled land (BC3), buildings and artificial surfaces (BL3) and recolonising bare ground (ED3), comprising the farm tracks and other exposed ground, were considered to be of *Negligible* suitability for foraging and commuting bats (Plate 4-1). These areas are generally open and exposed and lack linear features, shelter or habitat complexity likely to be used by bats as commuting routes or foraging habitat.

Areas of improved agricultural grassland (GA1), cutover bog (PB4), wet heath (HH3), wet grassland (GS4), dry meadows and grassy verges (GS2) and transition mire and quaking bog (PF3) were considered to be of *Low* suitability for foraging and commuting bats (Plate 4-2; Plate 4-3). While these habitats may occasionally be used by a small number of foraging bats, they are typically open in nature, offer limited shelter, and do not form strong or continuous linear features within the wider landscape. Drainage ditches (FW4) were also considered to be of *Low* suitability for foraging and commuting bats. This habitat is surrounded by wide expanses of grassland and peatland habitats and thus, are not very well connected to the surrounding landscape (Plate 4-4).

Conifer plantation (WD4) edges, mixed broadleaved woodland (WD1), mixed conifer woodland (WD3), scrub (WS1), stone walls and other stonework (BL1), hedgerows (WL1) and treelines (WL2), and in particular, linear features with adjacent woodland or scrub were considered to be of *Moderate* suitability for foraging and commuting bats (Plate 4-5; Plate 4-6). These features provide shelter, navigational structure and connectivity within the Site. The pond habitat was also considered to be of *Moderate* suitability as it is likely to provide good foraging opportunities for bats.

No habitats within the Proposed Wind Farm site were assessed as offering *High* suitability for commuting or foraging bats.

Plate 4-1 Open area of spoil and bare ground within the south of the Site, assigned Negligible suitability for commuting and foraging bats

Plate 4-2 Cutover bog around T3, assigned Low suitability for commuting and foraging bats

Plate 4-3 Open grassland area around T5, assigned Low suitability for commuting and foraging bats

Plate 4-4 Drainage ditch to the south-west of T3, assigned Low suitability for commuting and foraging bats

Plate 4-5 Conifer forestry edges and hedgerows leading to T6, assigned Moderate suitability for commuting and foraging bats

Plate 4-6 Scrub near T3, assigned Moderate suitability for commuting and foraging bats

With respect to roosting habitats, three farm buildings and structures were inspected for bat roosting suitability. One of the structures was assessed as offering *Negligible* roosting potential and two were assessed as offering *Low* roosting potential. Overall, built structures within the Site were assessed as providing *Negligible* to *Low* suitability for roosting bats, and no structures or features with *Moderate* or *High* roosting suitability were identified. Details of the inspected structures and dusk emergence surveys are presented in Section 4.3.2.

Trees within the development footprint and within the bat buffers (as detailed below in Section 6.1.3), scheduled for felling, were inspected for potential roost features (PRFs) as described in Section 3.3.3. No PRFs were identified on any tree inspected; accordingly, all inspected trees were assessed as having no

(None) roosting potential in line with Collins (2023). Example of trees present within felling buffers are shown in Plate 4-7 and Plate 4-8. Further detail on inspected trees is provided in Section 4.3.2.1.

Plate 4-7 Gappy hedgerow within the felling buffer for T5

Plate 4-8 Willow hedgerow within the felling buffer for T6

4.3.1.2 Proposed Grid Connection

An onsite 110 kV electrical substation with associated underground cabling is proposed in the northwestern section of the Site, within the townland of Cloonbaul, to facilitate connection of the Proposed Wind Farm to the national grid. The underground 110 kV cabling will extend approximately 982 m across private agricultural land, connecting the onsite substation to the existing Castlebar – Cloon 110 kV overhead line.

Habitats within the Proposed Grid Connection site include:

- Improved agricultural grassland (GA1)
- Wet grassland (GS4),
- Hedgerows (WL1),
- Scrub (WS1),
- Conifer plantation (WD4),
- Wet heath (HH3),
- Recolonising bare ground (ED3),
- Treelines (WL2)

The habitats at the proposed onsite 110kV substation and adjacent temporary construction compound consist predominantly of improved agricultural grassland (GA1) and wet grassland (GS4), as well as smaller areas of wet heath (HH3). These habitats were assessed as offering *Low* suitability for commuting and foraging bats. While these habitats may occasionally be used by a small number of foraging bats, they are typically open in nature, offer limited shelter, and do not form strong or continuous linear features within the wider landscape (Plate 4-9).

Small areas of recolonising bare ground along existing farm tracks were considered to be of *Negligible* suitability, due to their open nature and lack of connectivity to surrounding habitats (Plate 4-10).

Linear features within the Proposed Grid Connection, including treelines (WL2) and hedgerows (WL1), as well as conifer plantation (WD4) edges were assigned *Moderate* suitability for commuting and foraging bats due to their connectivity with the wider landscape and by providing navigational structure and shelter (Plate 4-11). Areas of scrub (WS1) were also assessed as having *Moderate* suitability habitat for commuting and foraging bats, as it provides potential food sources (Plate 4-12). Overall, habitats within the Proposed Grid Connection site were assessed as providing *Low* to *Moderate* suitability for commuting and foraging bats, with no habitats assessed as offering *High* suitability.

Plate 4-9 Open area of agricultural grassland within the Proposed Grid Connection, assigned Low suitability for commuting and foraging bats

Plate 4-10 Recolonising bare ground along a farm track within the Proposed Grid Connection, assigned Low suitability for commuting and foraging bats

Plate 4-11 Mature hedgerow within the Proposed Grid Connection, assigned Moderate suitability for commuting and foraging bats

Plate 4-12 Scrub located within the Proposed Grid Connection, assigned Moderate suitability for commuting and foraging bats

With regard to roosting bats, trees capable of supporting roosting bats were identified within the proposed onsite 110 kV substation footprint. Approximately 22 no. trees were assessed and 18 no. exhibited no *(None)* roosting potential (Plate 4-13). Four trees were assessed as *PRF-I* i.e., containing Potential Roosting Features (PRFs) for a small number of individuals, due to the size and conditions of the features identified (Plate 4-14). Further detail on inspected trees is provided in Section 4.3.2.1.

Plate 4-13 An example of a tree located within the Proposed Grid Connection assessed as having None roosting potential for bats

Plate 4-14 An example of mature ivy assessed as PRF-I within the Proposed Grid Connection

There are no EPA mapped watercourse crossings within the proposed onsite 110 kV substation footprint, along the 982 m underground cabling route between existing 110kV overhead line and the onsite 110kV substation or within the footprint of the two proposed end masts proposed to be located immediately beneath the existing OHL.

4.3.1.3 Turbine Delivery Accommodation Works

As described in Chapter 4 of this EIAR, to facilitate the delivery of large turbine components and other abnormal loads during the construction period, some accommodation works are required. These include tree pruning along the L1506 and L1505 and removal of approximately six trees on the L1505. Additionally, sections of stone wall at five locations along the route, including at the Claremont minor road junction, the L1505 and L15053 are proposed to be removed to facilitate the turbine delivery.

Habitats within the Turbine Delivery Accommodation (TDA) footprint comprise buildings and artificial surfaces (BL3), improved agricultural grassland (GA1), dry meadows and grassy verges (GS2), scrub (WS1), stone walls and other stonework (BL1), hedgerows (WL1), treelines (WL2) and small numbers of individual trees associated with gappy field boundaries and road edges. Areas of grassland, verges, disturbed ground and artificial surfaces were assessed as offering *Negligible* suitability for bat foraging and commuting, reflecting their open nature and lack of structural connectivity. Sections of stone walls, gappy hedgerows and occasional trees occur along field boundaries and were assessed as offering *Low* suitability for commuting and foraging bats, as these features do not form continuous linear corridors within the wider landscape. Treelines within the TDA works areas were assessed as having *Moderate* suitability for commuting and foraging bats, due to their connectivity to the wider landscape.

The stone walls within the TDA works areas were subject to inspections as per Collins (2023). Each section of wall proposed for removal were assessed as having *Negligible* potential for roosting bats due to insufficient size and lack of shelter and suitable crevices (Plate 4-15; Plate 4-16).

Plate 4-15 Section of stone wall proposed to be removed as part of the TDA works

Plate 4-16 Section of stone wall proposed to be removed at the site entrance

Trees within the TDA works areas were subject to ground-level inspection for potential roost features (PRFs), as described in Section 3.3.3. Approximately 80 trees were assessed, of which five trees proposed for pruning were identified as supporting features with the potential to accommodate individual bats or small numbers of bats, including overlapping mature ivy and areas of split bark. These trees were therefore classified as supporting *PRF-I.*

However, these trees are located adjacent to roads and are subject to ongoing disturbance from artificial lighting and traffic noise. While the identified features are structurally suitable to support individual roosting bats, the likelihood of regular roost use is considered to be low.

Further detail on inspected trees is provided in Section 4.3.2.1.

4.3.2 Roost Surveys

4.3.2.1 Daytime Roost Inspections

Three structures were identified within the Site as containing features with potential to support roosting bats. These were assessed during daytime roost inspections in accordance with the grading criteria

described by Collins (2023) (see **Appendix 1**). Each structure was subject to external inspection, and internal inspection to identify evidence of bat use and assess roosting potential.

Of the three structures surveyed, one was assessed as having *Negligible* potential, two were assessed as having *Low* bat roost potential. All three structures will be retained and avoided as part of the Proposed Project. Further details on the structures are provided below and are summarised in Table 4-8.

Table 4-8 Structures inspected for roost potential within the Site

Structure No.	Description	Irish Grid Reference	Nearest Turbine	Distance to Nearest Turbine (m)	Bat Roost Potential
1	Farm Shed	M 29077 77801	T5	140	*Low*
2	Building Ruins	M 29112 77849	T5	100	*Negligible*
3	Derelict House and Associated Ruins	M 29248 77610	T5	150	*Low*

The following sections describe each structure, supported by photographs and noting key features relevant to bat roosting potential.

Farm Shed (Structure 1, IG Ref: M 29077 77801)

Located approximately 140 m west of proposed Turbine 5, this farm shed was assessed as having *Low* bat roost potential in accordance with Collins (2023). The structure appears to have originally been constructed as a dwelling but is currently in use as a farm shed. The shed consists of concrete block walls with a corrugated iron roof and a single chimney stack and is situated within improved agricultural grassland (GA1), with a few scattered trees in the surrounding area.

Open windows, doorways, a chimney hearth, and a hole in the roof provide potential access to the interior for bats. Gaps between the timber roof support and the internal wall structure, and cracks and crevices in the internal walls have the potential to support a limited number crevice-roosting bats. The roof lining is mostly degraded, leaving the corrugated iron roof cover exposed. A small number of bat droppings were observed on an interior windowsill. The *Low* classification reflects the availability of features that could be used opportunistically by roosting bats, though the open and exposed nature of the interior lowers its overall suitability. This structure was subject to a dusk emergence survey on the 4th June 2025 as detailed in Section 4.3.3. Plates 4-17 to 4-20 illustrate the external and internal condition of this building.

Plate 4-17 Southwest aspect of the farm shed (Structure 1) showing the concrete exterior, corrugated iron roof, and surrounding habitat.

Plate 4-18 North aspect of Structure 1 showing potential access points via the open doorway and gaps under the roof.

Plate 4-19 Interior view of Structure 1 showing the lack of interior roof lining and exposed nature of the building.

Plate 4-20 Chimney hearth inside Structure 1.

Building Ruins (Structure 2, IG Ref: M 29112 77849)

Located approximately 100 m west of proposed Turbine 5, this ruined building was assessed as having *Negligible* bat roost potential in accordance with Collins (2023). The remains of this structure consist of stone walls and lack a roof. The crevices present within the walls are small and difficult to access for bats. This structure is located within improved agricultural grassland (GA1), with a few scattered trees in the surrounding area, including a tree growing within the interior of the structure. Plate 4-21 illustrates the condition of this structure.

Plate 4-21 Western aspect of Structure 2 showing outer stone wall and surrounding habitat.

Derelict House and Associated Ruins (Structure 3, IG Ref: M 29248 77610)

Located approximately 150 m south of proposed Turbine 5, the single-storey derelict house and associated ruins were assessed as having *Low* bat roost potential in accordance with Collins (2023).

The derelict house structure is constructed from stone and rendered in line with a slate roof. More than half of the house has previously been destroyed with the remains featuring a partial slate roof and two chimney stacks, one of which is covered in ivy. Open windows and a large hole in the gable of this structure offers potential access to the interior. Gaps in the timber support beams, a partially intact felt lining, and an open chimney hearth were identified within the structure as potential roosting features. A small number of bat droppings were found in the interior indicating active bat use of the structure. Plates 4-22 to 4-25 illustrate the external and internal condition of this building.

The associated ruins consist of stone walls overgrown with bramble and ivy. This structure features no roof which lowers its overall suitability. However, gaps and crevices in the stone walls could be used opportunistically by crevice-roosting bats. Plates 4-26 to 4-27 illustrate the external and internal condition of this structure.

The surrounding landscape comprises improved agricultural grassland (GA1), with a mosaic of trees and connecting treelines providing some degree of ecological linkage to the wider environment. The derelict house and ruins were subject to a dusk emergence survey on the 7th May 2025 as detailed in Section 4.3.3.

Plate 4-22 Southwest aspect of Structure 2 showing the exterior stone structure, slate roof, & surrounding habitat.

Plate 4-23 External view of the derelict building (Structure 2) showing potential access via open doorway & roof.

Plate 4-24 Timber support beams and felt lining inside Structure 2, which can provide shelter for roosting bats.

Plate 4-25 Chimney hearth inside Structure 2.

Plate 4-26 North aspect of associated ruins showing the stone structure overgrown with brambles and ivy.

Plate 4-27 Southern wall of associated ruins showing crevices with potential to support roosting bats.

Tree Inspections

Trees Proposed for Removal

Detailed ground-level tree inspections were undertaken on trees within the Proposed Project footprint including turbine bases, bat buffers, turbine hardstands, access tracks, the grid connection footprint, temporary site entrance and the Turbine Delivery Route Accommodation (TDA) works areas.

Trees within the felling buffers for the proposed turbines T1, T4, T5, T6 and T7 comprise predominantly immature trees within gappy hedgerows. No trees occur within the felling buffers of T2 and T3. No potential roost features (PRFs) were identified on any tree within the turbine felling buffers. Plates 4-28 and 4-29 illustrate examples of trees found within these buffers.

Plate 4-28 Gappy hedgerow within the felling buffer for T5.

Plate 4-29 Willow hedgerow within the felling buffer for T6.

Trees proposed to be felled for the construction of the Proposed Grid Connection include ash, elder, beech, blackthorn and hawthorn species. One beech tree was found to have two features potentially suitable to host roosting bats. One such feature was a large, east-facing hollow (Irish Grid Reference: M 28279 79024) (Plate 4-30). The second feature consisted of a smaller, south-facing vertical crack (Irish Grid Reference: M 28279 79024) (Plate 4-31). Both features had the suitability to support individuals or a small number of roosting bats and were therefore assessed as *PRF-I*. An additional three trees featured mature ivy with potential to provide shelter for an individual or small number of roosting bats (Irish Grid References: M 28285 79006; M 28285 79013; M 28275 79032) (Plate 4-32; Plate 4-33). All other trees within the Proposed Grid Connection site were assessed as having no *(None)* roosting potential. Results of ground-level inspections carried out on trees proposed to be removed are summarised in Table 4-9.

Plate 4-30 A large hollow assessed as PRF-I, located within the proposed substation footprint

Plate 4-31 A vertical crack assessed as PRF-I, located within the proposed substation footprint

Plate 4-32 An example of mature ivy assessed as PRF-I within the Proposed Grid Connection

Plate 4-33 A second example of mature ivy assessed as PRF-I within the Proposed Grid Connection

Trees within the temporary site entrance comprise a heavily managed and regularly cut-back hedgerow (Plate 4-34), within which no potential roost features (PRFs) were identified.

Plate 4-34 Cut-back hedgerow proposed to be removed for temporary site entrance works

Along the TDA works areas, several tree species were recorded, including ash, sycamore and beech of varying maturity. No potential roost features (PRFs) were identified on any trees proposed for removal as part of the TDA works, and all were assessed as having no (*None*) suitability for roosting bats. A summary of the outcomes of all inspections of trees proposed for removal is provided in Table 4-9.

Table 4-9 Summary of tree inspections for trees proposed for removal

Hedgerow/ Treeline ID	Nearest Proposed Project Element	PRFs / Notes	Description of Works	Bat Roost Suitability	Irish Grid Reference
Hedgerow 1	T1	Gappy hedgerows, no PRFs	Proposed removal for bat buffer and construction new tracks	*None*	M 28419 77848
Hedgerow 2 & Hedgerow 3	T4	Gappy hedgerows, no PRFs	Proposed removal for bat buffer and construction of new tracks	*None*	M 29106 78078 & M 29142 78008
Hedgerow 4 & Hedgerow 5	T5	Hedgerow, no PRFs	Proposed removal for bat buffer	*None*	M 29199 77777 & M 29296 77740
Hedgerow 6	T6	Willow, no PRFs	Proposed removal for bat buffer	*None*	M 28851 78415
Hedgerow 7 & Hedgerow 8	T7	Mature hawthorn, no PRFs	Proposed removal for bat buffer	*None*	M 28348 78545 & M 28306 78632

Treeline 1	Proposed Grid Connection – 110 kV Substation	Four trees assessed as *PRF-I,* all other trees assessed *None*	Proposed removal for substation construction	*Four trees with PRF-I & all others None*	M 28279 79024
Treeline 2 & Hedgerow 9	Proposed Grid Connection – New Tracks	No PRFs on trees and hedgerow	Proposed removal for construction of new tracks	*None*	M 28352 78909 & M 28420 78796
Hedgerow 10	Temporary Site Entrance	Hedgerow, no PRFs	Hedgerow will be removed for temporary site entrance works	*None*	M 28350 76977
Treeline 3	Turbine Delivery Route Accommodation (TDA)	Ash, sycamore and beech trees, no PRFs	Trees to be removed as part of the TDA works area	*None*	M 31133 74969

Trees Proposed for Pruning

Additionally, a number of trees are proposed to be pruned to accommodate turbine delivery activities. Four trees associated with the TDA works area were identified as supporting mature ivy with small gaps that could potentially provide shelter for an individual bat or a small number of bats, and one additional tree was found to exhibit a section of split bark. These features are consistent with ***PRF-I*** (i.e. capable of supporting an individual bat or small number of bats). Examples of these features are shown in Plate 4-35 and Plate 4-36.

However, these trees are located in close proximity to roads and are subject to ongoing disturbance from traffic noise and artificial lighting. No evidence of bat use (e.g. droppings, staining or feeding remains) was recorded during inspections. While the identified features are structurally suitable, the likelihood of use by roosting bats is considered to be low. No trees associated with the proposed works were identified as having the potential to support a significant or maternity bat roost.

Although no evidence of roosting bats was identified during these detailed tree inspection surveys, a pre-commencement inspection will be undertaken, fully in accordance with best practice guidance, recognising that tree conditions and roost use can change over time. In the unlikely event that evidence of bats is identified, works will cease and appropriate measures will be implemented in consultation with the National Parks and Wildlife Service (NPWS).

Trees assessed as supporting ***PRF-I*** and proposed for pruning as part of the TDA works are summarised in Table 4-10.

Table 4-10 Summary of PRFs found on trees proposed to be pruned as part of the TDA works

Inspection Dates	PRF	Description of Works	Bat Roost Suitability	Irish Grid Reference
25th February 2026	Mature ivy	To be pruned	***PRF-I***	M 34929 76130
25th February 2026	Mature ivy	To be pruned	***PRF-I***	M 34919 76136
25th February 2026	Split bark	To be pruned	***PRF-I***	M 34911 76143
25th February 2026	Mature ivy	To be pruned	***PRF-I***	M 31981 74790
25th February 2026	Mature ivy	To be pruned	***PRF-I***	M 31202 74941

Plate 4-35 An example of mature ivy assessed as PRF-I located on a tree to be pruned as part of the TDA works

Plate 4-36 Split bark assessed as PRF-I located on a tree to be pruned as part of the TDA works

4.3.2.2 Emergence Surveys

Emergence surveys were carried out in spring, summer and autumn of 2025 to further assess the use of structures within the Site by roosting bats and to confirm the presence, species composition and activity associated with potential roost features.

Structures 1 and 3 were assessed as having *Low* suitability for roosting bats and were therefore subject to dusk emergence surveys. Structure 2 was assessed as having *Negligible* suitability for roosting bats, with no potential roost features (PRFs) identified, and no further survey was considered necessary. In accordance with Collins (2023), structures of *Negligible* suitability do not require emergence surveys.

A dusk emergence survey was undertaken in spring 2025 on 7th May 2025 at Structure 3, comprising a derelict house and associated ruins. During this survey, three soprano pipistrelle bats were observed emerging from the northern elevation of the attic space of the structure, confirming its use as a bat roost. Following emergence, bats predominantly flew east towards adjacent treelines. A high level of activity was recorded in the immediate vicinity of the structure, with bats frequently circling a small group of trees forming a courtyard-like arrangement. Regular feeding buzzes were recorded in this area, indicating active foraging associated with these trees and surrounding habitat features. In addition to emergence activity, Leisler's bats, *Myotis* spp., and both common and soprano pipistrelles were recorded commuting and foraging around the surrounding trees and along adjacent linear features.

This structure was subsequently reconfirmed as an active roost during the autumn 2025 dusk emergence survey undertaken on 9th September 2025, when one soprano pipistrelle bat was observed emerging from the structure. During the same survey, a small number of *Myotis* spp. and brown long-eared bats were observed entering and exiting the structure, indicating continued bat activity associated with the building. Following emergence, bats were observed circling in close proximity to the structure and remained associated with trees located to the east of the building.

During the summer 2025 survey period, a dusk emergence survey was carried out at the Farm Shed (Structure 1) on the 4th June 2025. Sixteen bats were recorded emerging from an opening in the roof on the south-eastern side of the structure. These bats were identified as soprano pipistrelle and Leisler's bats. Following emergence, bats dispersed in multiple directions, including north, east and south of the structure. Additional bat activity was recorded in the surrounding area, with Leisler's bats, common and soprano pipistrelles observed commuting and foraging along nearby treelines and habitat features.

Overall, the emergence surveys undertaken in 2025 confirmed the use of two structures within 268 m of the turbines by roosting bats, specifically soprano pipistrelle and Leisler's bat, with activity concentrated around adjacent treelines and small groups of trees which provide key foraging and commuting habitat.

Across all survey periods, the primary directions of flight recorded following emergence were predominantly orientated away from the location of the nearest turbine (Turbine 5), with bats commuting towards adjacent treelines and foraging habitats. This indicates that the main foraging and commuting areas linked to these roosts are located away from the turbine, thereby reducing the potential for interaction.

Table 4-11 summarises the results of the emergence surveys undertaken in 2025.

Table 4-11 Summary of emergence survey results (2025)

Structure No.	Potential Roost Suitability	Irish Grid Reference	Distance from nearest Turbine (T5) (m)	Date Surveyed	Survey Results
3	*Low*	M 29248 77610	150	7th May 2025	3 soprano pipistrelles observed emerging
1	*Low*	M 29077 77801	140	4th June 2025	16 bats observed emerging, identified as soprano pipistrelle and Leisler's bat
1	*Low*	M 29248 77610	150	9th September 2025	1 soprano pipistrelle observed emerging

4.3.3 Manual Activity Surveys

Manual transects were undertaken in spring, summer and autumn of 2025, with bat activity recorded during surveys in all seasons. A total of 1,764 bat passes were recorded across all manual activity surveys. Overall, soprano pipistrelle (n = 965) was recorded most frequently, followed by common pipistrelle (n = 593) and Leisler's bat (n = 91). *Myotis* spp. (n = 120) and brown long-eared bat (n = 4) were recorded less frequently (Table 4-12; Plate 4-37).

The summer surveys recorded significantly fewer bat passes (n = 270) compared with spring (n = 754) and autumn (n = 749).

Table 4-12 Total bat passes recorded during manual transects per species per survey period 2025

Common Name	Scientific Name	Spring (n = 754)	Summer (n = 270)	Autumn (n = 749)	Total (n = 1,773)
Myotis spp.	*Myotis* spp.	18	18	84	**120**
Leisler's bat	*Nyctalus leisleri*	41	44	6	**91**
Common pipistrelle	*Pipistrellus pipistrellus*	111	163	319	**593**
Soprano pipistrelle	*Pipistrellus pygmaeus*	584	45	336	**965**
Brown long-eared bat	*Plecotus auritus*	-	-	4	**4**

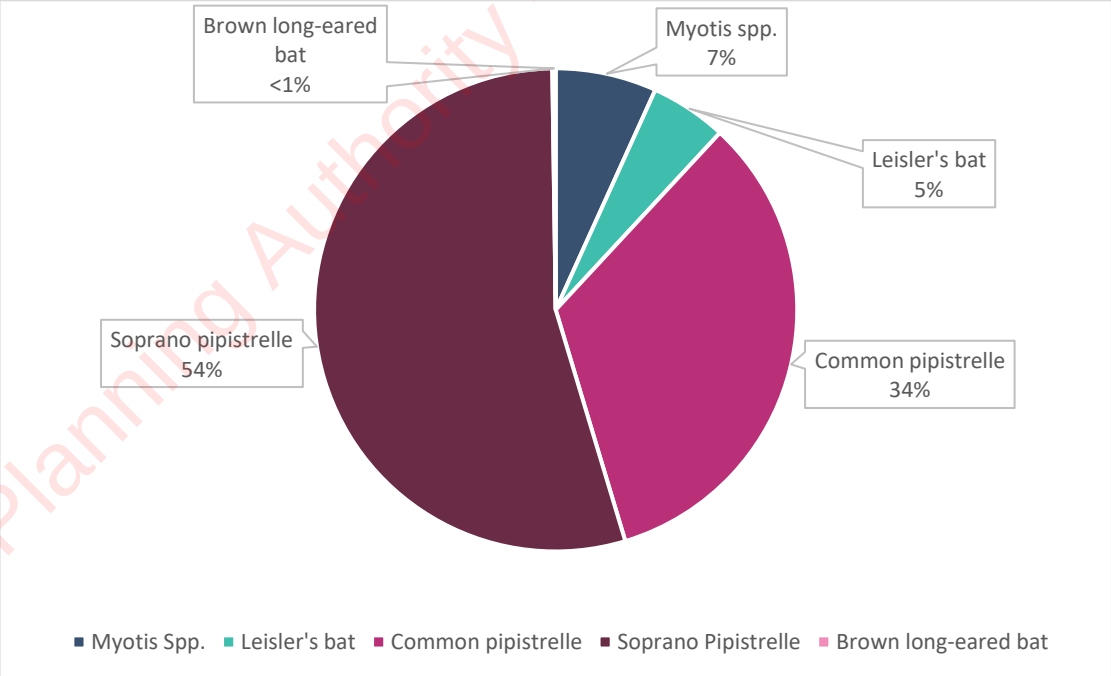


Plate 4-37 Manual activity survey results (2025): Total species composition

Species composition and activity levels recorded during manual transect surveys varied between survey periods. To account for differences in survey effort, results were standardised as bat passes per kilometre surveyed and are presented in Plate 4-38.

Soprano pipistrelle activity was highest in spring, followed by autumn and summer. Common pipistrelle activity peaked in autumn, with lower levels recorded in spring and summer. Leisler's bat activity was recorded in similar numbers in spring and summer and less frequently in autumn. Myotis spp. were recorded most frequently in autumn, with lower levels in spring and summer, while brown long-eared bats were recorded in small numbers in autumn only.

Figures 4-1 to 4-3 illustrate the spatial distribution of bat activity. Activity was generally concentrated along the limited treelines, hedgerows and forestry edges present within the Site.

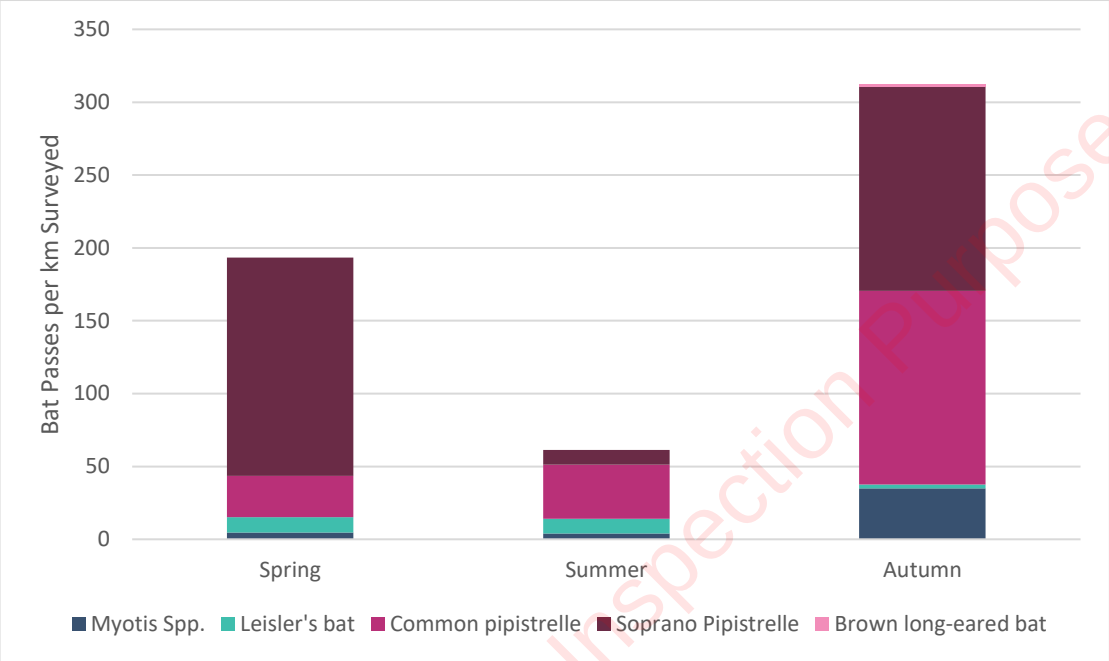
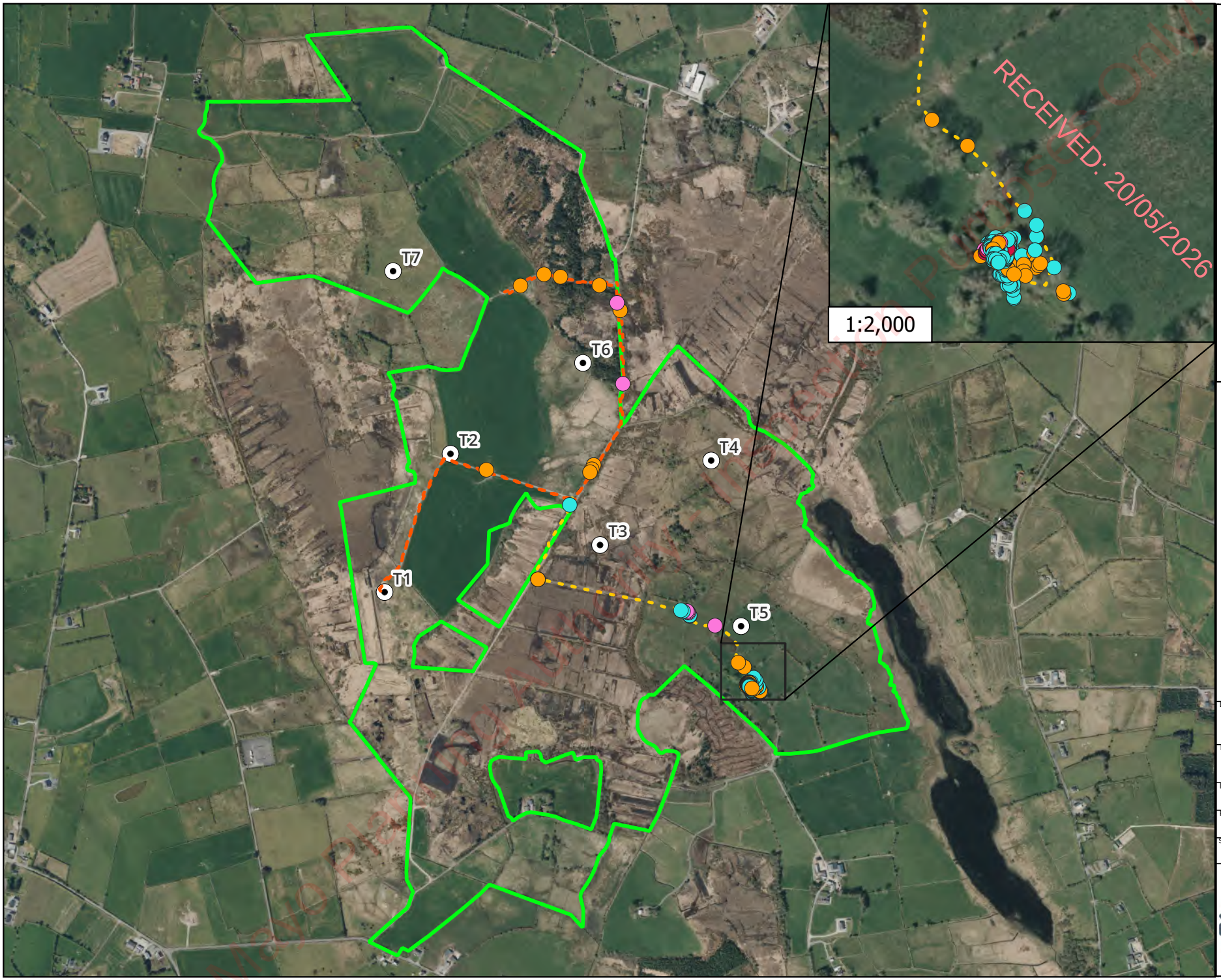


Plate 4-38 Manual activity survey results (2025): Relative bat activity per survey period



Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout

Transect Route 07.05.2025

- Walked
- Driven

Species

- Myotis spp.
- Leisler's bat
- Common pipistrelle
- Soprano pipistrelle

N

Drawing Title

Spring Manual Results

Project Title	Cunlaghfadda Green Energy Project
Drawn By: KL	Checked By: CM
Project No.: 220825-h	Drawing No.: Figure 4-1
Scale: 1:12,000	Date: 04/02/2026

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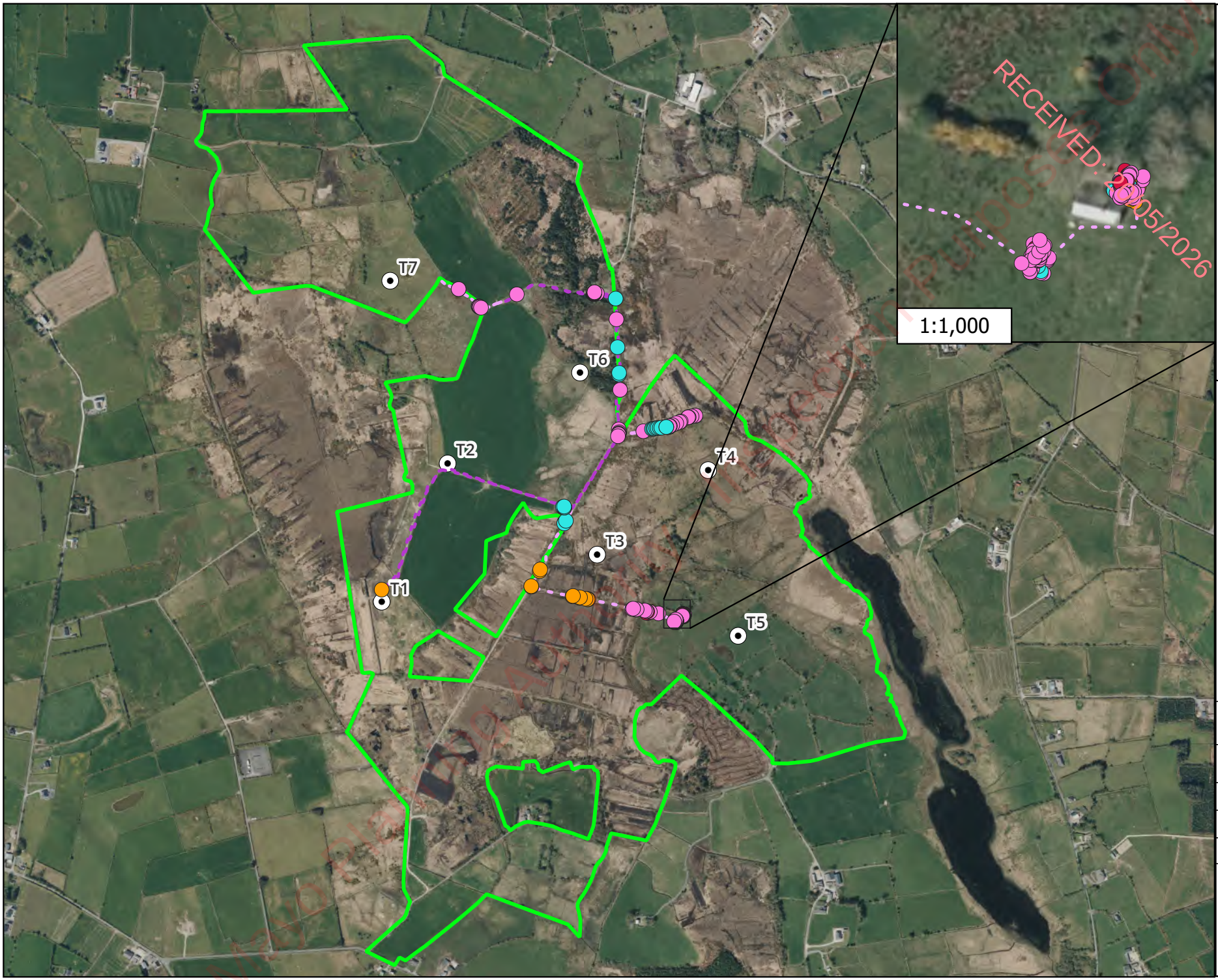

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout

Transect Route 04.06.2025

- Walked
- Driven

Species

- Myotis spp.
- Leisler's bat
- Common pipistrelle
- Soprano pipistrelle

N

Drawing Title

Summary Manual Results

Project Title	Cunlaghfadda Green Energy Project
Drawn By: KL	Checked By: CM
Project No.: 220825-h	Drawing No.: Figure 4-2
Scale: 1:12,000	Date: 13/02/2026

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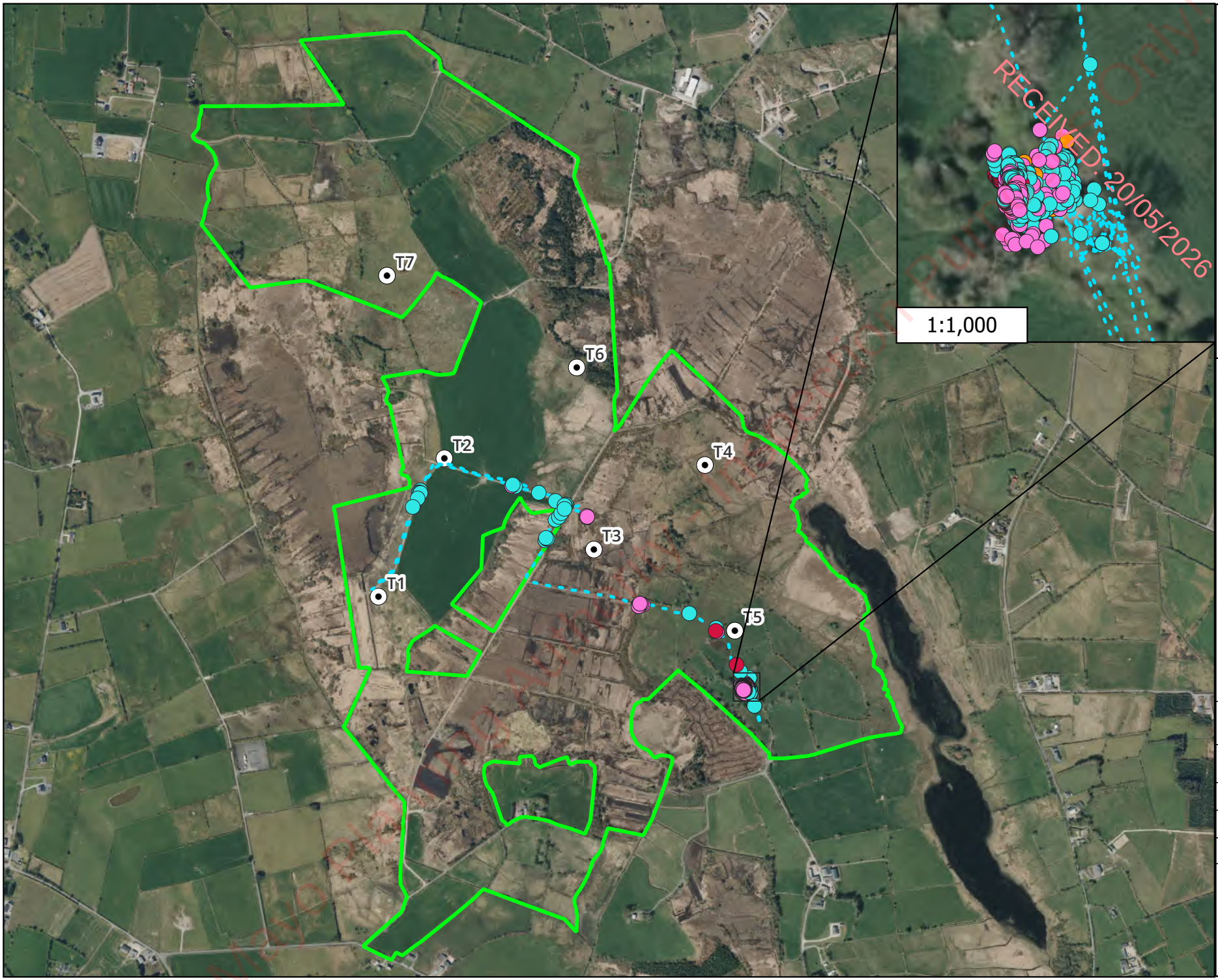

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- Walked Transect Route 09.09.2025

Species

- Myotis spp.
- Leisler's bat
- Common pipistrelle
- Soprano pipistrelle
- Brown long-eared bat

N

Drawing Title

Autumn Manual Results

Project Title

Cunlaghfadda Green Energy Project

Drawn By	Checked By
KL	CM
Project No.	Drawing No.
220825-h	Figure 4-3
Scale	Date
1:12,000	04/02/2026

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4.3.4 Ground-level Static Surveys

A total of 34,559 bat passes were recorded during the 2025 ground-level static surveys. Common pipistrelle (n = 11,590) was the most frequently recorded species, followed by Leisler's bat (n = 10,461) and soprano pipistrelle (n = 10,414). Lower levels of activity were recorded for *Myotis* spp. (n = 1,305), brown long-eared bat (n = 404), lesser horseshoe bat (n = 12) and Nathusius' pipistrelle (n = 2).

Plate 4-39 presents overall species composition across all ground-level static detectors.

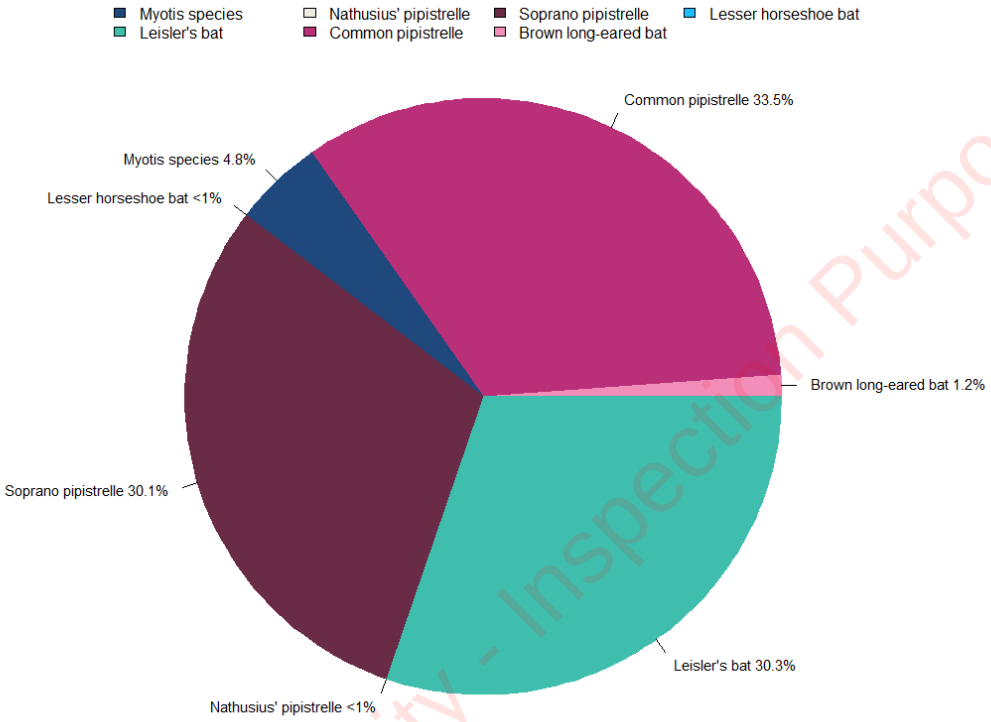


Plate 4-39 Static detector surveys (2025): Species composition (total bat passes)

Bat activity was standardised as bat passes per hour (bpph) to account for variation in night length. Seasonal patterns in activity are presented in Plate 4-40. Common pipistrelle activity was highest in spring, Leisler's bat activity peaked in summer, and soprano pipistrelle activity was greatest in autumn. Myotis spp. and brown long-eared bat were recorded at low levels throughout the survey period, with relatively higher activity recorded in spring. Lesser horseshoe bat was recorded infrequently in spring and autumn, while Nathusius' pipistrelle was recorded only during the autumn survey period.

The redeployed detector D06 during autumn recorded a species composition consistent with that observed at the same location during spring and summer, with activity dominated by common and soprano pipistrelle.

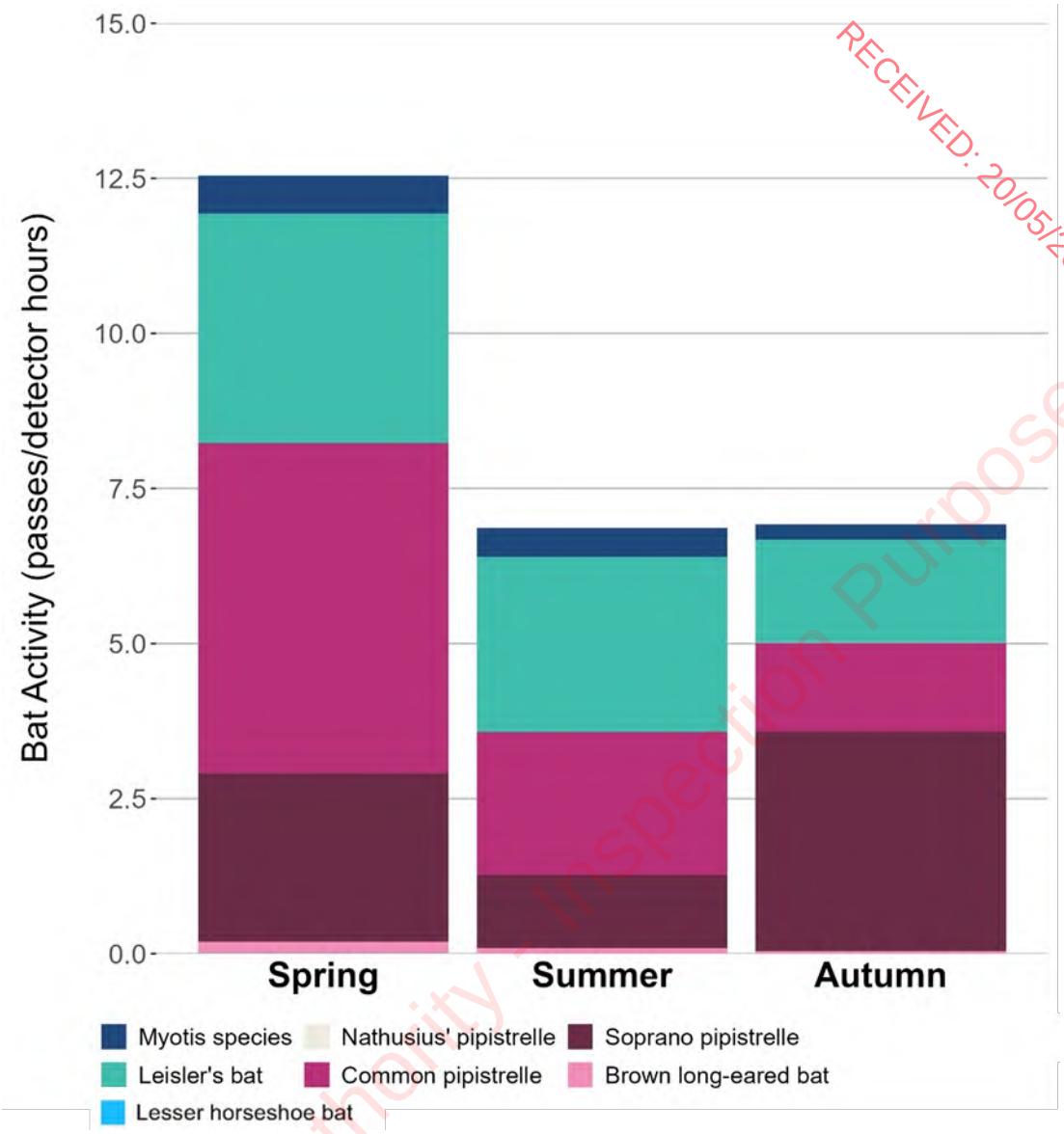


Plate 4-40 Static detector surveys (2025): Seasonal bat activity across all deployments (total bat passes per hour, all nights). Lesser horseshoe bat is not visible on the graph due to low numbers being recorded during the spring and autumn survey periods. Nathusius' pipistrelle is not visible on the graph due to two bat passes being recorded during the autumn survey period only.

The median bat pass rate (bpph) per detector location and survey period is presented in Plate 4-41. Bat activity varied across seasons and between detector locations. During the spring survey period, activity levels were broadly consistent across the Site, with the exception of detector D06, which recorded substantially higher activity, primarily comprising common pipistrelle. This detector is located along a treeline, which provides suitable commuting and foraging habitat.

Activity levels during summer were broadly similar across detector locations and comparable to those recorded in spring, with Leisler's bat activity relatively consistent across most locations during both seasons.

During autumn, the highest activity was recorded at detector D03, dominated by soprano pipistrelle. Detector D03 is located along a hedgerow, which provides connectivity to the wider landscape and suitable commuting and foraging habitat.

To characterise typical bat activity, nightly pass rates (bat passes per hour per night) were analysed, with median values used to account for variability between survey nights (Lintott & Mathews, 2018). Nights with zero recordings were included in the analysis.

Seasonal variation in activity was evident, with increased activity recorded during late spring and early autumn (Plate 4-42). Overall bat activity peaked on 22nd August, with secondary peaks recorded on 28th and 30th April.

Plate 4-41 Static detector surveys (2025): Median bat pass rate (bpph) including absences, per location per survey period. Lesser horseshoe bat is not visible on the graph due to low numbers being recorded during the spring and autumn survey periods. Nathusius' pipistrelle is not visible on the graph due to two bat passes being recorded during the autumn survey period only.

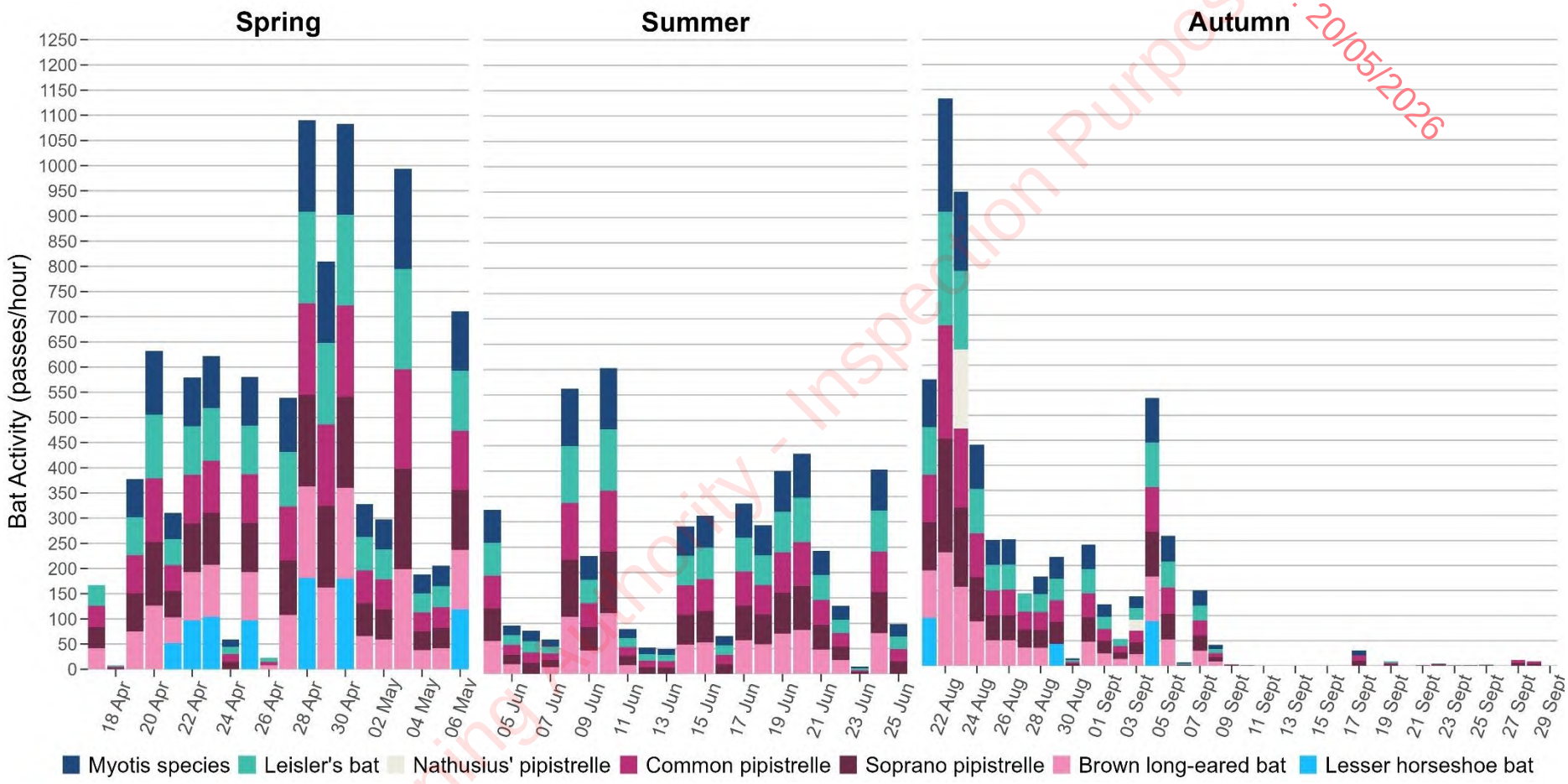


Plate 4-42 Static detector surveys (2025): Nightly pass rate (bpph) including absences, per location per survey period (including the autumn redeployment of D06)

The surveys recorded relatively high levels of Leisler's bat activity compared to similar sites. This species was recorded across all detector locations and throughout the night during spring and summer. In autumn, activity was more concentrated around sunset and sunrise periods, as illustrated in Plate 4-43.

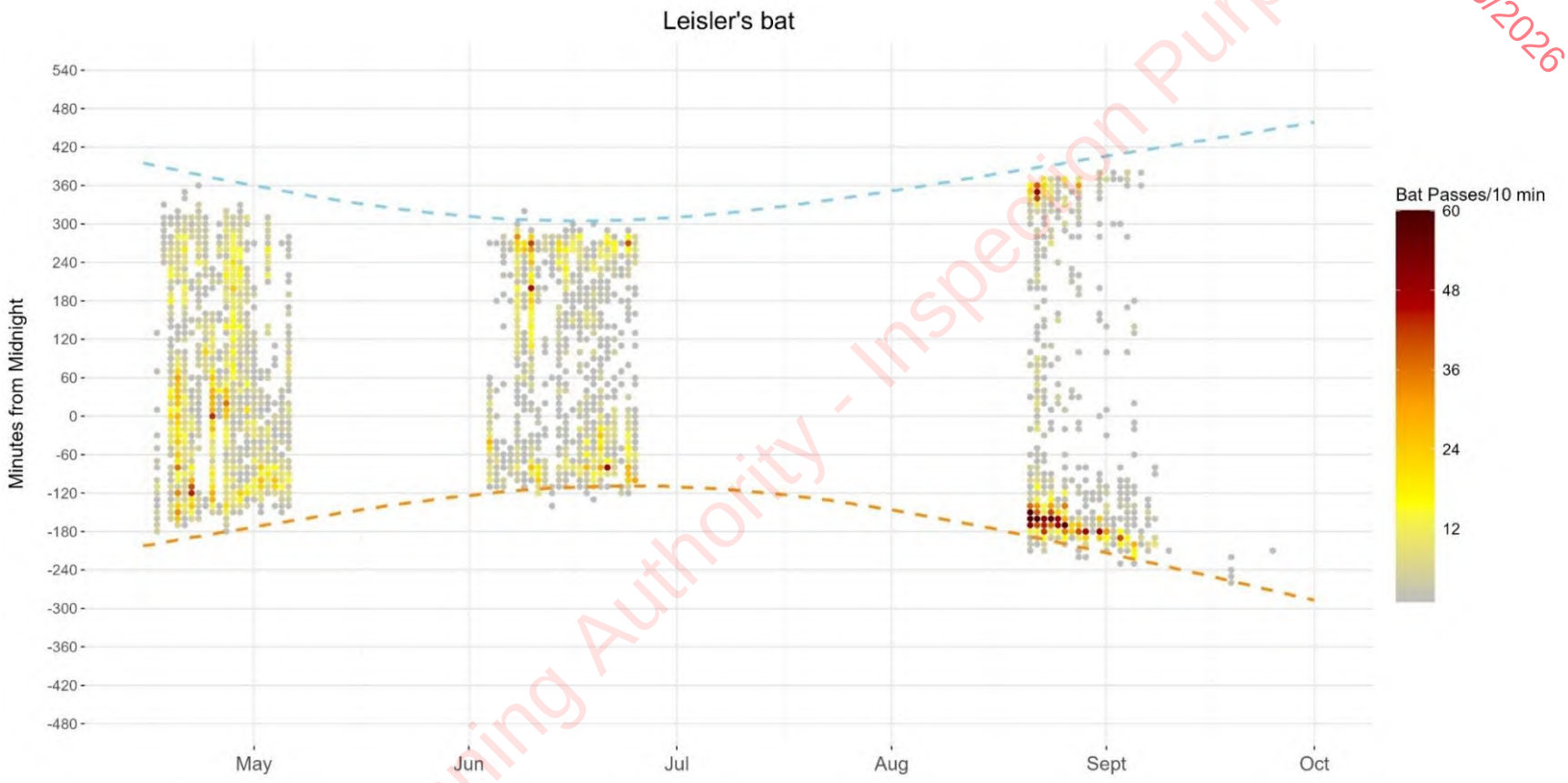


Plate 4-43 Within-night distribution of Leisler's bat activity (bat passes per 10-minute interval) in relation to time from sunset and sunrise during ground-level static detector surveys, 2025, with dashed lines indicating sunset (lower) and sunrise (upper)

Weather parameters recorded at the Site were examined in relation to bat activity. Higher levels of activity were associated with lower wind speeds and higher sunset temperatures. Approximately 90% of bat activity occurred at wind speeds below 2 m/s (Plate 4-44) and at sunset temperatures above 9.5 °C (Plate 4-45), consistent with established patterns of increased bat activity under warm, low-wind conditions.

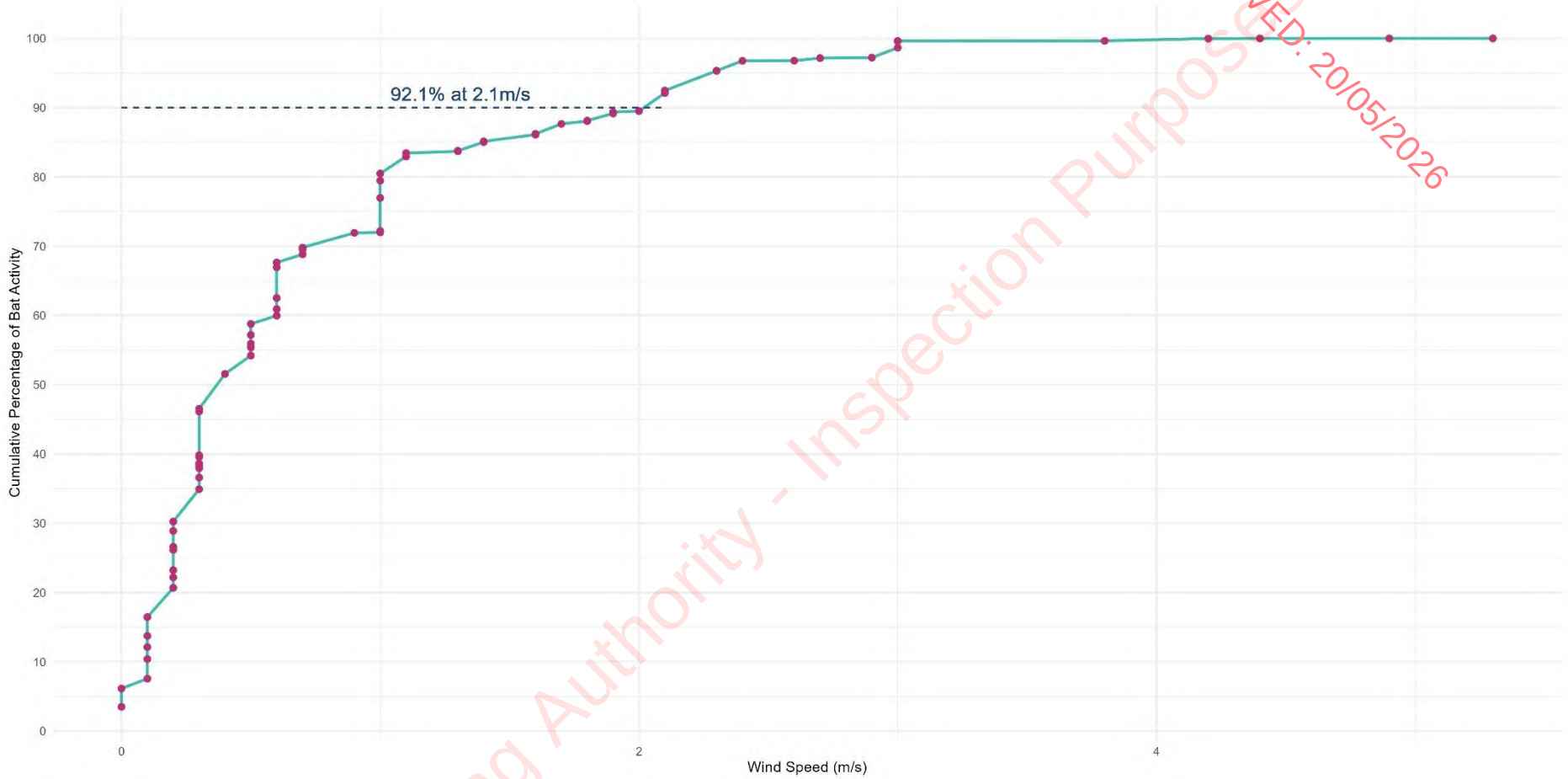


Plate 4-44 Cumulative bat activity in relation to wind speed, showing 90% of activity occurring below 2 m/s

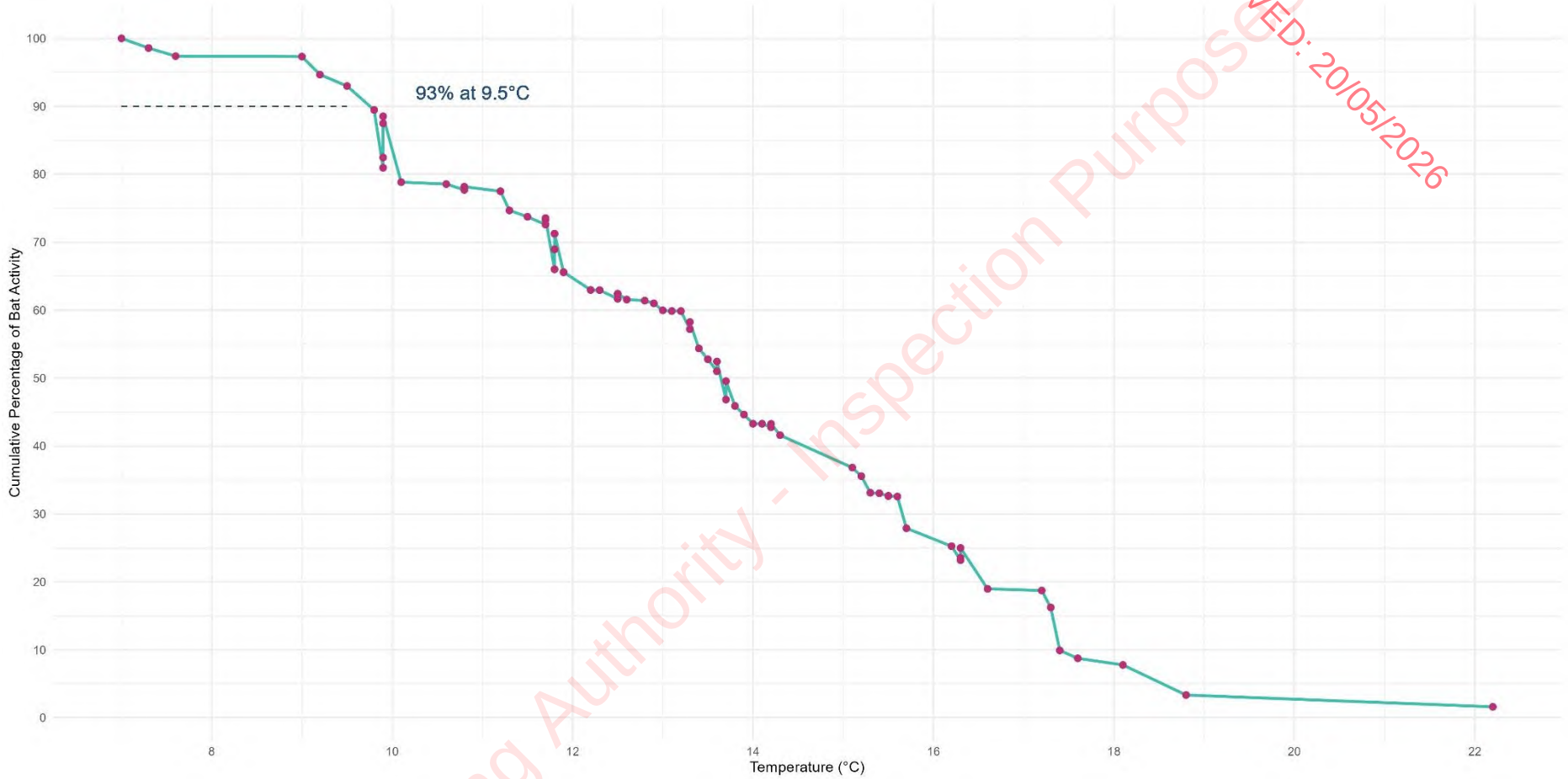


Plate 4-45 Cumulative bat activity in relation to sunset temperature, showing 90% of activity occurring above 9.5 °C

4.4 Assessment of Bat Activity Levels

4.4.1 Adapted Site-specific Ranges

Low, *Moderate*, and *High* bat activity levels were assigned to median and maximum bat pass rates (bpph) recorded during spring, summer and autumn at detector locations across the Site, using site-specific thresholds adapted from Mathews *et al.* (2016). The results of this assessment are presented in Table 4-13.

Leisler's bat median activity was generally recorded as *Moderate* during spring and summer, and *Low* across most locations in autumn, with the exception of detector D03, which recorded *Moderate* median activity (5.1 bpph). Maximum activity for this species ranged from *Moderate* to *High* across all seasons, indicating intermittent peaks in activity.

Common pipistrelle median activity was predominantly *Low*, with occasional *Moderate* and *High* values. *High* median activity was recorded at D06 in spring (13.55 bpph) and at D03 in autumn (6.4 bpph). Maximum activity ranged from *Moderate* to *High*, with a notable peak at D06 in spring (109.4 bpph), indicating periods of elevated activity at this location.

Soprano pipistrelle median activity was generally *Low*, with *High* median values recorded at D06 in spring (7.8 bpph) and D03 in autumn (16.4 bpph). Maximum activity ranged from *Moderate* to *High*, with a peak recorded at D03 in autumn (92.5 bpph).

Myotis spp. exhibited *Low* median activity across most detectors and seasons, with a single instance of *Moderate* median activity at D02 in spring (1.35 bpph). Maximum activity ranged from *Low* to *Moderate*, with occasional *High* values recorded at D02 and D07 in spring and at D02 and D06 in summer, indicating localised peaks in activity.

Nathusius' pipistrelle was recorded only at D04 and D05 during the autumn survey period, where *Low* median activity and *High* maximum activity were recorded, indicating occasional activity events.

Brown long-eared bat median activity was consistently *Low* across all survey periods. Maximum activity was generally *Low* to *Moderate* in spring and summer, with isolated *High* values recorded at D02, D06 and D07. Maximum activity declined to *Low* levels across most locations during autumn.

Lesser horseshoe bat was recorded at multiple detector locations across spring and autumn, but was absent during the summer survey period. Median activity was consistently *Low*, while maximum activity reached *High* levels at all locations where the species was recorded, indicating infrequent but occasionally elevated activity.

Across the Site, all detectors recorded *High* maximum activity in at least one season, reflecting occasional peaks in bat activity. The highest median activity levels were recorded at detectors D03 and D06 (corresponding to turbines T2 and T6), which are located in proximity to treelines and hedgerows. These features provide suitable commuting and foraging habitat and are likely to account for the elevated activity recorded at these locations. In contrast, detectors located within more open habitats, such as D01, D02 and D05 (corresponding to turbines T3, T5 and T4), recorded lower overall activity levels.

Table 4-13 Assessment of activity levels, classified as None, Low, Moderate and High. D06 (R) represents the autumn redeployment of D06.

2025 Season	Detector	Common pipistrelle		Soprano pipistrelle		Nathusius' pipistrelle		Leisler's bat		*Myotis* spp.		Brown long-eared bat		Lesser horseshoe bat	
		Median Bat Activity	Max Bat Activity	Median Bat Activity	Max Bat Activity	Median Bat Activity	Max Bat Activity	Median Bat Activity	Max Bat Activity	Median Bat Activity	Max Bat Activity	Median Bat Activity	Max Bat Activity	Median Bat Activity	Max Bat Activity
Spring	*D01*	2	10.6	0.75	3	-	-	3	15.6	0.2	0.7	0	0.2	0	0.1
	D02	1	4.4	1.1	7.4	-	-	2.15	5.4	1.35	4.1	0.2	1.7	0	0.1
	D03	1.6	18	1.3	24.3	-	-	3.65	30	0.05	0.2	-	-	0	0.1
	D04	1.1	13.4	0.8	6.7	-	-	3.45	14.7	0.15	1.3	0	0.1	-	-
	D05	1.15	6.1	0.55	2.3	-	-	1.45	3.5	0.2	1.2	0.4	1.2	-	-
	D06	13.55	109.4	7.8	16.3	-	-	3.25	8.8	0.35	1.9	0.05	0.7	0	0.1
	D07	1.1	15.4	0.8	19.9	-	-	0.9	7.5	0.75	5.7	0.15	1.3	0	0.1
Summer	*D01*	0.3	11.4	0.1	2.5	-	-	3	15.2	0	0.3	0	0.9	-	-
	D02	0.7	3.6	0.9	3.5	-	-	2	8.5	1.05	4.5	0	1	-	-
	D03	0.8	13.4	1	20.5	-	-	2.1	16.8	0	0.3	0	0.1	-	-
	D04	0.1	2.7	0.1	0.7	-	-	2	16.1	0	0.6	0	0.6	-	-
	D05	0.4	2.3	0.1	2	-	-	1.4	5.6	0.1	2.4	-	-	-	-
	D06	1.85	12.7	0.8	4.8	-	-	1.35	5.2	0.85	3.9	0.1	1.3	-	-
	D07	3.45	20.9	0.8	7.6	-	-	2.15	11	0	0.4	0	0.4	-	-
Autumn	*D01*	0.3	2.8	0.8	4	-	-	1.1	4.9	0.3	2.6	0	0.1	-	-
	D02	1	2.9	1.4	7.2	-	-	0.9	3.1	0.7	1.6	0.1	0.4	-	-
	D03	6.4	37.7	16.4	92.5	-	-	5.1	29.9	0	0.4	0	0.2	-	-
	D04	0.2	2.4	0.5	3.4	0	0.1	1.5	6.6	0	0.5	0	0.6	0	0.1
	D05	0.2	3.6	0.7	3.6	0	0.1	1.1	4.6	0.5	1.7	0	0.4	0	0.1
	D06 (R)	0	8	0	8.6	-	-	0	3.3	0	0.1	0	0.1	-	-
	D07	0.1	3.1	0	0.9	-	-	0	1.3	0	0.2	0	0.1	-	-

4.5 Importance of Bat Population Recorded at the Site

Ecological evaluation within this section follows a methodology that is set out in Chapter three of the '*Guidelines for Assessment of Ecological Impacts of National Roads Schemes'* (NRA, 2009).

All bat species in Ireland are protected under the Bonn Convention (1992), Bern Convention (1982) and the EU Habitats Directive (92/43/EEC). Additionally, in Ireland bat species are afforded further protection under the Birds and Natural Habitats Regulations (2011) and the Wildlife Acts 1976, as amended. No bat roosts were identified within the footprint of the Proposed Project. Bats as an Ecological Receptor have been assigned ***Local Importance (Higher value)*** on the basis that the habitats within the Site are utilized by a regularly occurring bat population of Local Importance.

A small number of roosting soprano pipistrelles and Leisler's bats were identified at two locations during the 2025 surveys, approximately 150 m and 140 m from Turbine 5. In addition, a brown long-eared bat was recorded at one of the structures during the 2023 roost surveys (refer to **Appendix 4**). These roost features are located outside the main construction footprint of the Proposed Project. The linear features associated with these structures, including adjacent treelines and hedgerows used for commuting and foraging, will be retained and enhanced as part of the Proposed Project design, thereby maintaining connectivity and guiding bat activity away from nearby turbines.

No large or significant maternity roosts (i.e. >100 individuals or of National Importance) were identified within the Site.

5. RISK AND IMPACT ASSESSMENT

This risk and impact assessment has been undertaken in accordance with NatureScot (2021). As per the guidance, wind farms present four potential risks to bats:

- Collision mortality, barotrauma and other injuries
- Loss or damage to commuting and foraging habitat
- Loss of, or damage to, roosts
- Displacement of individuals or populations

For each of these four risks, the detailed knowledge of bat distribution and activity within the Site has been utilized to predict the potential effects of the Proposed Project on bats.

5.1 Collision Mortality

5.1.1 Assessment of Site-Risk

The likely impact of the Proposed Project on bats is related to site-based risk factors, including habitat and development features. The site risk assessment, as per Table 3a of the NatureScot (2021) guidance, is provided in Table 5-1 below.

Table 5-1 Site-risk level determination for the Proposed Project (adapted from NatureScot, 2021)

Criteria	Site-specific Evaluation	Site Assessment
Habitat Risk	Two small roosting sites were confirmed within the Site. However, the habitats within the Site generally provide low quality commuting and foraging habitat that could be used by small numbers of bats. It is an isolated site, not extensively connected to the wider landscape by prominent linear features. Despite the presence of some sparse linear features such as hedgerows, treelines and stone walls, it does not provide a habitat that could be used extensively by foraging bats or meet any of the criteria of a *High* risk site as set out in Table 3a of NatureScot, 2021.	*Low*
Project Size	Following the criteria set out in NatureScot (2021), the Proposed Project is classified as a *Medium* scale development. While the Proposed Project comprises fewer than 10 turbines (seven in total), which would typically fall within the *Small* scale category, the turbine height exceeds 100 m and therefore elevates the Proposed Project to *Medium* scale. No other wind energy developments are located within 5 km of the Site. However, five wind energy developments are present within 10 km, with a further two located within 15 km.	*Medium*
Site Risk Assessment (from criteria in Table 3-10)		***Low* Site Risk (2)**

The Site is located in an area of predominantly agricultural grassland and peatland habitats. As per table 3a of the NatureScot Guidance (2021), it has a *Low* habitat risk score. As per Table 3a, the Proposed Project is a *Medium* project size (7 turbines). The cross tabulation of a *Medium* project on a *Low*-risk site results in an overall risk score of ***Low*** (NatureScot Table 3a).

5.1.2 Assessment of Collision Risk

The following high-risk species were recorded during the dedicated surveys:

- Leisler's bat,
- Common pipistrelle,
- Soprano pipistrelle,
- Nathusius' pipistrelle.

The Overall Risk Assessment for high collision risk species is provided in the sections below. Overall Risk was determined, in accordance with Table 3b of NatureScot guidance (**Appendix 3**), by a cross-tablature of the site risk level (i.e. *Low*) bat activity outputs for each species. The assessment was carried out for both median and maximum activity categories in order to provide insight into typical bat activity (i.e. median values) and activity peaks (i.e. maximum values).

In accordance with NatureScot (2021), the most representative activity metric (median or maximum) has been selected to inform the overall risk assessment for each species. Median values are considered to represent typical activity levels, while maximum values reflect short-term peaks which may not be representative of sustained collision risk.

The use of median activity levels as the primary indicator of collision risk is considered appropriate for this Site, as it reflects typical bat activity within predominantly open grassland and peatland habitats, where activity is generally low and concentrated around limited linear features.

As per NatureScot guidance there is no requirement to complete an Overall Risk Assessment for low-risk species.

During the extensive suite of surveys undertaken the following low risk species were recorded:

- *Myotis* spp.,
- Brown long-eared bat,
- Lesser horseshoe bat.

Overall activity levels were *Low* for the above species therefore no significant collision related effects are anticipated.

5.1.2.1 Leisler's bat

The Site is within the current range of the Leisler's bat (NPWS, 2025). Leisler's bats are classed as a rarer species of a high population vulnerability which have a high collision risk (Table 3-10). Leisler's bats were recorded during activity surveys across the Site. When assessed in the context of the identified site risk and in line with Table 3b (NatureScot, 2021) overall activity risk for Leisler's bat was found to be ***Low*** for all seasons at typical activity levels and ***Medium*** for all seasons at peak activity levels (See Table 5-2 below).

Based on site visit and survey data, including walked transects, it is determined that the Typical Activity (i.e. Median) is reflective of the nature of the Site, which consists of grassland and peatland habitats, with smaller areas of woodland and forestry as well as hedgerows and treelines.

Thus, there is *Low* collision risk level assigned to the local population of Leisler's bat in all seasons.

Table 5-2 Leisler's bat - Overall Risk Assessment

Survey Period	Site Risk	Typical Activity (Median)	Typical Risk Assessment	Activity Peaks (Maximum)	Peak Risk Assessment
Spring	Low (2)	Low-Moderate (2)	Typical Risk is **Low** (4)	High (5)	Peak Risk is **Medium** (10)
Summer		Low-Moderate (2)	Typical Risk is **Low** (4)	High (5)	Peak Risk is **Medium** (10)

Autumn		Low (1)	Typical Risk is **Low** (2)	Moderate (3)	Peak Risk is **Medium** (6)

5.1.2.2 Soprano pipistrelle

This Site is within the current range of the soprano pipistrelle bat (NPWS, 2025). Soprano pipistrelle bats are classed as a common species of a medium population risk which have a high potential collision risk (Table 3-10). Soprano pipistrelle was recorded during activity surveys across the Site. When assessed in the context of the identified site risk and in line with Table 3b (NatureScot, 2021) overall activity risk for soprano pipistrelle was found to be ***Low*** across all seasons at typical activity levels. At peak activity levels, risk was as assessed as ***Medium*** for all survey periods (See Table 5-3 below).

Based on site visit and survey data, including walked transects, it is determined that the Typical Activity (i.e. Median) is reflective of the nature of the Site, which consists of grassland and peatland habitats, with smaller areas of woodland and forestry as well as hedgerows and treelines.

Thus, there is *Low* collision risk level assigned to the local population of soprano pipistrelle bat in all seasons.

Table 5-3 Soprano pipistrelle - Overall Risk Assessment

Survey Period	Site Risk	Typical Activity (Median)	Typical Risk Assessment	Activity Peaks (Maximum)	Peak Risk Assessment
Spring	Low (2)	Low-Moderate (2)	Typical Risk is **Low** (4)	Moderate-High (4)	Peak Risk is **Medium** (8)
Summer		Low (1)	Typical Risk is **Low** (2)	Moderate-High (4)	Peak Risk is **Medium** (8)
Autumn		Low-Moderate (2)	Typical Risk is **Low** (4)	Moderate-High (4)	Peak Risk is **Medium** (8)

5.1.2.3 Common pipistrelle

This Site is within the current range of the common pipistrelle bat (NPWS, 2025). Common pipistrelle bats are classed as a common species of a medium population risk which have a high collision risk (Table 3-10). Common pipistrelles were recorded during activity surveys across the Site. When assessed in the context of the identified site risk and in line with Table 3b (NatureScot, 2021) overall activity risk for common pipistrelle was found to be ***Low*** at typical activity levels in spring, summer and autumn. The risk for peak activity levels were assessed as ***Medium*** for all seasons. (See Table 5-4 below).

Based on site visit and survey data, including walked transects, it is determined that the Typical Activity (i.e. Median) is reflective of the nature of the Site, which consists of grassland and peatland habitats, with smaller areas of woodland and forestry as well as hedgerows and treelines

Thus, there is *Low* collision risk level assigned to the local population of common pipistrelle in all seasons.

Table 5-4 Common pipistrelle - Overall Risk Assessment

Survey Period	Site Risk	Typical Activity (Median)	Typical Risk Assessment	Activity Peaks (Maximum)	Peak Risk Assessment
Spring	Low (2)	Low-Moderate (2)	Typical Risk is **Low** (4)	High (5)	Peak Risk is **Medium** (10)
Summer		Low-Moderate (2)	Typical Risk is **Low** (4)	Moderate-High (4)	Peak Risk is **Medium** (8)
Autumn		Low-Moderate (2)	Typical Risk is **Low** (4)	Moderate-High (4)	Peak Risk is **Medium** (4)

5.1.2.4 Nathusius' pipistrelle

This Site is within the current range of the Nathusius' pipistrelle bat (NPWS, 2025). Nathusius' pipistrelle bats are classed as a rarer species of a high population risk which have a high collision risk (Table 3-10). Nathusius' pipistrelle bats were recorded during activity surveys at two locations within the Site (D04 & D05) during the autumn survey period only. When assessed in the context of the identified site risk and in line with Table 3b (NatureScot, 2021) overall activity risk for Nathusius' pipistrelle bats was found to be ***Low*** at typical and peak activity levels across all survey periods (See Table 5-5 below).

Based on site visit and survey data, including walked transects, it is determined that the Typical Activity (i.e. Median) is reflective of the nature of the Site, which consists of grassland and peatland habitats, with smaller areas of woodland and forestry as well as hedgerows and treelines.

Thus, there is *Low* collision risk level assigned to the local population of Nathusius' pipistrelle bat in all seasons.

Table 5-5 Nathusius' pipistrelle - Overall Risk Assessment

Survey Period	Site Risk	Typical Activity (Median)	Typical Risk Assessment	Activity Peaks (Maximum)	Peak Risk Assessment
Spring	Low (2)	Nil (0)	Typical Risk is **Low** (0)	Nil (0)	Peak Risk is **Low** (0)
Summer		Nil (0)	Typical Risk is **Low** (0)	Nil (0)	Peak Risk is **Low** (0)
Autumn		Low (1)	Typical Risk is **Low** (2)	Low-Moderate (2)	Peak Risk is **Low** (4)

5.1.3 Collision Risk Summary

In addition to activity levels, site-specific observations indicate that bat movement is largely directed away from turbine locations. Emergence surveys confirmed that bats associated with nearby roosts predominantly commute towards adjacent treelines and foraging habitats located away from the nearest turbine (Turbine 5). Furthermore, the retention and enhancement of linear features within the Site, including the strategic planting of new hedgerows and treelines, has been designed to reinforce habitat connectivity and guide bat activity away from turbine locations. This reduces the likelihood of interaction between bats and turbine rotor-swept areas and is an important factor in reducing overall collision risk.

Site-level collision risk for high collision risk species was assessed as *Low* at typical activity levels and *Medium* at peak activity levels, with the exception of Nathusius' pipistrelle, which was assessed as *Low* under both scenarios.

The use of median activity levels is considered to provide the most representative assessment of collision risk at this Site, as peak activity values reflect short-duration events rather than sustained levels of bat activity. Overall, bat activity is consistent with the predominantly open nature of the Site, where suitable commuting and foraging habitat is limited and largely confined to discrete linear features.

Elevated activity levels recorded at detectors D03 and D06 (Table 5-6) are associated with localised habitat features (treelines and hedgerows), with high activity of common and soprano pipistrelles recorded at D03 in autumn and at D06 in spring only. These areas represent small-scale, habitat-driven increases in activity rather than widespread elevated risk across the Site. In addition, habitat modifications associated

with the implementation of bat buffers will reduce the suitability of these areas for bat activity within turbine proximity.

Importantly, site-specific observations indicate that bat commuting behaviour is largely directed away from turbine locations, with activity concentrated along existing linear features. The design of the Proposed Project incorporates the retention, reinforcement and extension of these features, with new planting specifically configured to guide bat movement away from turbines and maintain connectivity with the wider landscape.

A monitoring and mitigation strategy has been developed in accordance with NatureScot (2021) and BCI (2026), informed by site-specific data and described in further detail below. This includes post-construction monitoring and adaptive curtailment where required, ensuring that any residual risk can be effectively managed.

On this basis, the overall collision risk is considered to be low and not significant, taking into account the nature of the Site, the spatial distribution of bat activity, and the implementation of embedded and adaptive mitigation measures.

Table 5-6 Detector locations where High median bat activity levels were recorded for high collision risk species during seasonal surveys in 2025

Detector ID	Closest Turbine	Species	*High* Median Activity Survey Period
D03	T02	Common pipistrelle	Autumn 2025
D03	T02	Soprano pipistrelle	Autumn 2025
D06	T06	Common pipistrelle	Spring 2025
D06	T06	Soprano pipistrelle	Spring 2025

The *High* median activity recorded for common and soprano pipistrelles was spatially localised and associated with detectors positioned near linear features, including hedgerows and treelines. These activity peaks are therefore considered to be habitat-driven rather than indicative of widespread elevated collision risk across the Site. The implementation of bat buffers, including the removal or management of linear features within turbine risk zones, will directly reduce the attractiveness and functionality of these areas for pipistrelle commuting and foraging activity in proximity to turbines. On this basis, collision risk for common and soprano pipistrelles is considered to be adequately addressed through habitat-based mitigation, including turbine buffers, vegetation management and the strategic location of replacement planting away from turbine risk zones.

By contrast, Leisler's bat activity was recorded more widely across the Site and is less dependent on linear habitat features than pipistrelle species. Leisler's bat is an open-air, higher-flying species and therefore collision risk is less likely to be fully reduced through habitat modification alone. For this species, targeted curtailment is considered the most appropriate mitigation measure to reduce residual collision risk during the periods and environmental conditions associated with elevated activity.

5.2 Loss or Damage to Commuting and Foraging Habitat

The Site is predominantly characterised by open grassland and peatland habitats, which provide relatively low suitability for bat commuting and foraging. However, linear features such as treelines, hedgerows and stone walls are present locally and provide suitable habitat for commuting and foraging bats.

The majority of turbines are located within agricultural grassland and cutover peatland, thereby minimising direct impacts on these linear features. Approximately 1.3 km of linear vegetation will be removed within and around the Proposed Project infrastructure footprint, including the Proposed Grid Connection, to facilitate the construction of turbine bases, access tracks and associated infrastructure. This includes vegetation removal required to implement bat buffers, as detailed in Section 6.1.3. In addition, approximately 0.7 ha of conifer trees will be removed. The extent of vegetation removal is presented in Figure 6-1, with further detail provided in Chapter 6 of this EIAR.

In the absence of appropriate design, the loss or degradation of commuting and foraging habitat has the potential to reduce feeding opportunities and displace bat activity. The maintenance of ecological connectivity is also a key objective of the Mayo County Development Plan, as outlined in Section 4.2.1.

To address this, a replanting and habitat enhancement plan has been developed (Section 6.1.5, Appendix 6-4 BMEP). This includes the provision of approximately 2.5 km of new linear planting along selected field boundaries, as well as the bolstering and reinforcement of existing linear features. These measures are designed to enhance and strengthen habitat connectivity within the Site. The location of this planting has been strategically selected to guide bat movement away from turbine locations (i.e. outside bat buffer zones) and to maintain connectivity between confirmed roost locations and the wider landscape. This will result in a net gain of approximately 1.2 km of linear habitat features within the Site.

While the removal of linear vegetation will result in a short-term reduction in connectivity, habitat functionality is expected to be re-established within approximately 3–10 years. In addition, approximately 3.5 ha of native broadleaved woodland will be planted within the Site, resulting in a net gain of higher-quality woodland habitat. These measures also serve to direct bat activity away from turbine locations, further reducing potential turbine interaction risk. On this basis, no permanent loss or damage to commuting or foraging habitat is anticipated; instead, a measurable net gain in both the extent and quality of habitat will be achieved.

Minor accommodation works will also be required along the turbine delivery route and at the temporary site entrance (see Chapter 4, Section 4.6.2.1), including the removal of sections of stone wall and the pruning or removal of a small number of trees. The stone walls and hedgerows affected are assessed as having *Low* suitability for commuting and foraging bats (Section 4.3.1.2), while treelines within the TDA works areas were assessed as having *Moderate* suitability. These works are temporary and will be reinstated/reseeded following completion of turbine delivery.

The Site lies within the current known range of lesser horseshoe bat (Article 17). This species was recorded occasionally (12 bat passes) during the 2025 baseline surveys, with detections recorded at low levels in spring and autumn only, indicating that the Site provides seasonally limited foraging and commuting opportunities. In Ireland, lesser horseshoe bats rely on sheltered, cluttered habitats such as broadleaved woodland, dense scrub, tall hedgerows, treelines and vegetated river corridors (NPWS, 2018; NPWS & VWT, 2022), which are largely absent across the Site. However, the implementation of the BMEP, including the establishment of native woodland and enhancement of linear habitats, will improve the suitability of the Site for bat foraging and commuting, including for lesser horseshoe bat. Overall, the Proposed Project is not expected to adversely affect foraging or commuting opportunities for this species and will instead contribute to the creation of suitable habitat, thereby supporting its conservation status at a local level.

Taking into account the limited baseline suitability of the Site, the retention and enhancement of key linear features, and the implementation of habitat enhancement measures, no significant effects in relation to habitat loss or fragmentation are anticipated. Instead, the Proposed Project will result in a net gain in both the extent and quality of commuting and foraging habitat for bats, with enhanced connectivity and habitat structure providing improved conditions for bat activity across the Site.

5.3 Loss of, or Damage to, Roosts

The Site is predominantly located within agricultural grassland and peatland habitats, which provide generally low suitability for roosting bats. A small number of structures and trees within the Site were identified as having roosting potential, with two structures confirmed as supporting small numbers of roosting bats. These roosts are located outside the Proposed Project footprint and will not be affected by construction or operational activities.

Tree removal is required at a number of turbine locations to facilitate the implementation of bat felling buffers (Section 6.1.3). None of the trees within these areas were identified as supporting potential roost features (PRFs), and therefore no loss of roosting habitat is anticipated in association with turbine infrastructure.

Vegetation clearance associated with the Proposed Grid Connection includes the removal of a small number of trees of mixed species. A limited number of these trees were identified as supporting features with the potential to accommodate individual bats or small numbers of bats (*PRF-I*), including cavities, cracks and areas of mature ivy. No evidence of bat roosting was recorded during detailed inspections of these features. As such, while a minor loss of potential roosting features will occur, there is no evidence to indicate that any active roosts will be affected.

The Turbine Delivery Accommodation (TDA) works include localised removal of sections of stone wall and the pruning or removal of a small number of trees. The stone walls were assessed as having no roosting suitability, while trees proposed for pruning were generally of low suitability. A small number of trees were identified as supporting PRF-I; however, these features will be retained. Accordingly, no loss of roosting habitat is anticipated in association with the TDA works.

As a precautionary measure, pre-commencement surveys will be undertaken prior to tree removal and pruning to confirm the absence of roosting bats. Although no evidence of roosting bats was identified during the surveys, bats are a mobile species, and roosting conditions may change over time. The requirement for a pre-commencement survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice, with the purpose of confirming the baseline conditions at the time of works.

A review of desk study information confirms that lesser horseshoe bat roosts are present within the wider landscape; however, all known roosts are located at distances greater than 6 km from the Site and beyond the core foraging range of the species (NPWS, 2018). No suitable roosting features for lesser horseshoe bat were identified within the Site. On this basis, no direct or indirect effects on lesser horseshoe bat roosts are anticipated.

No large or significant maternity roosts were identified within the Site. The confirmed roosts are small in scale and will be retained. While a limited number of trees with low roosting potential will be removed, no evidence of roosting bats was recorded, and appropriate precautionary measures will be implemented.

Bat boxes will be installed along retained treelines in the southernmost aspect of the Site, outside bat buffers and away from potential collision risk zones, to provide additional roosting opportunities and contribute to a net gain in roosting habitat.

On this basis, no loss of, or damage to, bat roosts is anticipated. The Proposed Project will maintain existing roosting resources and provide additional roosting opportunities, resulting in a slight positive effect on roosting habitat within the Site.

5.4 Displacement of Individuals or Populations

Displacement refers to the avoidance of areas by bats due to disturbance associated with wind farm infrastructure, including turbine presence, operational noise, lighting, or changes to habitat structure. Displacement effects may result in reduced use of previously occupied commuting or foraging areas and, in extreme cases, could contribute to population-level effects if alternative habitat is unavailable (NatureScot, 2021).

The potential for displacement at the Site has been assessed with reference to the scale and nature of habitat affected, baseline bat activity levels, and the availability of alternative habitats within the surrounding landscape.

The Bat Habitat Suitability Appraisal identified that the majority of habitats within the Site are of *Low* to *Moderate* suitability for bat commuting and foraging, with *Moderate* suitability largely associated with linear features and localised habitat edges. Ground-level static detector surveys and manual transects recorded generally low levels of bat activity, with activity dominated by common, soprano pipistrelle and Leisler's bat, and characterised by spatially and temporally limited peaks rather than sustained high use of specific areas.

In accordance with current guidance, including recent recommendations from Bat Conservation Ireland (BCI, 2026), potential disturbance effects associated with lighting and operational noise have been considered.

During the construction phase, temporary security and task lighting may be required around construction compounds and the proposed on-site substation. These lighting requirements will be temporary and localised in nature. Lighting will be designed and managed to minimise light spill onto adjacent habitats through the use of directional, low-intensity, warm-spectrum lighting, cowls/shields where appropriate, and activation only where required for health, safety and security purposes. No permanent illumination of retained treelines, hedgerows or other key bat commuting features is proposed.

During the operational phase, external lighting associated with the proposed 110 kV substation will be installed in accordance with contractor and EirGrid security and operational requirements. Operational lighting requirements are expected to be limited and infrequently used. Any permanent lighting will be designed to minimise illumination of adjacent habitats and linear features through directional lighting design and minimisation of unnecessary light spill. Given the low to moderate suitability of habitats within the Site, the low overall levels of recorded bat activity, and the retention of dark commuting corridors, significant lighting-related displacement effects are not anticipated.

Operational noise associated with the wind turbines and substation will be primarily limited to low-frequency audible noise, which does not overlap with the ultrasonic frequencies used by bats for echolocation. On this basis, operational noise is not considered to represent a significant pathway for behavioural disturbance in the context of the Proposed Project.

Given the low overall activity levels, the absence of high-quality foraging habitat or large roosts within the Site, the limited and controlled nature of potential disturbance sources, and the retention and enhancement of habitat connectivity, any disturbance effects are expected to be localised and temporary. The Proposed Project will result in a net gain in both linear habitat and native broadleaved woodland, which will enhance commuting and foraging opportunities within the Site. These measures will strengthen habitat connectivity and provide alternative and improved resources for bats, thereby reducing the likelihood of displacement. There is no evidence to suggest that bats regularly using the Site would be displaced from critical habitat or that population-level effects would occur.

On this basis, the potential for displacement of individual bats or bat populations as a result of the Proposed Project is assessed as not significant, and no specific mitigation measures are required beyond the embedded design measures already incorporated into the project.

6. BEST PRACTICE AND MITIGATION MEASURES

This section describes the best practice and site-specific mitigation measures that are in place to avoid and reduce the potential for significant effects on local bat populations.

6.1 Standard Best Practice Measures

6.1.1 Noise Restrictions

During the construction phase, all plant and equipment will be operated in accordance with the Construction Plant and Equipment Permissible Noise Levels Regulations (S.I. No. 632 of 2001). Plant machinery will be switched off when not in use, and works will be managed to minimise unnecessary noise generation.

Operational noise associated with the Proposed Project will primarily comprise low-frequency audible noise generated by wind turbines and substation infrastructure (e.g. transformer hum and associated cooling systems). These sources operate outside the ultrasonic frequency range used by bats for echolocation and navigation.

While limited ultrasonic emissions have been hypothesised from certain electrical components, available evidence indicates that such emissions, where present, attenuate rapidly over very short distances and are unlikely to extend beyond the immediate vicinity of the source. Given the scale and nature of the proposed electrical infrastructure, no significant pathway for interference with bat echolocation or behaviour is identified.

Notwithstanding this, all electrical infrastructure will be specified, installed and maintained in accordance with relevant standards and manufacturer guidance to minimise the potential for unintended high-frequency noise emissions.

On this basis, operational noise is not considered to represent a pathway for disturbance, displacement or behavioural effects on bats, and no specific mitigation measures are required beyond standard best practice and embedded design measures.

6.1.2 Lighting Restrictions

In accordance with current best practice, including the Institute of Lighting Professionals Guidance Note 08/23 (ILP, 2023) and Bat Conservation Ireland guidance (BCI, 2026), a "dark corridor" approach will be implemented across the Site to protect light-sensitive bat species, including *Rhinolophus hipposideros* and *Myotis* spp. Exterior lighting during construction, operation and decommissioning will be designed to minimise light spill onto woodland, treelines, hedgerows and other boundary habitats.

During the construction phase, lighting requirements will be temporary and limited to areas where required for health, safety and security purposes, including temporary compounds and the proposed 110 kV on-site substation. Where works are required during hours of darkness, lighting will be directed away from retained treelines, hedgerows, roost features and bat commuting or foraging habitats to minimise potential disturbance to bats. Directional accessories, including baffles, hoods, cowls and louvres, will be used where appropriate to reduce light spill and focus illumination only where required. Construction lighting will be temporary, localised and minimised as far as practicable.

During the operational phase, lighting within the Proposed Project will be minimal. There is no requirement for continuous illumination of turbines beyond aviation lighting, which is not expected to significantly influence bat behaviour. External lighting associated with the proposed 110 kV substation and ancillary infrastructure will primarily comprise security and maintenance lighting and will be motion-activated rather than continuously illuminated. Operational lighting will be designed to minimise

illumination of adjacent habitats and retained commuting features through the use of directional luminaires and minimisation of unnecessary light spill.

All permanent lighting will utilise warm-spectrum LED sources with a correlated colour temperature of less than 2700K. Lighting design will seek to maintain dark commuting corridors along retained habitat features and minimise fragmentation of bat commuting routes.

The proposed lighting strategy will also adhere to Dark Sky Ireland principles, ensuring that lighting is only used where necessary, directed appropriately, and maintained at the minimum intensity required for operational and safety purposes.

Post-construction monitoring will be undertaken to assess any changes in bat activity patterns or collision risk. Should any unforeseen effects be identified, lighting measures will be reviewed and adapted as necessary to ensure no significant impacts on bats occur.

6.1.3 Tree Works and Vegetation Clearance

Tree pruning and vegetation clearance associated with the Proposed Project, including turbine infrastructure, the Proposed Grid Connection and Turbine Delivery Accommodation (TDA) works, will be undertaken in a manner that avoids impacts on roosting bats and complies with relevant legislation protecting bat species and their roosts.

A small number of trees associated with the Proposed Grid Connection and TDA works areas were identified as supporting Potential Roost Features suitable for individual bats (*PRF-I*), including features such as cavities, cracks and mature ivy cover. These features are considered capable of supporting individual bats or small numbers of bats. However, no evidence of roosting bats was identified during the surveys. While the likelihood of use is considered to be low, particularly where features are subject to disturbance (e.g. adjacent to roads and artificial lighting), a precautionary approach will be applied.

Where practicable, vegetation clearance and tree works will be scheduled outside the main bat activity season (typically April to October inclusive), when bats are most active and therefore more vulnerable to disturbance. Where this is not possible, works will be subject to appropriate pre-commencement inspection and suitable mitigation measures, as required.

A pre-commencement inspection of all trees identified as supporting *PRF-I* will be undertaken by a suitably qualified and, where required, licensed bat ecologist prior to any felling, pruning or vegetation clearance. These inspections will be carried out as close as practicable to the time of works to confirm the absence of roosting bats and to account for any changes in tree condition since the original assessment. The locations of these trees are provided in Table 6-1.

Table 6-1 Trees supporting PRF-I subject to pre-commencement inspection

Works Type	Location	Irish Grid Reference
Tree Removal	Proposed Grid Connection	M 28279 79024
Tree Removal	Proposed Grid Connection	M 28275 79032
Tree Removal	Proposed Grid Connection	M 28285 79006
Tree Removal	Proposed Grid Connection	M 28285 79013
Tree Pruning	TDA Works Area	M 34929 76130
Tree Pruning	TDA Works Area	M 34919 76136
Tree Pruning	TDA Works Area	M 34911 76143
Tree Pruning	TDA Works Area	M 31981 74790
Tree Pruning	TDA Works Area	M 31202 74941

In the event that evidence of roosting bats is identified during pre-commencement inspection or at any stage during works, all works in the vicinity will cease immediately. The project ecologist will advise on the appropriate next steps, and measures will be implemented in consultation with the National Parks and Wildlife Service (NPWS). Works will only proceed under licence where required, in accordance with the Wildlife Acts and the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

Trees that do not support potential roost features are considered to have no suitability for roosting bats and do not require specific bat mitigation measures.

6.2 Habitat Mitigation and Enhancement

The Proposed Project is predominantly located within grassland and peatland habitats, with smaller areas of woodland, forestry, hedgerows and treelines. Where practicable, existing linear features have been retained and avoided through the design process. However, some removal of hedgerows and trees is required to facilitate turbine infrastructure, access tracks, the Proposed Grid Connection and associated bat buffers (Figure 6-1).

In total, approximately 1.3 km of linear vegetation will be removed, along with approximately 0.7 ha of conifer plantation. To offset this, a comprehensive habitat replacement and enhancement plan has been developed (Appendix 6-4, BMEP). This includes the provision of approximately 2.5 km of new native linear planting, in addition to the bolstering and reinforcement of retained hedgerows and treelines. This will result in a net gain of approximately 1.2 km of linear habitat within the Site.

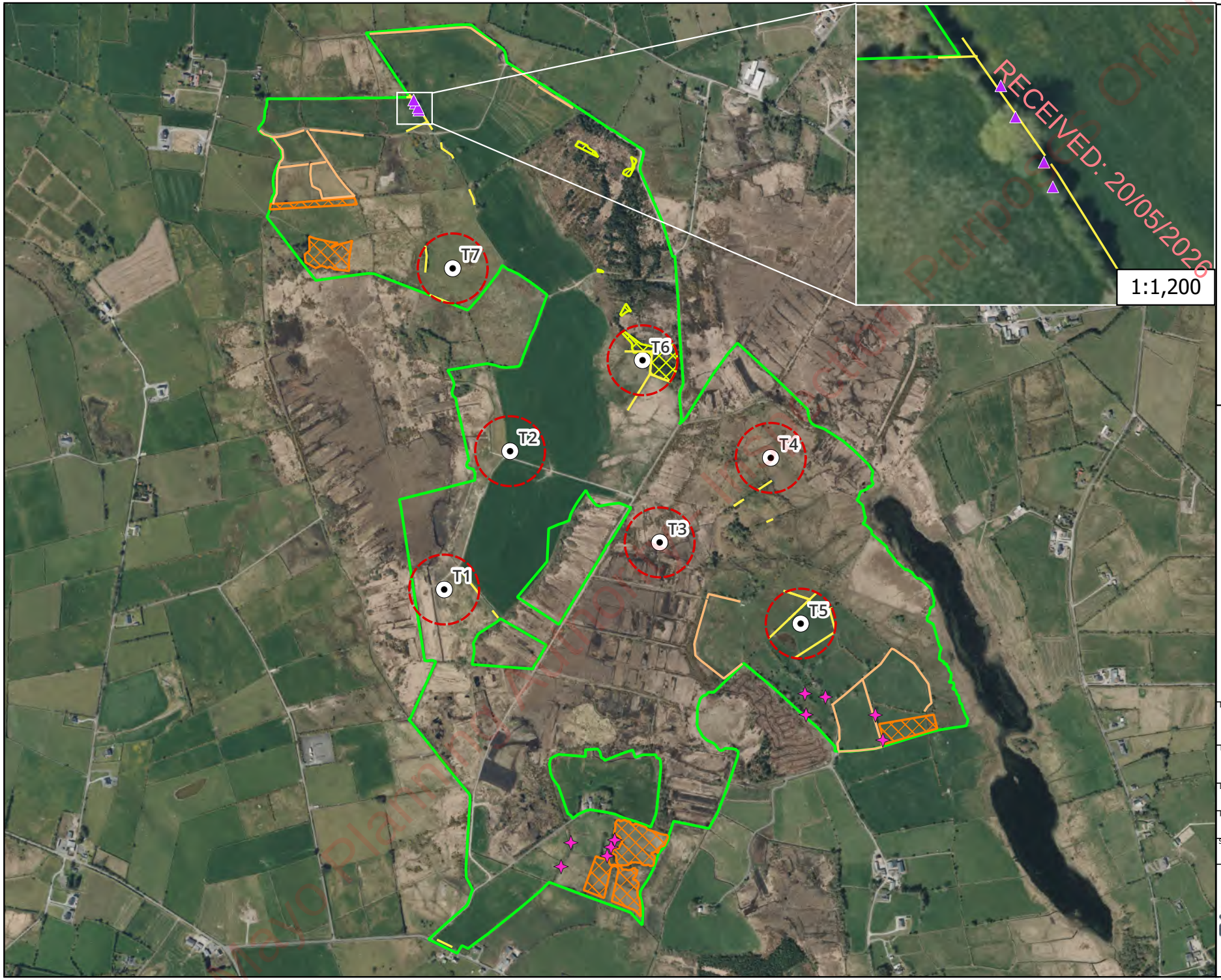
The location of new planting has been strategically designed to maintain and enhance habitat connectivity with surrounding established commuting and foraging corridors, while ensuring that planting is located outside turbine buffer zones and potential collision risk areas (Figure 6-1). Planting will be focused along field boundaries and existing connectivity routes, strengthening ecological networks and maintaining dark commuting corridors for bats. This approach is consistent with BCI (2026) guidance, which emphasises the importance of maintaining functional connectivity while avoiding the creation of features that may increase bat activity within turbine risk zones.

In addition, approximately 3.5 ha of native broadleaved woodland will be established within the Site, resulting in a net gain of woodland habitat. This will enhance foraging opportunities for bats and improve the structural diversity of habitats within the Site. All planting will comprise species native to the local area.

These measures will not only compensate for habitat loss but will provide enhanced commuting and foraging opportunities for bats in areas of the Site that are separated from turbine locations. The design of the planting, in combination with turbine buffers, ensures that suitable bat habitat is maintained and enhanced while reducing the likelihood of bat activity occurring within the rotor-swept area.

With regard to roosting habitat, a small number of trees supporting features suitable for individual bats (*PRF-I*) will be removed as part of the Proposed Grid Connection works. However, no evidence of roosting bats was identified during surveys. As a precautionary and enhancement measure, bat boxes will be installed within the Site to provide additional alternative roosting habitat. A total of 10 bat boxes will be erected at suitable locations, positioned at least 3 m above ground level, with a southerly orientation and away from artificial lighting. The bat boxes will be installed in advance of, or during, the construction phase. Proposed bat box locations are shown in Figure 6-1 and represent the most suitable locations within the Site for the provision of additional roosting opportunities. These measures will provide additional roosting habitat and contribute to a net gain in roosting habitat within the Site.

Overall, the habitat replacement and enhancement measures will ensure that ecological connectivity is maintained and improved across the Site, with a measurable net gain in both the extent and quality of bat habitat, while remaining consistent with the requirement to minimise collision risk.



Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout
- 85 m Bat Buffer
- Conifer Plantation Felling
- Linear Habitat Loss
- Native Woodland Replanting
- Linear Habitat Replanting
- Trees With PRF-Is To Be Removed
- Proposed Bat Box Locations

N

Drawing Title
Proposed Habitat Removal, Replacement and Enhancement

Project Title
Cunlaghfadda Green Energy Project

Drawn By	Checked By
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6.3 Collision Risk Mitigation Measures

6.3.1 Bat Felling Buffers

In accordance with NatureScot (2021), NIEA (2021) and BCI (2026), a minimum 50 m buffer is applied between turbine blade tips and habitat features used by bats (e.g. hedgerows, treelines and woodland edges), in order to reduce the risk of bat activity occurring within the rotor-swept zone.

While larger buffers (100–200 m) have been recommended in Eurobats Publication No. 6 and NIEA guidance for woodland habitats, these are not currently supported by consistent empirical evidence in the UK and Ireland and are therefore not applied as standard.

A 50 m buffer between turbine blade tip and the nearest habitat feature will be implemented, based on the turbine specification (blade length: 68 m; hub height: 92 m; tip height: 160 m). These buffers were calculated using the Natural England formula (Plate 6-1) and have been incorporated into the turbine layout.

The application of these buffers forms a key embedded mitigation measure to reduce collision risk, particularly for high-risk species such as Leisler's bat and pipistrelle species, which utilise linear landscape features for commuting but also forage more widely in open habitats. Maintaining separation from these features reduces the likelihood of bats moving through the rotor-swept zone during commuting movements.

To facilitate these buffers, areas of conifer plantation and other vegetation will be removed within the Proposed Wind Farm. These areas will be maintained as vegetation-free (i.e. less than 2 m in height) throughout the operational life of the Proposed Project. This ensures that no new edge habitats or linear features develop within the buffer zone that could attract bat activity towards turbine locations.

In accordance with BCI (2026), linear features within the buffer zone will be removed or managed such that they do not function as commuting or foraging corridors for bats. This includes the removal or reduction of vegetation associated with treelines, hedgerows and woodland edges, and the management of other features, such as stone walls, where necessary, to ensure they do not provide continuous linear guidance or enhanced foraging opportunities for bats within the turbine risk zone.

This approach ensures that habitat features which could otherwise attract bat activity are not present within the rotor-swept area, thereby reducing the likelihood of bat–turbine interactions.

It is necessary to calculate the distance between the edge of the habitat feature and the centre of the turbine (b), using the following formula:

$$b = \sqrt{(50 - bl)^2 - (hh - fh)^2}$$

Where, bl = blade length, hh = hub height, fh = feature height all in metres.

An example calculation is provided below, where b = 69.3 m (Plate 6-1).

In the case of the Proposed Wind Farm, the required bat felling buffer equates to approximately **85 m** from the turbine base to the nearest habitat feature. Bat buffers meeting this requirement will be established and maintained around all seven proposed turbines.

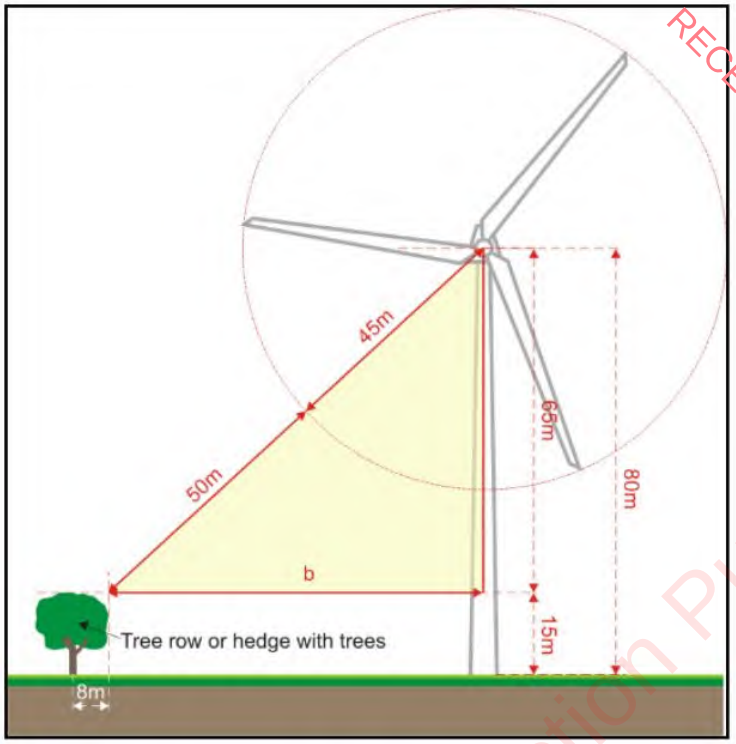

Plate 6-1 Calculation of buffer distances (NatureScot, 2021)

6.3.2 Blade Feathering and Curtailment

In accordance with current best practice guidance (NatureScot, 2021; NIEA, 2021; BCI, 2026), blade feathering will be implemented across all turbines as a standard embedded mitigation measure. When wind speeds fall below the turbine cut-in speed, turbine blades will be pitched parallel to the wind (i.e. feathered) to minimise rotation, thereby reducing the risk of bat collisions during periods when turbines would otherwise idle. Blade feathering will be applied at all turbines throughout the operational life of the Proposed Project and will not be limited spatially.

In addition to blade feathering, a site-specific curtailment strategy will be implemented to reduce collision risk to Leisler's bat. This approach has been selected because the residual collision risk for Leisler's bat cannot be addressed through habitat-based mitigation alone, given the species' open-air foraging behaviour, higher flight profile and widespread activity across the Site. Although activity for this species was classified as *Low Risk* at median levels, it was classified as *Medium Risk* at peak levels, thereby triggering the requirement for site-specific mitigation in accordance with BCI (2026) guidance for *Medium Risk (Amber)* scenarios.

Baseline survey results indicate that Leisler's bat is an important component of the bat assemblage at the Site. The species was recorded across all detector locations and throughout all survey periods, comprised a substantial proportion of the recorded activity, and a small mixed roost of Leisler's bat and soprano pipistrelle was confirmed within one of the surveyed structures. While Leisler's bat activity occurred at lower levels throughout the night during spring and summer, within-night analysis demonstrated that autumn activity was more concentrated around sunset and sunrise periods (Plate 4-43), indicating a potentially elevated collision risk during these time windows.

Common and soprano pipistrelles were also assessed as high collision risk species and were recorded at *High* median activity levels at specific detector locations. However, these records were associated with localised linear habitat features, which will be removed, modified or buffered as part of the embedded mitigation strategy. As common and soprano pipistrelles are more strongly associated with edge habitats and lower-level commuting and foraging activity, the removal of attractive linear features from turbine buffer zones, combined with replacement planting away from collision risk areas, is considered to provide an effective and proportionate means of reducing collision risk for these species. The proposed curtailment regime, although targeted primarily at Leisler's bat, will also provide additional incidental

protection for pipistrelle species active during the same low wind speed and warm temperature conditions.

On this basis, a condition-based curtailment regime will be implemented across **all turbines** during the principal Leisler's bat peak activity period, namely **August to September inclusive**, and will target the periods of highest recorded activity. Curtailment will operate under the following parameters:

- from sunset to **two hours after sunset**,
- from **two hours before sunrise** to sunrise,
- when wind speeds are below **6 m/s**, and
- when temperatures are above **10°C**.

Weather analysis undertaken during baseline surveys indicated that higher levels of bat activity were associated with lower wind speeds and higher temperatures, with approximately 90% of activity occurring at wind speeds below 2 m/s (ground level) and temperatures above 9.5 °C. While these values are based on ground-level measurements and are not directly comparable to turbine nacelle height conditions, they are consistent with established patterns of increased bat activity under warm, low-wind conditions. On this basis, the selected thresholds of 6 m/s and 10°C are considered appropriate, precautionary and proportionate for the Proposed Project.

This targeted curtailment approach is informed directly by site-specific survey results and is designed to reduce collision risk during peak periods of Leisler's bat activity, while avoiding unnecessary turbine downtime outside these higher-risk periods.

The curtailment strategy will be monitored for the first year of operation in order to determine (a) whether it is working effectively and (b) whether the curtailment regime can be finetuned so that turbine down-time is minimised while ensuring the strategy remains effective in preventing causalities (NatureScot, 2021). Should monitoring indicate elevated activity or collision risk outside the defined seasonal or temporal windows, curtailment parameters will be refined accordingly in line with the adaptive mitigation approach outlined in NatureScot (2021) and BCI (2026).

This combined approach of blade feathering and targeted, site-specific curtailment ensures that collision risk is addressed through both baseline and peak-risk mitigation measures, in accordance with current best practice guidance.

6.4 Post-Construction Monitoring

A programme of post-construction monitoring (PCM) will be implemented to assess the effects of the Proposed Wind Farm on bat activity and collision mortality, and to evaluate the effectiveness of the mitigation measures described above, including blade feathering and site-specific curtailment.

The primary objective of the monitoring programme is to evaluate the effectiveness of the mitigation strategy and to ensure that the *Favourable Conservation Status* of local bat populations is maintained, as required under Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

The monitoring programme has been designed in accordance with NatureScot (2021), NIEA (2021) and BCI (2026) guidance and will follow an adaptive management approach.

In accordance with NatureScot (2021) and BCI (2026), PCM will comprise two integrated components:

- **Fatality monitoring (carcass searches)** to quantify collision mortality; and
- **Acoustic monitoring** to assess bat activity patterns and potential displacement or attraction effects.

Given that collision risk for Leisler's bat was identified as *Medium* at peak activity levels, with activity concentrated during late summer and early autumn and around sunset and sunrise periods, the monitoring programme is specifically designed to validate the effectiveness of the site-specific curtailment strategy.

6.4.1 Fatality Monitoring

Carcass searches will be undertaken to quantify bat mortality associated with turbine operation.

In accordance with NatureScot (2021) and BCI (2026), professionally trained canine search teams will be utilised as the primary method of carcass detection. This reflects the reduced efficiency of human-led searches in Irish upland and vegetated landscapes.

Searches will be undertaken at all turbines within a radius of **80 m from the turbine base**, equivalent to half the turbine tip height (160 m), in accordance with best practice guidance.

Search frequency will be as follows:

- **Peak season (mid-August to October):** weekly searches,
- **Standard season (April to mid-August):** fortnightly searches.

Carcass persistence (scavenger removal) trials and searcher efficiency (SEEF) trials will be undertaken to allow robust estimation of collision mortality.

- **Carcass persistence trials:** A minimum of 10 trial carcasses will be deployed and monitored (e.g. using camera traps or regular checks) to determine mean persistence time.
- **Searcher efficiency trials:** Searcher efficiency trials will be undertaken to quantify the probability of carcass detection. These trials will involve the placement of trial carcasses within the search area and subsequent assessment of detection rates by the survey team. The results will be used to derive site-specific correction factors for the estimation of collision mortality.

These data will be used to correct observed carcass counts and calculate realistic estimates of bat mortality.

6.4.2 Acoustic Monitoring

Post-construction acoustic monitoring will be undertaken to assess bat activity patterns and to validate the effectiveness of the curtailment strategy.

Static detectors will be deployed at ground level in accordance with the pre-construction survey design to allow direct comparison with baseline conditions.

In addition, **two turbines will be fitted with nacelle-mounted ultrasonic detectors**, in accordance with BCI (2026) guidance (minimum one detector per three turbines). These detectors will record bat activity at rotor height.

Nacelle-level activity will be compared with baseline and ground-level data to assess bat activity in relation to turbine operation.

Analysis will focus on:

- seasonal patterns of activity,
- within-night activity (particularly sunset and sunrise periods), and
- activity in relation to weather conditions and turbine operation.

6.4.3 Mortality Threshold and Adaptive Management

Collision mortality will be estimated using corrected carcass search data, accounting for carcass persistence and searcher efficiency.

For the purposes of this assessment, a threshold of **greater than one bat per turbine per year** is defined as a level at which collision mortality may be considered significant, in line with NIEA (2021) guidance.

The results of post-construction monitoring will be reviewed annually.

- Where monitoring demonstrates that collision mortality remains below this threshold and that mitigation measures are effective, the existing curtailment strategy will be maintained.
- Where mortality exceeds this threshold, curtailment measures will be strengthened. This may include extending the seasonal curtailment period, increasing the duration of nightly curtailment, or adjusting wind speed and temperature thresholds.

6.4.4 Monitoring Duration and Reporting

Post-construction monitoring will be undertaken for a minimum of three years following commissioning of the Proposed Wind Farm.

At the end of Year 3, a synthesis report will be prepared and submitted to the Planning Authority by the appointed bat ecologist on behalf of the wind farm operator. Where mortality remains below the defined threshold, the curtailment regime in place at that time will be maintained. Additional post-construction monitoring may be undertaken at five-year intervals from Year 5 of operation onwards, subject to the outcomes of the initial monitoring programme and agreement with the relevant authorities.

Where mortality exceeds the threshold, curtailment measures will be strengthened, and monitoring will be extended for a further two years.

An annual monitoring report will be prepared and submitted to the Planning Authority and relevant statutory consultees. Each report will include:

- bat activity data and analysis,
- observed fatalities and corrected mortality estimates,
- assessment of mitigation effectiveness, and
- recommendations for any required adjustments to the mitigation strategy.

Transition to Smart Curtailment (Optional Optimisation Pathway)

At the end of Year 3, and subject to the outcomes of post-construction monitoring, the Applicant may submit a **Mitigation Review Report** to the Planning Authority and the National Parks and Wildlife Service (NPWS), in accordance with BCI (2026) guidance.

Where monitoring demonstrates that collision mortality remains below the defined significance threshold and confirms that periods of elevated risk are confined to specific temporal or environmental conditions, the curtailment strategy may be refined to more accurately reflect the site-specific risk profile.

In this context, the Applicant may elect to implement a **Smart Curtailment system**, whereby turbine operation is dynamically controlled based on real-time detection of bat activity at rotor height (e.g. using nacelle-mounted detectors integrated with turbine control systems). Under such a system, turbines would curtail or shut down only when bats are detected within, or approaching, the rotor-swept zone, thereby directly targeting periods of actual collision risk.

This approach allows curtailment to be focused and responsive, rather than applied across broad seasonal or nightly windows, and may therefore reduce unnecessary turbine downtime while maintaining effective protection for bats.

In accordance with BCI (2026), implementation of Smart Curtailment must be supported by a minimum of three years of robust post-construction monitoring data demonstrating that refinement of the mitigation strategy is appropriate.

Where Smart Curtailment is implemented, a **post-implementation re-validation audit will be undertaken at intervals of approximately five years**, including fatality monitoring, ground-level acoustic monitoring

and at-height (nacelle) monitoring, to ensure that the system remains effective and continues to protect bat populations under changing environmental conditions.

6.5 Residual Effects

Not Significant Effect

Taking into account the design of the Proposed Project and the implementation of embedded and site-specific mitigation measures, no significant long-term residual effects on bats are anticipated.

With respect to collision mortality and barotrauma, the combination of turbine siting, application of bat felling buffers, blade feathering and targeted site-specific curtailment is expected to reduce collision risk to a level that is not significant at the local population scale. The effectiveness of these measures will be validated through post-construction monitoring, with an adaptive management framework in place to ensure that any unforeseen effects are addressed. On this basis, no significant residual effects are anticipated in relation to collision mortality.

No significant residual effects are anticipated in relation to the loss of, or damage to, roosts. Confirmed roosts are located outside the footprint of the Proposed Project and will not be affected. A precautionary approach to tree works, including pre-commencement surveys, will ensure that no potential roosts are impacted. In addition, the provision of bat boxes will result in a net gain in roosting opportunities within the Site.

With regard to displacement, the retention and enhancement of linear features, together with the implementation of a lighting strategy that maintains dark corridors, will ensure that commuting and foraging routes remain available. The proposed habitat enhancement measures will result in a net gain in both the extent and quality of foraging and commuting habitat. As such, no significant residual effects are anticipated in relation to displacement of individuals or populations.

A temporary residual effect at the local geographic scale is anticipated in relation to the loss of commuting and foraging habitat during the construction phase, due to the removal of sections of treelines and hedgerows required to facilitate infrastructure and turbine buffers. Although this loss will be offset through a comprehensive woodland and hedgerow enhancement and replanting programme, it will take approximately 3–10 years for newly planted vegetation to establish and restore full habitat functionality. During this period, a minor and temporary reduction in ecological connectivity may occur.

Overall, taking into account the mitigation measures implemented and the proposed habitat enhancement strategy, the Proposed Project will not adversely affect the conservation status of local bat populations.

6.6 Cumulative Effects

The Proposed Project has been considered in combination with other existing, permitted and proposed developments within the surrounding area that could give rise to cumulative effects on bats. This included a review of planning registers and available project information to identify relevant developments and their potential ecological effects. The projects considered are detailed in Section 2.8 of Chapter 2 of the EIAR.

Following the detailed assessment presented above, it is concluded that the Proposed Project will not result in any significant residual adverse effects on bats when considered in isolation.

No other wind energy developments are located within 5 km of the Proposed Project. However, five wind energy developments are located within 10 km, with a further two wind energy developments located within 15 km of the Site. In total, these developments comprise 30 turbines within the wider 15 km study area. These developments vary in scale, with a proportion comprising smaller turbines (e.g. ≤80 m tip height and including a 24 m turbine), which present a substantially lower collision risk to bats compared to modern commercial-scale turbines (c. 150–160 m tip height). As such, the potential cumulative collision risk is primarily associated with a subset of larger turbines rather than the total number of turbines within the study area.

The spatial distribution of these developments indicates that the majority are clustered within the eastern part of the wider study area, with no wind energy developments located to the west or south of the Proposed Project. This results in a clear spatial separation between the Proposed Project and other wind farm clusters.

In assessing cumulative effects, consideration was given to the potential for additive collision risk, shared use of commuting or foraging habitats, and the presence of roosts that could support bat populations exposed to multiple wind energy developments.

No evidence of roosts of conservation importance was identified within or in close proximity to the Proposed Project that would be subject to cumulative effects from multiple wind energy developments. Known roosts within the wider landscape are located at distances beyond the typical core foraging range for most species or are not spatially or ecologically connected to the Proposed Project. While highly mobile species such as Leisler's bat may range over wider areas, there is no evidence to suggest that individual roosts are functionally linked to multiple wind farm sites within the study area.

Furthermore, there is no evidence of strong landscape connectivity (e.g. continuous treelines, woodland corridors or riparian features) linking the Proposed Project to other wind energy developments. As such, the Site is not considered to form part of a wider network of connected habitats that would facilitate regular bat movement between wind farm sites. This substantially reduces the potential for cumulative effects arising from repeated exposure of the same bat populations to multiple turbine arrays.

Although Leisler's bat was recorded across the Site, activity levels were characterised by site-specific temporal peaks rather than sustained high use of the wider landscape. Given the wide-ranging behaviour of this species, the dispersed distribution of wind energy developments within the study area, and the absence of connectivity between sites, any collision risk is considered to be spatially distributed rather than concentrated on a single local population.

In addition, the implementation of mitigation measures at the Proposed Project, including turbine buffers, blade feathering and targeted curtailment, will reduce collision risk at this Site. Similar mitigation is typically applied at other wind energy developments in Ireland, further reducing the likelihood of significant cumulative effects.

On this basis, taking into account the scale, distribution and separation of developments, the lack of habitat connectivity, the absence of shared roost influence, and the implementation of mitigation measures, no potential for significant cumulative effects on bat populations is anticipated.

7. CONCLUSION

This report presents a comprehensive assessment of the potential effects of the Proposed Project on bat populations. Surveys were undertaken in accordance with NatureScot (2021) guidance, and the assessment and mitigation have been informed by NatureScot (2021), NIEA (2021) and BCI (2026) guidance.

The assessment demonstrates that, following the implementation of embedded design measures and site-specific mitigation, the Proposed Project will not result in significant effects on bats. In particular, collision risk has been reduced through appropriate turbine siting, application of bat buffers, blade feathering and targeted curtailment, supported by a robust post-construction monitoring and adaptive management framework.

Habitat enhancement measures, including the planting of new linear features and native broadleaved woodland, together with the provision of bat boxes, will result in a net gain in foraging, commuting and roosting opportunities within the Site. These measures will improve ecological connectivity and enhance the suitability of the Site for bats over the medium to long term.

The Proposed Project aligns with the bat-related objectives of the Mayo County Development Plan (Section 4.2.1), through the protection and enhancement of key habitat features and the maintenance of ecological connectivity. The development will also contribute to renewable energy generation in accordance with national climate policy objectives.

Taking all of the above into account, and provided that the Proposed Project is constructed and operated in accordance with the design, best practice measures and mitigation described in this report, no significant effects on bats are anticipated at any geographic scale. The Proposed Project will not adversely affect the favourable conservation status of bat populations.

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APPENDIX 1

BAT HABITAT SUITABILITY APPRAISAL

Updated guidelines for assessing the potential suitability of a site for bats, based on the presence of habitat features (taken from Collins, 2023)

Potential Suitability	Description	
	Roosting Habitats in Structures	**Potential Flight- Paths and Foraging Habitats**
None	No habitat features on site likely to be used by any roosting bats at any time of the year. (i.e. a complete absence of crevices/ suitable shelter at all ground/ underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flight-lines or generate/shelter insect populations available to foraging bats).
Negligible[a]	Negligible habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[b] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats, i.e. unlikely to be suitable for maternity and not a classic cool/stable hibernation site but could be used by individual hibernating bats[c].	Habitat that could be used by small numbers of bats as flight-paths such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[b] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation - the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for flight-paths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure with one or potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[b], and surrounding habitat. These structures have the potential to support high conservation status which is established after presence is confirmed.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

a) Negligible is defined as 'so small or unimportant as to be not worth considering, insignificant'. This category may be used where there are places that a bat could roost or forage (due to one attribute) but it is unlikely that they actually would (due to another attribute).

b) For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

c) Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten et al., 2016 and Jansen et al., 2022). Common pipistrelle swarming has been observed in the UK (Bell, 2022 and Tomlinson, 2020) and winter hibernation of numbers of this species has been detected at Seaton Delaval Hall in Northumberland (National Trust, 2018). This phenomenon requires some research in the UK, but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in prominent buildings in the landscape, urban or otherwise.

BCT Protocol for categorising the suitability of trees for bats (Collins, 2023).

Assessment	Description
NONE	Either no PRFs in the tree or highly unlikely to be any
FAR	Further assessment required to establish if PRFs are present in the tree
PRF	A tree with at least one PRF present

BCT Guidance for categorising suitability of PRFs for bats (Collins, 2023).

Assessment	Description
PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats.
PRF-M	PRF is suitable for multiple bats and may therefore be used by a maternity colony

APPENDIX 2

SITE RISK ASSESSMENT

Table 3a: *Stage 1 - Initial site risk assessment*

Site Risk Level (1-5)*	**Project Size**			
		Small	**Medium**	**Large**
Habitat Risk	**Low**	1	2	3
	Moderate	2	3	4
	High	3	4	5

Key: Green (1-2) - low/lowest site risk; Amber (3) - medium site risk; Red (4-5) - high/highest site risk.

* Some sites could conceivably be assessed as being of no (0) risk to bats. This assessment is only likely to be valid in more extreme environments, such as above the known altitudinal range of bats, or outside the known geographical distribution of any resident British species.

Habitat Risk	**Description**
Low	Small number of potential roost features, of low quality. Low quality foraging habitat that could be used by small numbers of foraging bats. Isolated site not connected to the wider landscape by prominent linear features.
Moderate	Buildings, trees or other structures with moderate-high potential as roost sites on or near the site. Habitat could be used extensively by foraging bats. Site is connected to the wider landscape by linear features such as scrub, tree lines and streams.
High	Numerous suitable buildings, trees (particularly mature ancient woodland) or other structures with moderate-high potential as roost sites on or near the site, and/or confirmed roosts present close to or on the site. Extensive and diverse habitat mosaic of high quality for foraging bats. Site is connected to the wider landscape by a network of strong linear features such as rivers, blocks of woodland and mature hedgerows. At/near edge of range and/or on an important flyway. Close to key roost and/or swarming site.

Project Size	**Description**
Small	Small scale development (≤10 turbines). No other wind energy developments within 10km. Comprising turbines <50m in height.
Medium	Larger developments (between 10 and 40 turbines). May have some other wind developments within 5km. Comprising turbines 50-100m in height.
Large	Largest developments (>40 turbines) with other wind energy developments within 5km. Comprising turbines >100m in height.

APPENDIX 3

OVERALL SITE RISK ASSESSMENT

Table 3b: *Stage 2 - Overall risk assessment*

Site risk level (from Table 3a)	Ecobat activity category (or equivalent justified categorisation)					
	Nil (0)	Low (1)	Low-moderate (2)	Moderate (3)	Moderate-high (4)	High (5)
Lowest (1)	0	1	2	3	4	5
Low (2)	0	2	4	6	8	10
Med (3)	0	3	6	9	12	15
High (4)	0	4	8	12	15	18
Highest (5)	0	5	10	15	20	25

The scores in the table are a product of multiplying site risk level and the Ecobat activity category (or equivalent). The activity categories equate to those given in Table 1 for high collision risk species. Nil (0) means no bat activity was recorded across the whole site, but caution is needed here, because although the values given in this column are "0", at sites where pre-construction surveys found no bat activity, there remains the possibility that new turbines could attract some bat species, thereby altering the level of risk that applies in reality.

Overall assessment:

Low (green)	0-4
Medium (amber)	5-12
High (red)	15-25

It is important to have an understanding of both "typical" and unusually high levels of bat activity at a site so that potentially important peaks in activity are not overlooked. It is therefore recommended that both the highest Ecobat activity category and the most frequent activity category (i.e. the median) are assessed separately in Table 3b and presented in the overall risk assessment. A judgement can then be made on which is the most relevant. It should be noted that presenting mean activity levels can be highly misleading where the data are highly skewed, as is frequently the case with bat activity at wind turbines (Lintott & Mathews, 2018).

APPENDIX 4

PREVIOUS BASELINE SURVEYS (2023)

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1. INTRODUCTION

This appendix provides supplementary data from bat surveys undertaken at the Site during the 2023 survey season. These surveys were designed and implemented in accordance with NatureScot (2021) guidance, and survey methodologies were consistent with those applied during the 2025 surveys, allowing the datasets to be interpreted together. An initial proposed layout in 2023 comprised 8 turbines, rather than the 7 included in the 2025 design. Accordingly, the 2023 bat surveys covered 8 locations to ensure compliance with NatureScot guidelines.

Surveys completed included:

- Bat habitat suitability appraisal
- Roost surveys
- Manual activity surveys
- Ground-level static detector surveys

The results presented here supplement the 2025 survey dataset and have been considered together with those more recent surveys in the EIAR impact assessment to inform baseline characterisation and the evaluation of potential effects on bats.

2. METHODS

2.1 Bat Habitat Suitability Appraisal

Bat walkover surveys were carried out throughout 2023. During these surveys, habitats within the Site were assessed for their suitability to support roosting, foraging and commuting bats. Connectivity with the wider landscape was also considered. The appraisal was undertaken across the entire Site during field walkover surveys, based on the turbine layout and site boundary available at the time of survey in 2023.

Suitability was assessed according to Collins (2016), which was the most up-to-date guidance at the time. This guidance provides a grading protocol for roosting habitats and for commuting and foraging areas. Suitability categories are divided into *High*, *Moderate*, *Low* and *Negligible*, as defined in the relevant guidance. This approach is consistent with subsequent guidance (Collins, 2023), and suitability categories remain directly comparable.

Bat habitat suitability appraisal was carried out in 2023 to classify habitats, assess bat roost potential, and identify features of value for foraging and commuting bats. Surveys were undertaken systematically across the Site (Table 2-1).

Table 2-1 Bat survey dates (2023)

Dedicated Bat Survey Dates
26th April 2023
14th June 2023
7th September 2023

2.2 Roost Surveys

Daytime Roost Inspections

A search for roosts was undertaken within 200m plus the maximum proposed rotor radius (i.e. 81.5m) of the proposed turbine locations (NatureScot, 2021). The aim was to determine the presence of roosting bats and the need for further survey work or mitigation. The Site was visited in April, June and September of 2023. A daytime bat walkover survey was carried out, and structures were assessed for their potential to support roosting bats following the categories according to Collins (2016) as *High*, *Moderate*, *Low* and *Negligible*.

Two structures were identified as potential roost features within the Site (IG references: M 29247 77612 and M 29077 77800; corresponding to Structure No. 3 and 1, respectively). These were subject to a roost assessment which comprised a detailed inspection of the interiors and exteriors to look for evidence of bat use, including live and dead specimens, droppings, feeding remains, urine splashes, fur oil staining and noises.

No trees with potential roost features were identified within the Site following bat habitat suitability appraisal and walk-over surveys.

Emergence Surveys

Emergence surveys at dusk were carried out which focused on the PRFs identified during the bat habitat appraisal. During these surveys, surveyors were equipped with Bat Logger M bat detectors (Elekon AG, Lucerne, Switzerland). This detector model was also used during the 2025 surveys. The emergence surveys commenced at least 15 minutes before sunset and concluded 1 hour and 30 minutes after sunset. Table 2-2 summarises survey effort in relation to emergence surveys. Where possible, species identification was made in the field and any other relevant information was also noted, e.g., numbers, behaviour, features used, etc. All bat echolocation was recorded for subsequent analysis to confirm species identifications.

Surveyors were located at PRFs identified during the daytime roost inspection surveys with a focus on potential access point and roosting features. The purpose was to identify any bat species, numbers, access points and roosting locations within the structure. Surveys were undertaken in weather conditions considered suitable for bat activity in accordance with guidance.

Table 2-2 Survey effort 2023 - Emergence surveys

Date	Surveyors	Sunset	Weather Conditions
26th April 2023	Kate Greaney & David Culleton	21:00	11 - 13°C; dry; calm
7th September 2023	Kate Greaney & David Culleton	20:13	22 - 23°C; dry; calm

2.3 Manual Transects

Manual activity surveys comprised walked transects after dusk. A series of representative transect routes were selected throughout the Site. The purpose of manual transects was to supplement static detector data and provide behavioural and spatial context to bat activity. Transect routes were prepared with reference to the proposed turbine layout, desktop and walkover survey results as well as any health and safety considerations and access limitations. As such, transect routes generally followed existing roads and tracks. Transect routes are presented in Figure 2-1.

Transects were walked by two surveyors, recording bats in real time. Dusk transect surveys began at sunset in June and approximately 90 minutes after sunset, immediately following the completion of emergence surveys in April and September, and were completed for up to 3 hours after sunset. This timing is consistent with standard transect survey methodology. Surveyors were equipped with active full spectrum bat detectors, the Batlogger M bat detector (Elekon AG, Lucerne, Switzerland), and all bat activity was recorded for subsequent analysis to confirm species identifications. Transects surveys were

undertaken in spring, summer and autumn of 2023. Table 2-3 summarises survey effort in relation to manual transects.

Table 2-3 Survey effort 2023 - Manual transects

Date	Surveyors	Sunset	Weather Conditions	Transect Length (km)
26th April 2023	Kate Greaney & David Culleton	21:00	11 - 13˚C; dry; calm	4.18 km
14th June 2023	Kate Greaney & David Culleton	20:13	22 - 23˚C; dry; calm	7.05 km
7th September 2023	Kate Greaney & David Culleton	21:00	11 - 13˚C; dry; calm	4.36 km
Total Survey Effort				**15.58 km**

2.4 Ground-level Static Surveys

Where developments have up to 10 turbines, NatureScot requires one detector per turbine. Given that 8 turbines were initially proposed during surveys carried out in 2023, 8 detectors were deployed to ensure compliance with NatureScot guidance. Automated bat detectors were deployed for at least 10 nights of suitable weather in spring (April - May), 20 nights in summer (June - mid-August) and 10 nights in autumn (mid-August - October), (NatureScot, 2021; NIEA, 2021). Detector locations were selected to represent the range of habitats and landscape features present within the Site and in proximity to proposed turbine locations. Figure 2-1 illustrates the location of ground-level static detectors in relation to the final turbine layout, with detector locations summarised in Table 2-4.

Table 2-4 Ground-level static detector locations (2023)

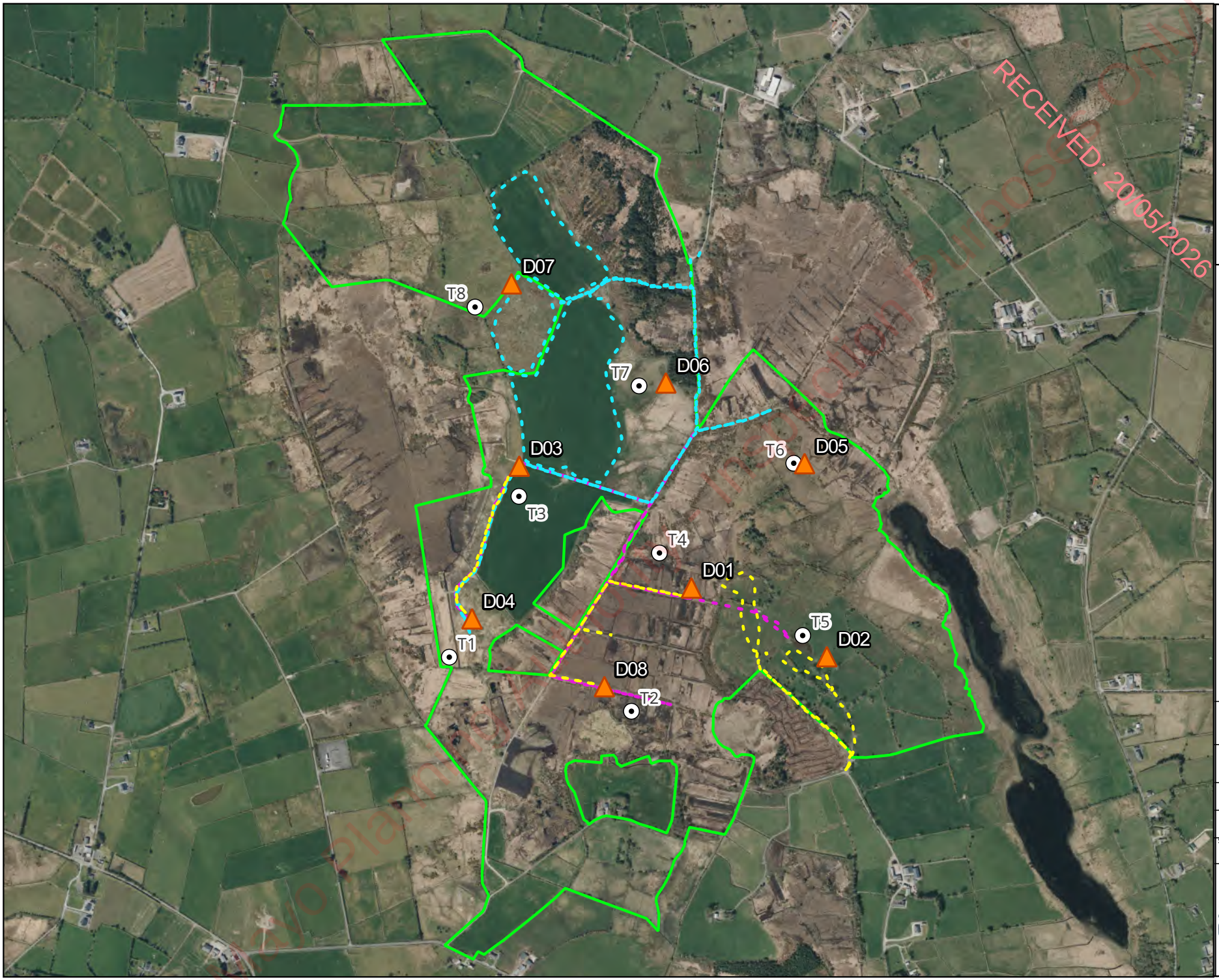
Detector ID	Location (Irish Grid Reference)	Habitat Context	Linear Feature within 50 m	Nearest Turbine
D01	M 28913 77859	Wet heath (HH3)	N/A	T01
D02	M 29243 77691	Wet grassland (GS4)	N/A	T02
D03	M 28493 78156	Improved agricultural grassland (GA1)	Hedgerow	T03
D04	M 28378 77783	Dry humid acid grassland (GS3)	Hedgerow/Treeline	T04
D05	M 29188 78162	Lowland blanket bog (PB3)	N/A	T05
D06	M 28850 78358	Wet grassland (GS4)	Treeline	T06
D07	M 28474 78600	Lowland blanket bog (PB3)	N/A	T07
D08	M 28700 77618	Wet grassland (GS4)	Hedgerow	T08

Full spectrum bat detectors, Song Meter SM4BAT (Wildlife Acoustics, Maynard, MA, USA), were employed using settings recommended for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. Detectors were set to record from 30 minutes before sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method when provided with GPS coordinates. Detector settings and deployment protocols were consistent with best practice guidance for static acoustic bat surveys.

Onsite weather monitoring was undertaken concurrently with static detector deployments. One Vantage Pro 2 (Davis Instruments, CA, UCS) was deployed each season and night-time hourly data was tracked remotely to ensure a sufficient number of nights with appropriate weather conditions were captured (i.e. dusk temperatures above 8 ˚C, wind speeds less than 5 m/s and no or only very light rainfall). This ensured that activity data were derived from conditions suitable for bat activity and comparable between seasons. Table 2-5 summarises survey effort achieved in 2023 for each of the detector locations.

Table 2-5 Survey effort 2023- Ground-level static detector surveys

Season	Survey Period	Total Survey Nights per Detector Location	Nights with Suitable Weather
Spring	13th April – 2nd May 2023	19	16
Summer	14th June – 11th July 2023	26	24
Autumn	7th – 20th September 2023	13	12
Total Survey Effort		**58**	**52**



Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout 2023
- Static Detector Locations
- Spring Transect Route 26.04.2023
- Summer Transect Route 14.06.2023
- Autumn Transect Route 07.09.2023

N

Drawing Title

Survey Effort 2023

Project Title	Cunlaghfadda Green Energy Project
Drawn By: KL	Checked By: CM
Project No.: 220825-e	Drawing No.: Figure 2-1
Scale: 1:12,000	Date: 03/04/2026

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2.5 Bat Call Analysis

All recordings from 2023 were later analysed using bat call analysis software Kaleidoscope Pro v5.1.9 (Wildlife Acoustics, MA, USA). The aim of this was to identify, to a species or genus level, what bats were present at the Site. Bat species were identified using established call parameters (Russ, 2012). Automated classifications generated by Kaleidoscope Pro were used as an initial screening tool only and were subject to subsequent manual verification. Where calls could not be reliably identified to species level, recordings were classified to genus level (e.g. *Myotis* spp.) in accordance with best practice.

2.6 Assessment of Bat Activity Levels

Activity was standardised as *bat passes per hour (bpph)* to account for variable night length. The median nightly bpph was used to represent typical levels of activity (Lintott & Mathews, 2018).

Ecobat (mammal.org.uk; Lintott *et al.*, 2018) is the recommended tool for benchmarking activity levels (NatureScot, 2021). However, the platform was unavailable at the time of analysis due to scheduled maintenance. Therefore, activity levels were assessed using site-specific thresholds adapted from Mathews et al. (2016), with categories defined by quartiles of maximum nightly pass rates. This approach provides a proportionate means of distinguishing relative activity levels within the Site in the absence of cross-site benchmarking. To avoid bias in the derivation of activity thresholds, statistical outliers identified through box-plot analysis were excluded prior to calculating quartile values. Site-specific activity thresholds applied to the 2023 dataset are presented in Table 2-6.

Table 2-6 Site-specific activity thresholds as bat passes per hour (bpph)

Assessment Level	Activity Threshold as Bat Passes per Hour (bpph) for Bat Species					
	Myotis spp.	*Leisler's bat*	*Common and soprano pipistrelle*	Nathusius' pipistrelle	Brown long-eared bat	*Lesser horseshoe bat*
Low	< 1.44	< 2.01	< 2.92	< 0.44	< 0.24	< 0.04
Moderate	1.44 – 4.33	2.01 – 6.01	2.92 – 8.77	0.44 – 1.33	0.24 – 0.73	0.04 – 0.11
High	> 4.33	> 6.01	> 8.77	> 1.33	> 0.73	> 0.11

3. RESULTS

3.1 Bat Habitat Suitability Appraisal

Results from the desktop review and walkover surveys were used to establish a baseline understanding of habitat suitability within the Site for foraging, commuting and roosting bats, in accordance with Collins (2016). Habitats were assigned to suitability categories of *High*, *Moderate*, *Low* or *Negligible*, as defined in the relevant guidance. The appraisal was undertaken across the entire Site during field walkover surveys, based on the turbine layout and site boundary available at the time of survey in 2023.

Habitats within the Site are dominated by grassland and peatland habitats. Other habitats include smaller areas of conifer plantation and buildings and artificial surfaces, as well as treelines and hedgerows.

With regard to foraging and commuting bats, areas of grassland and peatland habitats were assessed as having *Low* suitability, reflecting habitat that is suitable but relatively isolated and therefore likely to be used by small numbers of commuting or foraging bats (Collins, 2016).Treelines and hedgerows, as well as conifer plantation edges and scrub show potential for foraging and commuting bats, providing shelter and connectivity within the Site. As such, these habitats were classified as having *Moderate* suitability for commuting and foraging bats.

With regard to roosting bats, an assessment of the treeline habitats was undertaken. Trees present on site comprise a mixture of immature woodland, gappy hedgerows and sporadic mature trees. Overall trees within the Site did not provide optimal habitat for roosting bats and were assessed as having *Negligible* roosting potential.

Two structures within the Site were identified as having potential to support roosting bats. These structures were also identified during the 2025 survey period. Both structures were subject to daytime inspections and comprised a derelict house and a farm shed with accessible openings and limited potential roosting features. Each structure was assessed as having *Low* roosting potential. These structures were therefore subject to further assessment through emergence surveys, as described in Section 3.2 below.

3.2 Roost Surveys

Daytime Roost Inspections

Two structures were identified as containing potential roost features (PRFs) within the Site during surveys undertaken in 2023. These comprised a derelict house and a farm shed, referred to as Structure No. 3 and Structure No. 1. Plate 3-1 and Plate 3-2 illustrate each structure assessed during the 2023 surveys.

Structure No. 3 is the remains of a house IG reference [M 29247 77612]. The house is constructed from stone and rendered in lime with a sate roof, more than half of the house has previously been destroyed (Plate 3-1) The remains of the house have a partial roof and is dark throughout. The remainder of the roof has timber beam supports and remains of felt lining. A small number of gaps suitable for crevice dwelling bats were identified within the structure and so the house was assigned *Low* potential. The remains were subject to a dusk emergence survey on the 26th April 2023.

Structure No. 1 is in use as a farm shed IG reference [M 29077 77800]. Constructed in block and covered in pebbledash the building has a corrugated roof and the windows have been covered with a corrugated sheet (Plate 3-2). The building is dark throughout and some gaps in the timber frames were identified as being suitable for a small number of crevice dwelling bats. The shed as assigned *Low* potential and was subject to a dusk emergence survey on the 7th September 2023.

Plate 3-1 Northeast aspect of Structure No. 3

Plate 3-2 Southern aspect of Structure No. 1

Emergence Surveys

Dusk emergence surveys were carried out during the spring and autumn survey periods of 2023. Surveys were undertaken under suitable weather conditions and in accordance with guidance.

The spring emergence survey was conducted by two surveyors on 26th April 2023 at Structure No. 3 (Plate 3-1). No bats were recorded emerging from this structure during the survey, however soprano and common pipistrelle activity and a single *Myotis* spp. bat pass were observed in the area.

A second dusk emergence survey was undertaken on 7th September 2023 at Structure No. 1 (Plate 3-2), This structure was confirmed as an active roost during the survey. Four soprano pipistrelles, two common pipistrelles and one brown long-eared bat were observed emerging from the structure. Additionally Leisler's bat and *Myotis* spp. bat passes were recorded during the survey.

Table 3-1 summarises the results of the dusk emergence surveys undertaken at structures within the Site during 2023.

Table 3-1 Emergence survey results 2023

Structure No.	Description	Potential Roosting Suitability	Irish Grid Reference	Date Surveyed	Survey Results
3	Derelict House	*Low*	M 29247 77612	26th April 2023	No bats observed emerging
1	Farm Shed	*Low*	M 29077 77800	7th September 2023	4 soprano pipistrelles, 2 common pipistrelles and 1 brown long-eared bat observed emerging

3.3 Manual Transect Surveys

Manual bat activity transect surveys were undertaken during the spring, summer and autumn survey periods of 2023. Bat activity was recorded during all survey seasons. A total of 347 bat passes were recorded during manual surveys, including activity recorded in association with dusk emergence surveys, where transects immediately followed emergence survey completion in April and September. Common pipistrelle (n = 159) was the species recorded most frequently, closely followed by soprano pipistrelle (n = 156). Leisler's bat (n = 18), *Myotis* spp. (n = 12) and brown long-eared bat (n = 2) were recorded in low numbers. The overall species composition recorded during manual surveys is presented in Plate 3-3.

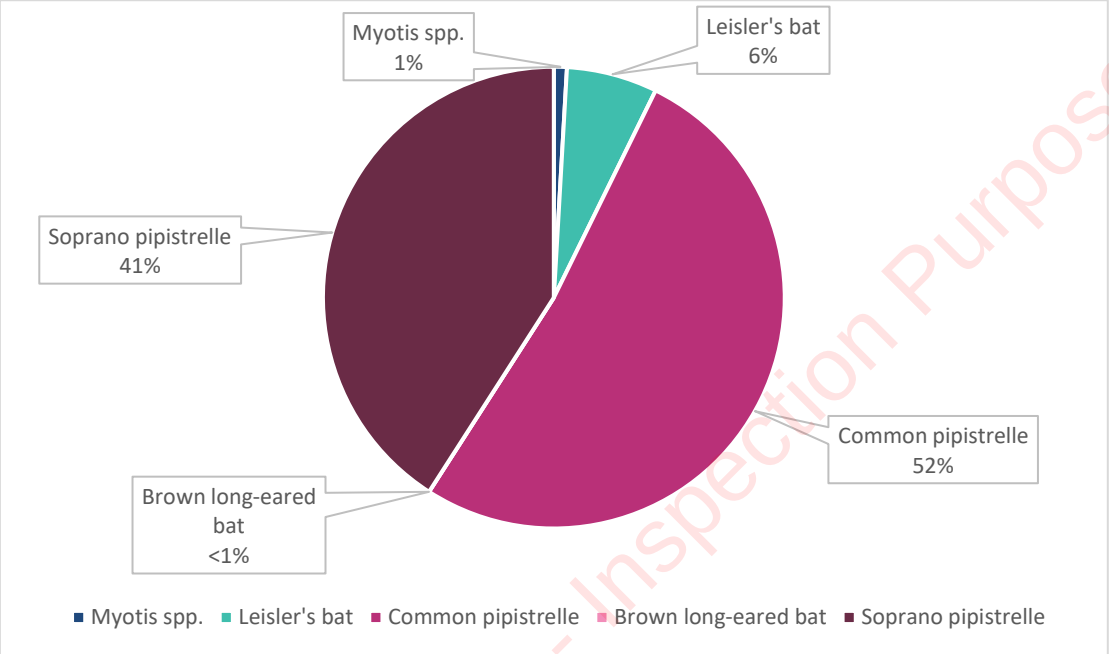


Plate 3-3: Total species composition from manual activity surveys across the 2023 survey period

Transect survey results for individual species and survey periods are presented in Table 3-2. To account for differences in survey effort, transect results were standardised and expressed as bat passes per kilometre surveyed (Plate 3-4). Overall bat activity recorded during manual transect surveys was highest during the spring survey period, followed by autumn and summer. Species diversity was the greatest during the autumn period, when five species/species groups were recorded. The spatial distribution of bat activity recorded during spring, summer and autumn manual transect surveys is illustrated in Figures 3-1 to 3-3.

Species composition remained similar between seasons, however, relative soprano pipistrelle activity was the highest during the autumn period. Activity of *Myotis* spp. was relatively higher in summer. The majority of the *Myotis* spp. activity overall was recorded within the south-eastern section of the Site, nearby Structure No. 2. Brown long-eared bat activity was recorded only during the autumn transect survey. Recorded bat activity during walked transects did not show a distinct spatial pattern or habitat associations as bat passes were recorded throughout the site in a variety of habitats.

These results indicate that manual transect surveys recorded a bat assemblage dominated by pipistrelle species, with activity patterns varying seasonally and spatially across the Site.

Table 3-2 Total bat passes per species and season recorded during manual transects in 2023.

	Spring	Summer	Autumn
Total Bat Passes	**110**	**32**	**205**
Myotis spp.	1	1	10
Leisler's bat	7	5	6
Common pipistrelle	57	22	80
Soprano pipistrelle	45	4	107
Brown long-eared bat	-	-	2

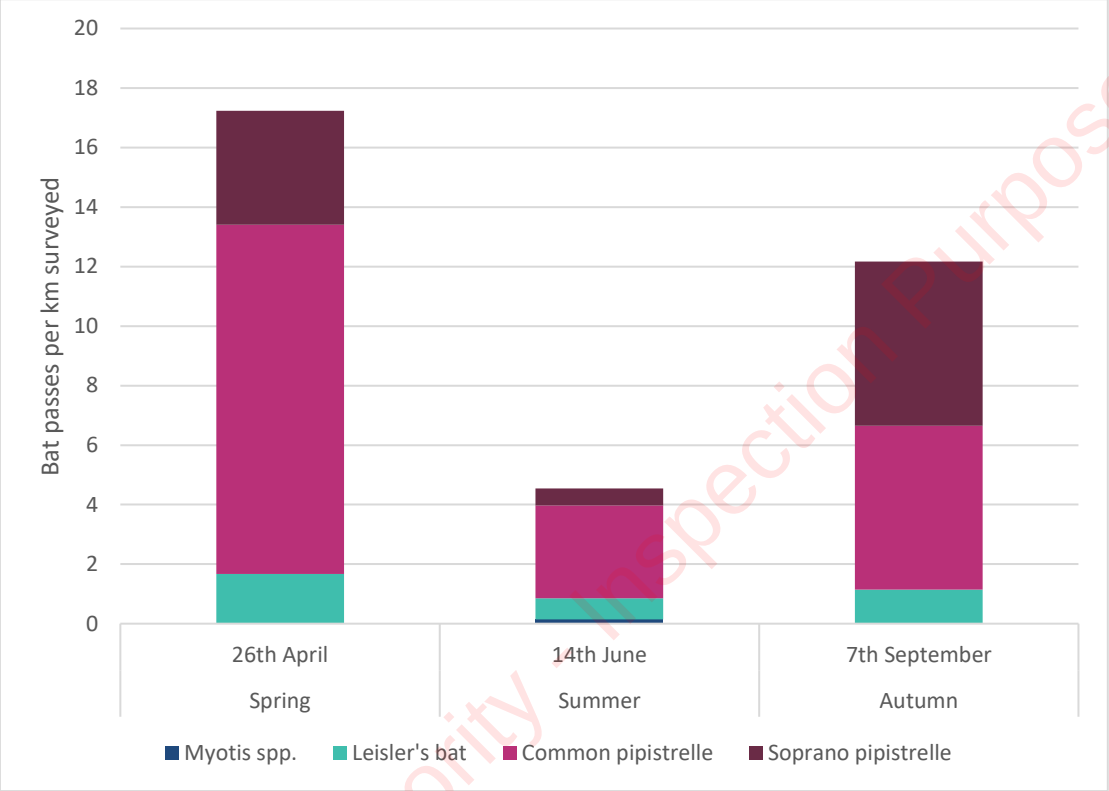
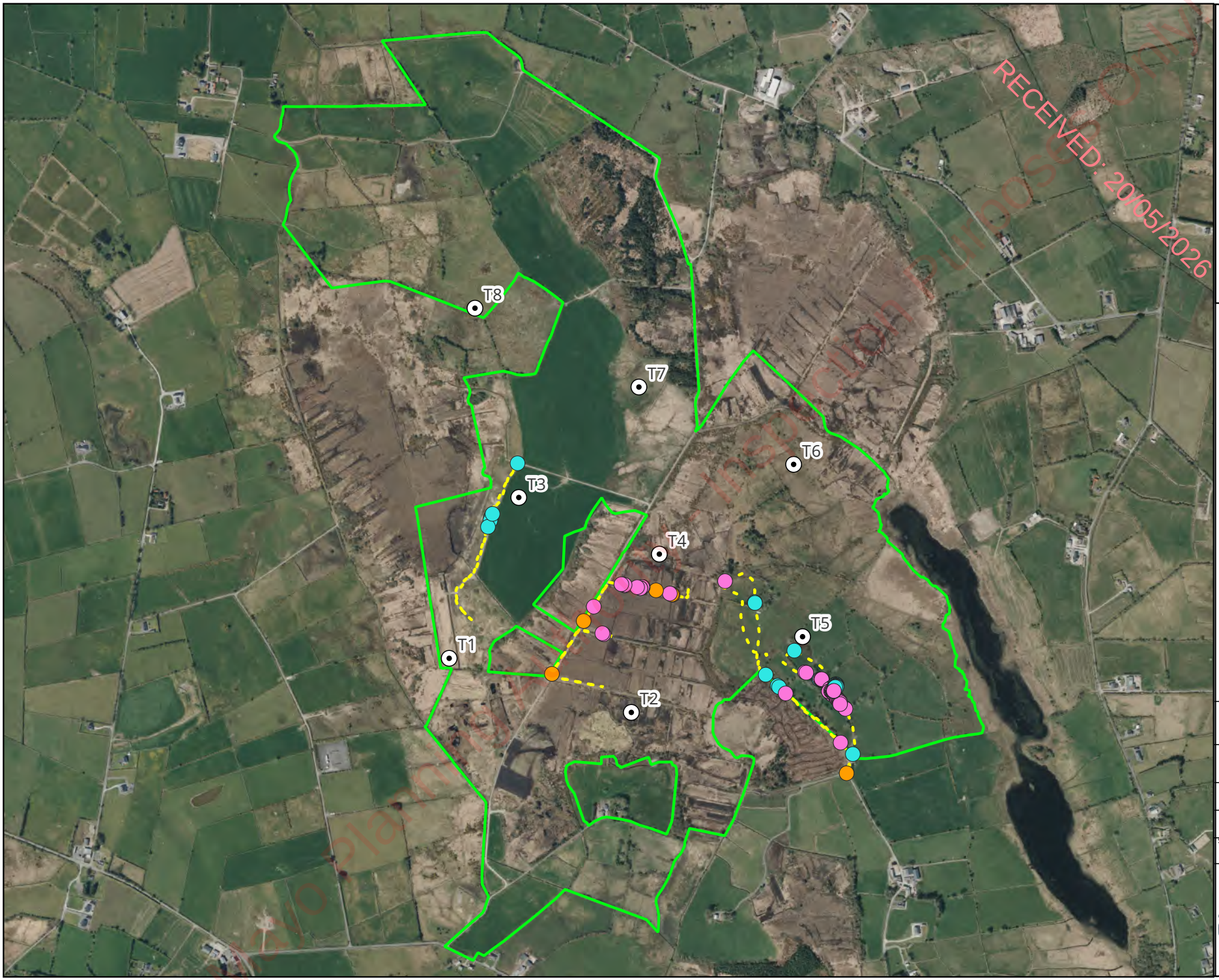


Plate 3-4 Relative bat activity per survey period during 2023 manual transect surveys



Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout 2023
- Spring Transect Route 26.04.2023

Species

- Myotis spp.
- Leisler's bat
- Common pipistrelle
- Soprano pipistrelle

N

Drawing Title
Spring Manual Survey Results 2023

Project Title
Cunlaghfadda Green Energy Project

Drawn By	Checked By
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Project No.	Drawing No.
220825-e	Figure 3-1
Scale	Date
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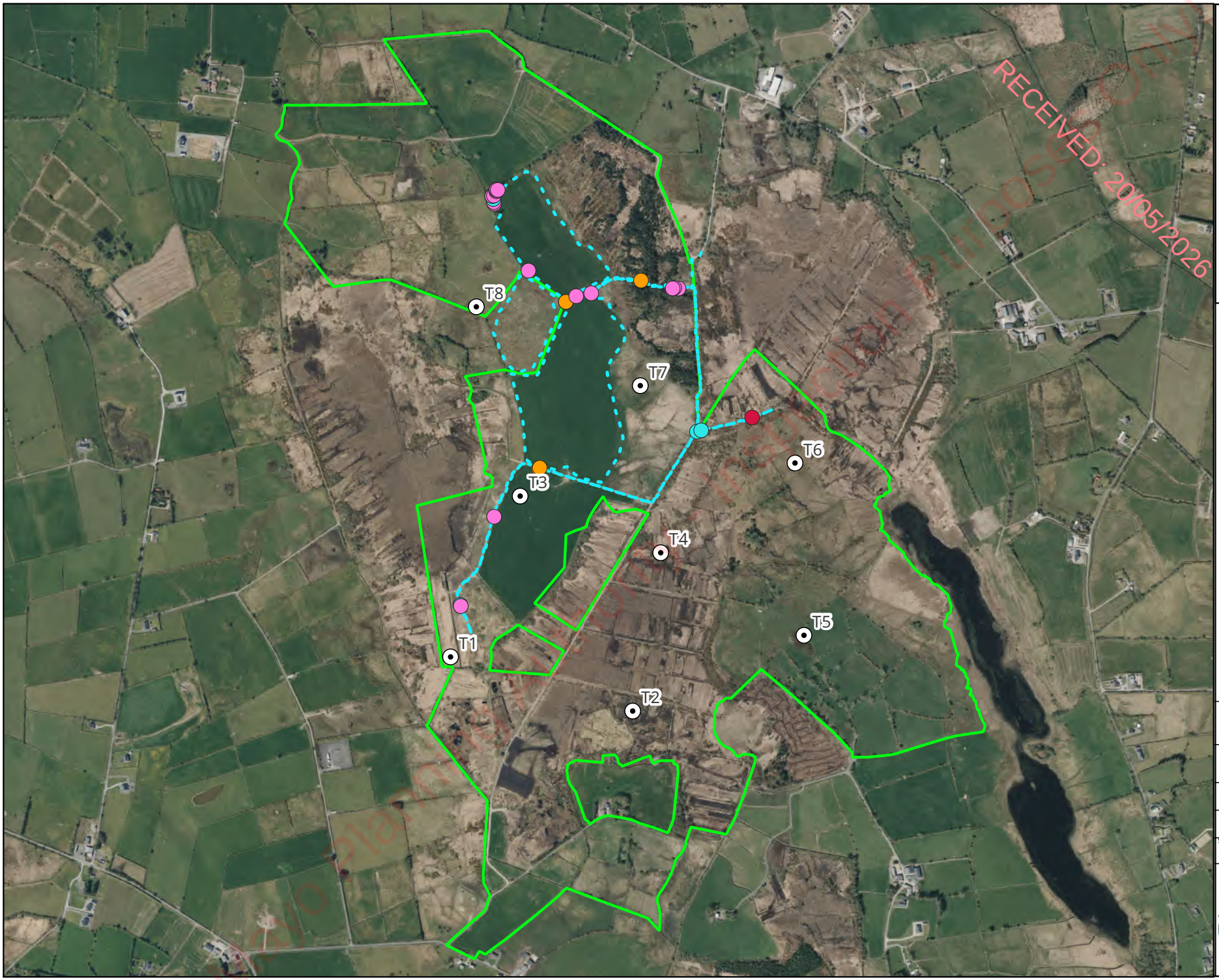

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout 2023
- Summer Transect Route 14.06.2023

Species

- Myotis spp.
- Leisler's bat
- Common pipistrelle
- Soprano pipistrelle

N

Drawing Title
Summer Manual Survey Results 2023

Project Title
Cunlaghfadda Green Energy Project

Drawn By	Checked By
KL	CM
Project No.	Drawing No.
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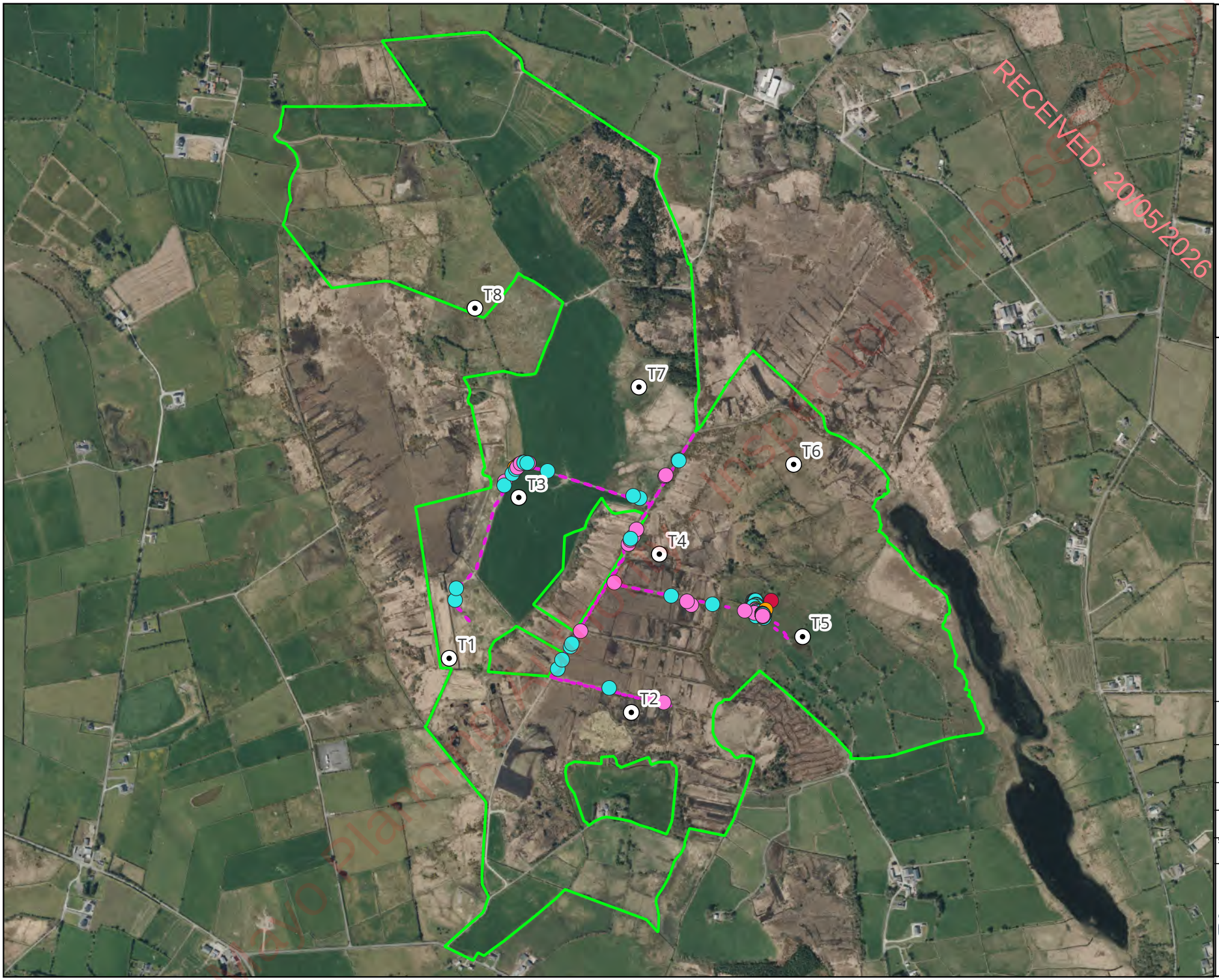

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout 2023
- Autumn Transect Route 07.09.2023

Species

- Myotis spp.
- Leisler's bat
- Common pipistrelle
- Soprano pipistrelle
- Brown long-eared bat

N

Drawing Title
Autumn Manual Survey Results 2023

Project Title
Cunlaghfadda Green Energy Project

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Project No.	Drawing No.
220825-e	Figure 3-3
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3.4 Ground-level Static Surveys

In total, 36,661 bat passes were recorded in 2023. In general, Common pipistrelle (n = 16,599) occurred most frequently, followed by Soprano pipistrelle (n = 12949,) and Leisler's bat (n = 5,147) Instances of *Myotis spp.* (n = 1,305), Brown long-eared bat (n = 404), Nathusius' pipistrelle (n = 243) and Lesser horseshoe bat (n = 14) were significantly less. Plate 3-5 presents species composition across all ground-level static detectors.

Bat activity was calculated as total bat passes per hour (bpph) per season to account for any bias in survey effort, resulting from varying night lengths between seasons. Plate 3-6 presents these results for each season. Some variability in species composition was recorded between seasons. Higher activity levels for soprano pipistrelle, brown long-eared bat, and *Myotis* spp. were recorded in autumn, while common pipistrelle, Leisler's bat and Nathusius' pipistrelle showed higher activity in spring. Overall activity was dominated by common and soprano pipistrelles.

Bat activity is often variable between survey nights. Therefore, the median bat pass rate (bpph) was used as the most appropriate and robust measure of bat activity to compare activity at each detector location (Lintott & Mathews, 2018). Plate 3-7 illustrates median bpph per detector and survey period for 2023. Species composition was broadly similar between detector locations. However, *Myotis* spp. bats formed a higher proportion of recordings during the spring and autumn survey periods at D02, and Nathusius' pipistrelle activity was notably higher at D06 and D08 in spring. Additionally, brown long-eared bat reached a substantial peak at D02 in autumn. Median activity levels varied between detector locations: D06 recorded the highest activity during spring , D02 recorded the highest in summer, and relatively higher activity was recorded at D03 in autumn, followed closely by D02. D01 recorded the lowest median activity during summer and autumn, and D07 recorded very low bat activity during the spring survey period.

Overall, ground-level static surveys indicate a bat assemblage dominated by pipistrelle species, with only minor seasonal and spatial variation in relative activity levels across the Site.

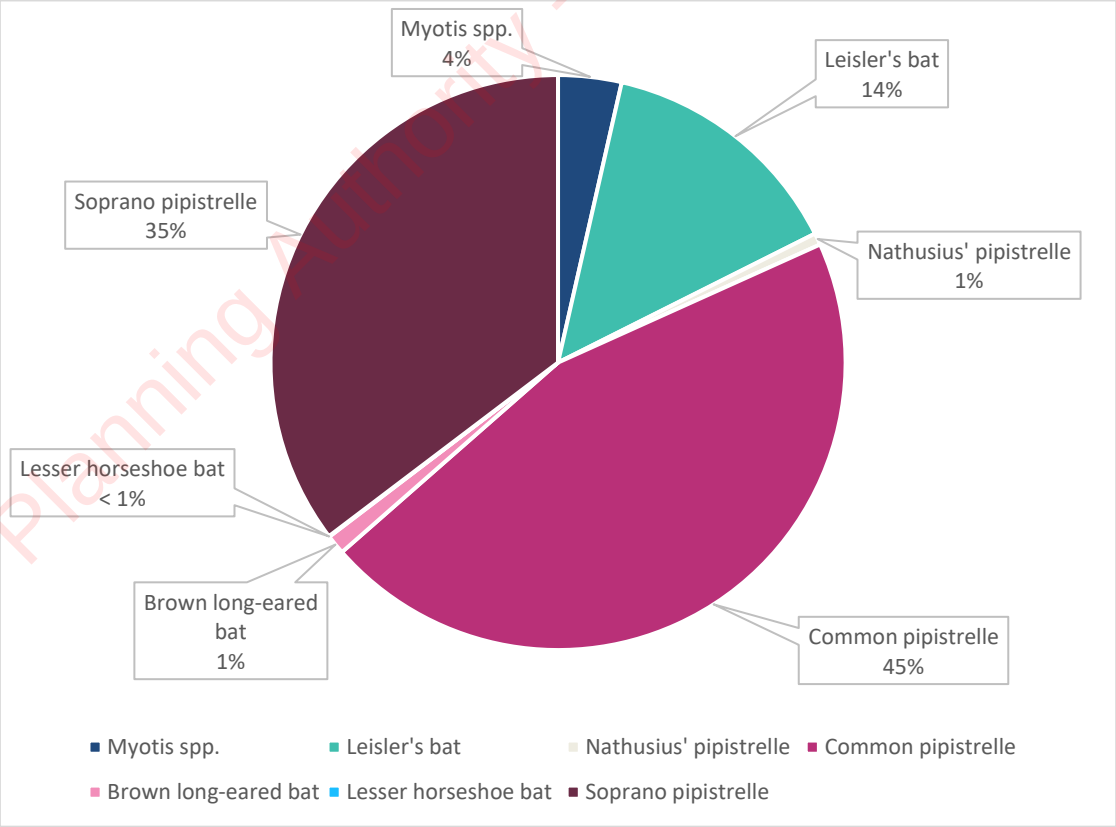

Plate 3-5 Static detector surveys 2023: overall species composition (total bat passes)

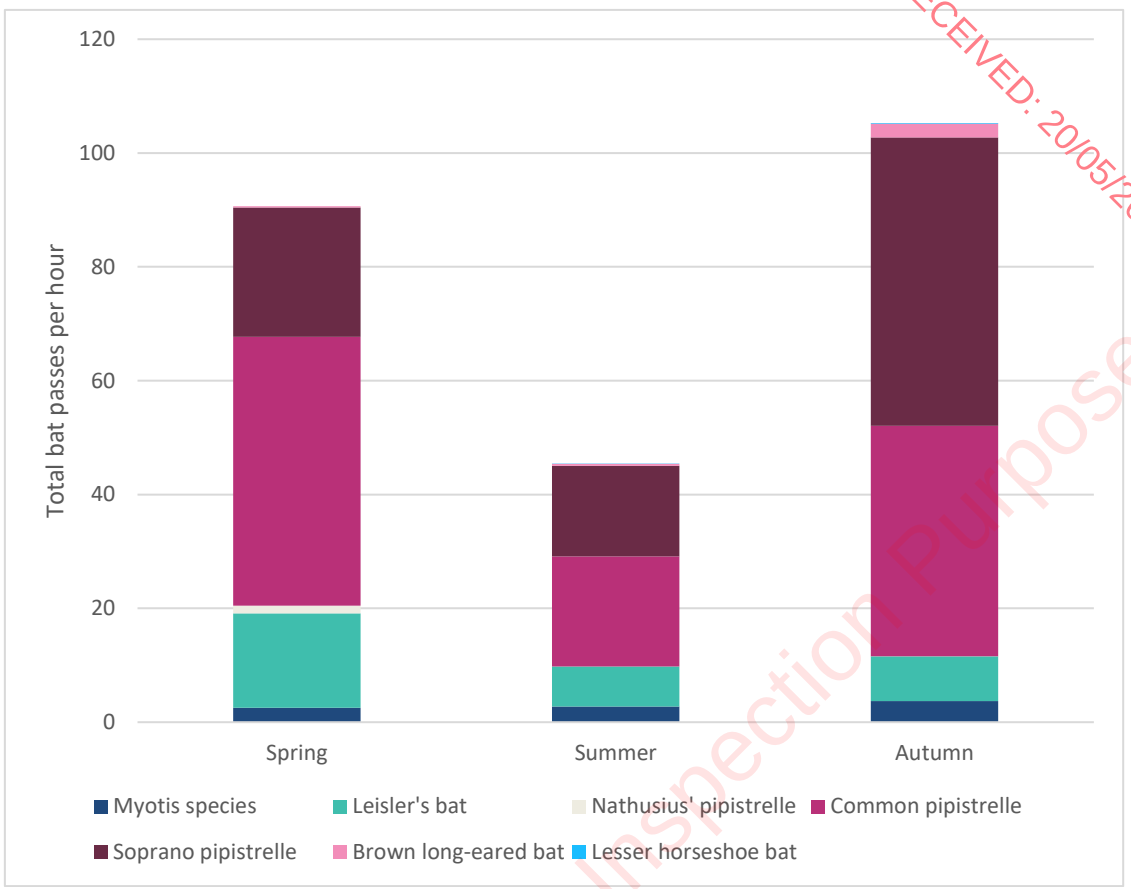

Plate 3-6 Static detector surveys 2023: seasonal bat activity levels (bat passes per hour)

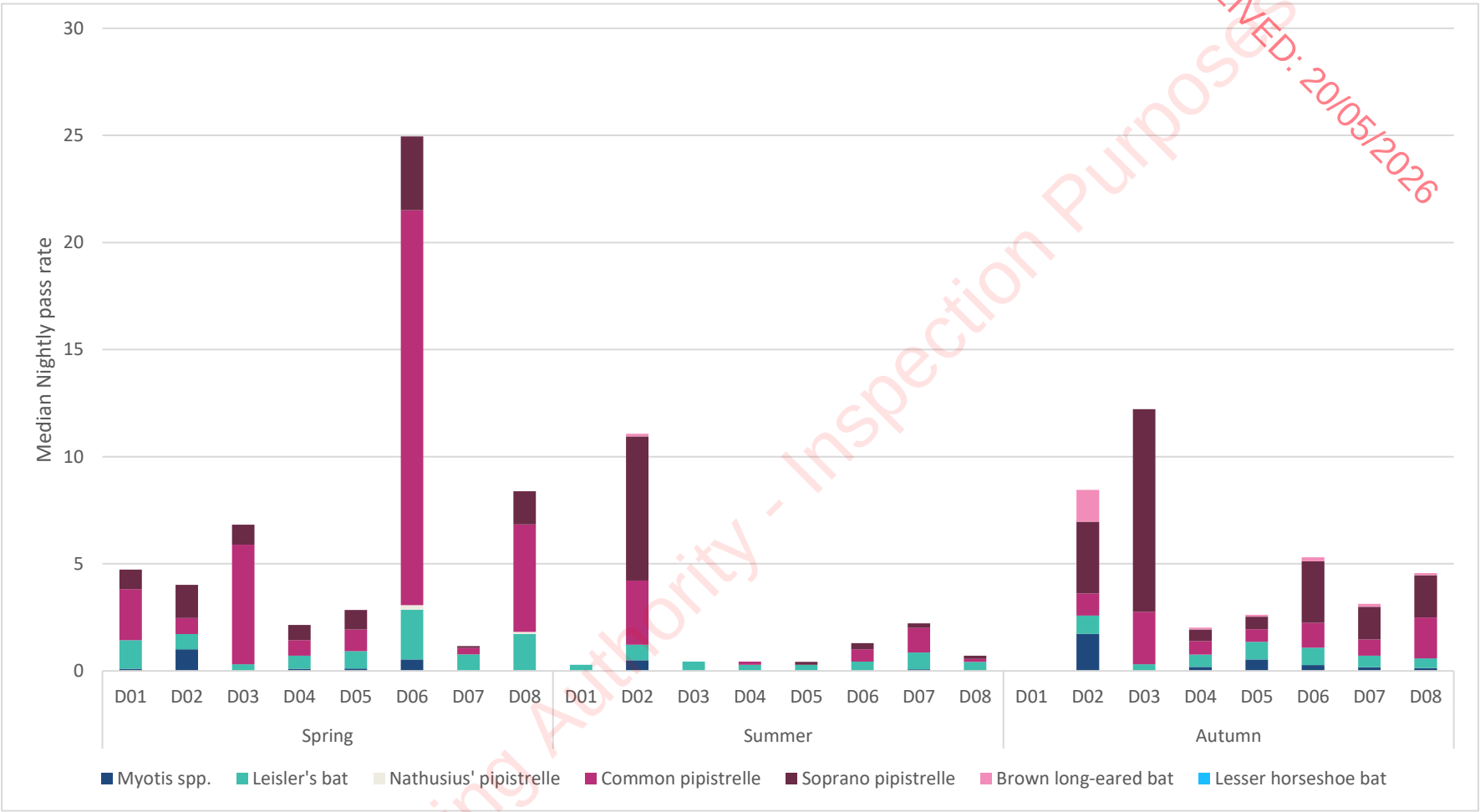

Plate 3-7 Static detector surveys 2023: median bat passes per hour (bpph) per detector and survey period. Lesser horseshoe bat is not visible on the graph due to being recorded in small numbers during the summer and autumn periods only.

3.5 Assessment of Bat Activity Levels 2023

Low, *Moderate* and *High* bat activity levels were assigned to median and maximum bat pass rates (bpph) recorded during spring, summer and autumn at each detector location, using site-specific thresholds adapted from Mathews et al. (2016). This approach allows activity levels to be interpreted in a manner proportionate to the local bat assemblage. Table 3-3 presents the results of this site-level activity assessment.

Leisler's bat exhibited *Low* median activity levels across all detector locations and seasons, with the sole exception of a *Moderate* level at D06 in spring (2.32 bpph). Maximum nightly activity values generally varied from *Moderate* to *High* across seasons. A peak of maximum activity was reached at D08 in spring with a rate of 18.61 bpph. Overall, the contrast between *Low* median activity and occasional elevated maximum values indicates intermittent peaks in activity, rather than sustained or consistently elevated use of the Site by this species.

Common pipistrelle exhibited generally *Low* median activity levels across detector locations during summer and autumn, with only one instance of *Moderate* median activity at D02 in summer (3.00 bpph). During the spring survey period, *Moderate* median activity was recorded at detector locations D03 (5.59 bpph) and D08 (5.01 bpph) and *High* median activity levels were recorded once at D06 (18.44 bpph). Maximum nightly activity values for common pipistrelle ranged from *Low* to *High* across seasons and detectors, with the highest maximum activity recorded at D06 in spring (111.40 bpph). The elevated activity during summer may indicate a seasonal pattern by this species in relation to use of the Site. This disparity between generally *Low* median activity and occasional *High* maximum values indicates that common pipistrelle activity at the Site was typically *Low* on most nights, but with intermittent peaks at certain locations and nights.

Soprano pipistrelle generally exhibited *Low* median activity levels across detector locations, with *Moderate* median activity recorded at a limited number of detectors. *Moderate* median activity was recorded at D06 in spring (3.45 bpph), D02 in summer (6.72 bpph) and D02 in autumn (3.35 bpph). A single instance of *High* median activity was recorded at D03 in autumn (9.46 bpph). Maximum nightly activity values ranged from *Low* to *High* across detector locations and seasons, peaking at D03 in autumn (113.01 bpph). As with common pipistrelle, the contrast between generally *Low* to *Moderate* median activity and higher maximum values indicates that activity by soprano pipistrelle was influenced by intermittent higher-activity nights, rather than consistently elevated activity across all survey nights.

Nathusius' pipistrelle was recorded at all locations during spring, however was recorded at only one detector location (D07) in autumn, and at no location during summer. Where recorded, median activity levels were consistently *Low*, with the highest median activity recorded at D06 during the spring survey period (0.21 bpph). Maximum nightly activity values for Nathusius' pipistrelle ranged from *Low* to *High*, peaking D06 in spring at a rate of 4.82 bpph. Overall, the limited spatial and seasonal occurrence of Nathusius' pipistrelle, combined with generally *Low* absolute activity levels, indicates seasonal use of the Site in spring, rather than regular or sustained activity.

Myotis spp. generally exhibited *Low* median activity levels across detector locations during spring and summer, with *Moderate* median activity recorded only at D02 during the autumn survey period (1.73 bpph). Maximum nightly activity values for *Myotis* spp. were predominantly *Low*, with *Moderate* and *High* values recorded occasionally during each season. *High* maximum activity levels were recorded at D02 in each season, peaking in summer at a rate of 12.18 bpph. *Moderate* maximum activity levels were recorded each season at different detector locations, including D06 in spring, D07 in summer and D05 in autumn. Overall, *Low* median activity, together with only occasional high maximum values, indicates that *Myotis* spp. activity at the Site was generally limited. Additionally, higher levels of activity were recorded at specific locations, notably at D02, indicating that *Myotis* spp. activity is localised rather than widespread across the Site.

Brown long-eared bat generally exhibited *Low* median activity levels across all detector locations and all seasons. *High* median activity levels for this species were recorded only once at D02 in autumn (1.48 bpph). Maximum nightly activity values for brown long-eared bat in spring and summer were generally *Low*, with a single instance of *Moderate* at D05 in spring (0.56 bpph) and single instance of *High* at D02 in summer (0.97 bpph). During the autumn survey period, maximum activity reached *High* levels at two locations, D02 and D05, peaking at D02 at a rate of 3.48 bpph. Overall, these results indicate generally *Low* activity across most of the year, with a broader but still seasonally restricted increase in activity during autumn.

Lesser horseshoe bat activity was absent in spring, occasional in summer and most widespread in autumn. Median activity for this species was *Low* across all seasons and detectors. Maximum activity reached *High* levels at D02, D04 and D06 in summer and *Moderate* levels at all locations with the exception of D01 in autumn. Overall, these results indicate that the Site is used only to a limited extent by lesser horseshoe bats.

Table 3-3 Bat activity levels (bpph) per species, season and detector location 2023 classified as None, Low, Moderate, High

Season 2023	Detector	*Myotis* spp.		Leisler's bat		Nathusius' pipistrelle		Common pipistrelle		Soprano pipistrelle		Brown long-eared bat		Lesser horseshoe bat	
		Median Bat Activity	Max Bat Activity	Median Bat Activity	Max Bat Activity	Median Bat Activity	Max Bat Activity	Median Bat Activity	Max Bat Activity	Median Bat Activity	Max Bat Activity	Median Bat Activity	Max Bat Activity	Median Bat Activity	Max Bat Activity
Spring	D01	0.10	0.50	1.33	7.36	0.00	0.56	2.38	25.17	0.91	6.68	0.00	0.21	-	-
	D02	1.00	4.35	0.72	4.61	0.00	0.21	0.74	4.03	1.55	4.64	0.00	0.22	-	-
	D03	0.00	0.65	0.31	12.98	0.00	0.76	5.59	37.87	0.93	87.49	0.00	0.10	-	-
	D04	0.10	1.03	0.61	3.83	0.00	0.22	0.73	4.39	0.72	2.54	0.00	0.40	-	-
	D05	0.11	1.01	0.81	8.02	0.00	0.11	1.01	2.60	0.91	5.63	0.00	0.56	-	-
	D06	0.53	2.01	2.32	16.29	0.21	4.82	18.44	111.40	3.45	33.45	0.00	0.34	-	-
	D07	0.00	0.55	0.77	2.67	0.00	0.11	0.30	8.58	0.10	2.96	0.00	0.10	-	-
	D08	0.00	0.41	1.73	18.61	0.10	1.77	5.01	28.49	1.55	7.14	0.00	0.11	-	-
Summer	D01	0.00	0.28	0.28	2.02	-	-	0.00	2.02	0.00	1.87	-	-	-	-
	D02	0.49	12.18	0.73	6.34	-	-	3.00	47.05	6.72	41.06	0.12	0.97	0.00	0.13
	D03	0.00	0.28	0.43	3.32	-	-	0.00	18.24	0.00	20.45	0.00	0.14	-	-
	D04	0.00	0.14	0.29	3.03	-	-	0.14	5.03	0.00	2.30	-	-	0.00	0.14
	D05	0.00	0.72	0.28	0.87	-	-	0.00	7.50	0.14	4.18	0.00	0.29	-	-
	D06	0.00	0.56	0.43	6.47	-	-	0.58	7.52	0.29	10.92	0.00	0.14	0.00	0.14
	D07	0.07	1.59	0.79	12.96	-	-	1.15	18.48	0.21	6.22	0.00	0.29	-	-
	D08	0.00	0.28	0.42	2.43	-	-	0.14	4.17	0.14	1.58	-	-	-	-
Autumn	D01	-	-	-	-	-	-	0.00	0.71	0.00	0.18	-	-	-	-
	D02	1.73	5.77	0.85	3.64	-	-	1.03	28.41	3.35	38.22	1.48	3.48	0.00	0.09
	D03	0.00	0.18	0.32	6.73	-	-	2.44	94.95	9.46	113.01	0.00	0.28	0.00	0.09
	D04	0.18	1.34	0.58	7.10	-	-	0.63	5.38	0.54	4.67	0.09	0.46	0.00	0.09
	D05	0.54	1.82	0.82	6.36	-	-	0.58	2.52	0.59	1.95	0.09	0.75	0.00	0.09
	D06	0.28	1.42	0.80	4.11	-	-	1.17	11.00	2.87	7.89	0.18	0.46	0.00	0.09
	D07	0.18	0.65	0.54	2.15	0.00	0.09	0.76	13.38	1.52	7.99	0.13	0.73	0.00	0.09
	D08	0.13	0.55	0.45	2.90	-	-	1.91	14.11	1.98	5.22	0.09	0.18	0.00	0.09

4. CONCLUSION

Bat surveys undertaken in 2023 established a robust baseline of bat activity within the Site, undertaken in accordance with NatureScot (2021) guidance for low-risk wind farm sites. The 2023 baseline surveys confirmed the presence of a small pipistrelle roost at a farm shed.

Bat activity recorded during the 2023 survey period exhibited clear seasonal patterns, with lower activity levels recorded during the summer survey season in comparison to spring and autumn. Activity across the Site was dominated by common and soprano pipistrelle, with lower levels of activity recorded for Leisler's bat, *Myotis* spp. and brown long-eared bat. Nathusius' pipistrelle and lesser horseshoe bat were recorded infrequently.

Overall bat activity recorded during the 2023 baseline surveys was generally *Low*, with a small number of instances of *Moderate* median activity recorded, primarily during the autumn survey period. *High* median activity levels were recorded only once for common pipistrelle at D06 in spring.

Overall, the 2023 baseline surveys indicate that bat activity at the Site is characterised by widespread use by pipistrelle species, with generally *Low* activity levels and limited spatial and seasonal variation across the Site. The 2023 baseline data provide an initial characterisation of bat activity and, when considered alongside the 2025 survey results presented in the EIAR, contribute to a consistent understanding of bat activity patterns at the Site. Together, these datasets have been used to inform the impact assessment and the development of appropriate mitigation measures.

5. REFERENCES

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