APPENDIX 6-2

BAT REPORT

Appendix 6-2 – Bat Report

Proposed Slievegrine Renewable Energy Development, Co. Waterford

DOCUMENT DETAILS

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APPENDICES

Appendix 1 – Bat Habitat Suitability Appraisal

Appendix 2 – Site Risk Assessment

Appendix 3 – Overall Site Risk Assessment

1. INTRODUCTION

MKO was commissioned to undertake a comprehensive bat impact assessment to inform a planning application for the Proposed Slievegrine Renewable Energy Development located in the townland of Lyre and adjacent townlands, near Dungarvan, Co. Waterford. This report presents the results of 2025 bat surveys, detailing the survey design, methodologies, and findings. It also includes an assessment of potential effects on bats and outlines mitigation measures designed to avoid or minimise significant impacts.

Surveys were carried out throughout 2025, based on an indicative layout comprising 24 turbines. The layout has since been refined to include 23 proposed turbines. The methodology followed industry best practice, primarily Bats and Onshore Wind Turbines – Survey, Assessment and Mitigation hereafter referred to as NatureScot (2021), and employed a combination of approaches, including desktop study, habitat and landscape appraisal, roost surveys, manual transects, and static detector surveys at ground level.

The assessment and recommended mitigation measures have been developed in accordance with NatureScot (2021), with additional reference to Guidance on Bat Surveys, Assessment and Mitigation for Onshore Wind Turbine Developments in Northern Ireland published by the Northern Ireland published by the Northern Ireland Environment Agency Natural Environment Division (August 2021, amended April 2024)., hereafter referred to as NIEA, 2021. Mitigation measures have been developed based on these guidance documents. The Bat Survey, Assessment and Mitigation Guidelines for Onshore Wind Farms in Ireland by Bat Conservation Ireland, hereafter referred to as BCI (2026), has been reviewed and referenced where consistent with established methodologies but has not been applied in defining survey scope, impact assessment, mitigation or post-construction monitoring as it's not an endorsed or statutory document.

As detailed in Section 1.1.1 of Chapter 1, for the purposes of this EIAR, the various project components are described and assessed using the following references: 'Proposed Project', 'Proposed Wind Farm', 'Proposed Grid Connection', 'Proposed Turbines', 'Proposed 110kV Substation', 'Proposed 220kV Loop-in Substation', 'Proposed 110kV Underground Cabling Route', 'Site', 'Proposed Wind Farm site' and 'Proposed Grid Connection site'. A detailed description of the Proposed Project is provided in Chapter 4 of this EIAR.

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 both direct mortality and indirect impacts such as habitat loss, disturbance and displacement. Bat fatalities have been widely reported at wind farms worldwide, and global syntheses highlight the potential for cumulative impacts at population level in some regions (Arnett *et al.*, 2016).

In a European context, studies collated by Voigt *et al.* (2022) estimate that approximately 1.5-30 bats may be killed per turbine per year, although rates vary considerably between sites depending on turbine characteristics, landscape context and bat assemblages. Carcass-search data from the United Kingdom indicate fatality rates of 0–5-25 bats per turbine per month during peak activity periods (July–October) (Mathews *et al.*, 2016). While these figures cannot be directly transferred to an Irish context, the broadly similar bat assemblages of Ireland and Britain mean that they provide a useful reference point when considering potential collision risks. Fatality rates are also influenced by factors such as turbine height, rotor swept area, weather conditions and landscape characteristics that influence bat activity.

Bat mortality at wind farms is primarily associated with collisions with moving turbine blades (Horn *et al.*, 2008; Cryan *et al.*, 2014) and barotrauma, whereby rapid pressure changes near rotating blades can cause internal injuries (Baerwald *et al.*, 2008). In addition, several behavioural and environmental mechanisms have been proposed to explain why bats may be present around turbines, including the attraction of insects to turbine structures, the use of turbines as navigational or mating landmarks, and the influence of weather conditions on bat activity.

Robust pre-construction bat surveys are undertaken to establish baseline activity and assess the potential risks associated with turbine operation. This report presents survey results primarily focused on the Proposed Wind Farm site. The Proposed Grid Connection including the 110 kV underground cabling route was also assessed.

Survey design and impact assessment were guided by current legislation, scientific literature, and best-practice guidance, with full consideration given to spatial, temporal, and behavioural patterns relevant to bat ecology.

1.2 Bat Survey and Assessment Guidance

A range of guidance documents exists 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 recently published Irish-specific guidance document, *Bat Survey, Assessment and Mitigation Guidelines for Onshore Wind Turbines in Ireland* (Bat Conservation Ireland, 2026), became available during the preparation of this report, following completion of the baseline bat surveys for the Proposed Project. This document sets out a framework for bat survey, assessment and mitigation in an Irish context, drawing on existing sources such as NatureScot (2021), NIEA (2021; amended 2024), NPWS (2022), EUROBATS (2014/2015) and Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2023). It includes additional detail on aspects such as site risk categorisation, survey effort, interpretation of bat activity and post-construction monitoring. Bat Conservation Ireland, 2026 is not a statutory or regulatory requirement, and the surveys undertaken for the Proposed Project were completed in accordance with established best practice guidance, in particular NatureScot (2021) with additional reference to NIEA (2021; amended 2024), and informed by Collins (2023), ensuring current best practice was applied throughout. Bat Conservation Ireland (2026) has been considered in the preparation of this report and has been reviewed and referenced where parameters are consistent with established guidance (e.g. spatial buffers applied within the desk study), but it has not altered the baseline surveys or the impact assessment presented. Until such time as this guidance receives formal endorsement, it is be treated as a Professional Statement of Best Practice.

1.3 Irish Bats: Legislation, Policy and Status

Ireland supports nine resident bat species, which together comprise more than half of the country's native terrestrial mammal fauna (Montgomery *et al.,* 2014). All Irish bats are protected under European legislation, namely the Habitats Directive (92/43/EEC). 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. This species range for the most part is limited to, the west and southwest of Ireland. 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. Any work at a roost site must be carried out with the agreement of 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 report for the Republic of Ireland was submitted in December 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

Bat Species	Conservation Status	Principal Pressures and Threats
Soprano pipistrelle *Pipistrellus pygmaeus*	Favourable	**PX04** No pressures or threats
Nathusius' pipistrelle *Pipistrellus nathusii*	Unknown	**PD01** Wind, wave and tidal power (including infrastructure) – unknown
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* **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 wild fire) - *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*

1.4 Statement of Authority

MKO employs a dedicated bat unit within its Ecology team, experienced in scoping, carrying out, and reporting on bat surveys, as well as producing impact assessments in relation to bats. MKO ecologists have relevant academic qualifications and are qualified in undertaking surveys to the levels required.

This report was prepared by Molly O'Hare, supported by Emma Fitzgerald. Molly is a Project Bat Ecologist within MKO with over 4 years of experience in ecological consultancy. She holds a B.Sc. in Ecology and Environmental Biology and an M.Sc. in Marine Biology from University College Cork. Molly has specialist experience in bat field survey techniques including mist netting, harp trapping, hand

netting, radio tagging and tracking, exclusion works, transect surveys, emergence surveys, re-entry surveys and roost assessments. Molly also has experience carrying out multidisciplinary field surveys such as habitat assessments, general mammal surveys, bird surveys and acting as an ecological clerk of works. Since joining MKO, she has contributed to specialist bat reports, EIAR Biodiversity Chapters and the development of bat mitigation and monitoring measures for wind energy projects and solar energy projects. Emma is a Bat Ecologist within MKO with 2 years of professional ecological consultancy experience, and she holds a B.Sc. (Hons) in Zoology from University College Cork, Ireland. Emma has been involved in roost assessments, deployment of static bat detectors and weather stations nationwide, dusk and dawn bat activity surveys, sonogram analysis, mapping, impact assessments, mitigation strategies and report writing. Since joining the bat team, Emma has been involved as a bat ecologist on a number of wind energy projects, solar energy projects and large residential developments and works as part of a large multi-disciplinary team to produce ecological reports and assessments.

This report has been reviewed by Aoife Joyce. Aoife Joyce is a Project Director and Senior Ecologist within MKO with over seven years' experience specialising in bat ecology and the assessment of renewable energy developments. Aoife holds a B.Sc. (Hons) in Environmental Science and a M.Sc. (Hons) in Agribioscience from the University of Galway, Ireland. Aoife has extensive experience in the planning, coordination and interpretation of baseline bat surveys for wind energy developments, including static detector surveys, manual activity surveys, roost assessments, acoustic monitoring and sonogram analysis. She has acted as Lead Ecology Specialist on numerous wind farm and large-scale infrastructure projects, overseeing survey strategy, impact assessment, mitigation design and the preparation of Environmental Impact Assessment Reports (EIARs), Natura Impact Statements and Appropriate Assessment documentation.

Bat surveys were carried out by Molly O'Hare, Emily Fair (B.Sc., M.Sc.), Emma Fitzgerlad, Saoirse Fitzsimons (B. A., M.Sc.) and Marie Greaney (B.Sc., M.Sc.). All surveyors have relevant academic qualifications and are competent in undertaking bat surveys and roost assessments.

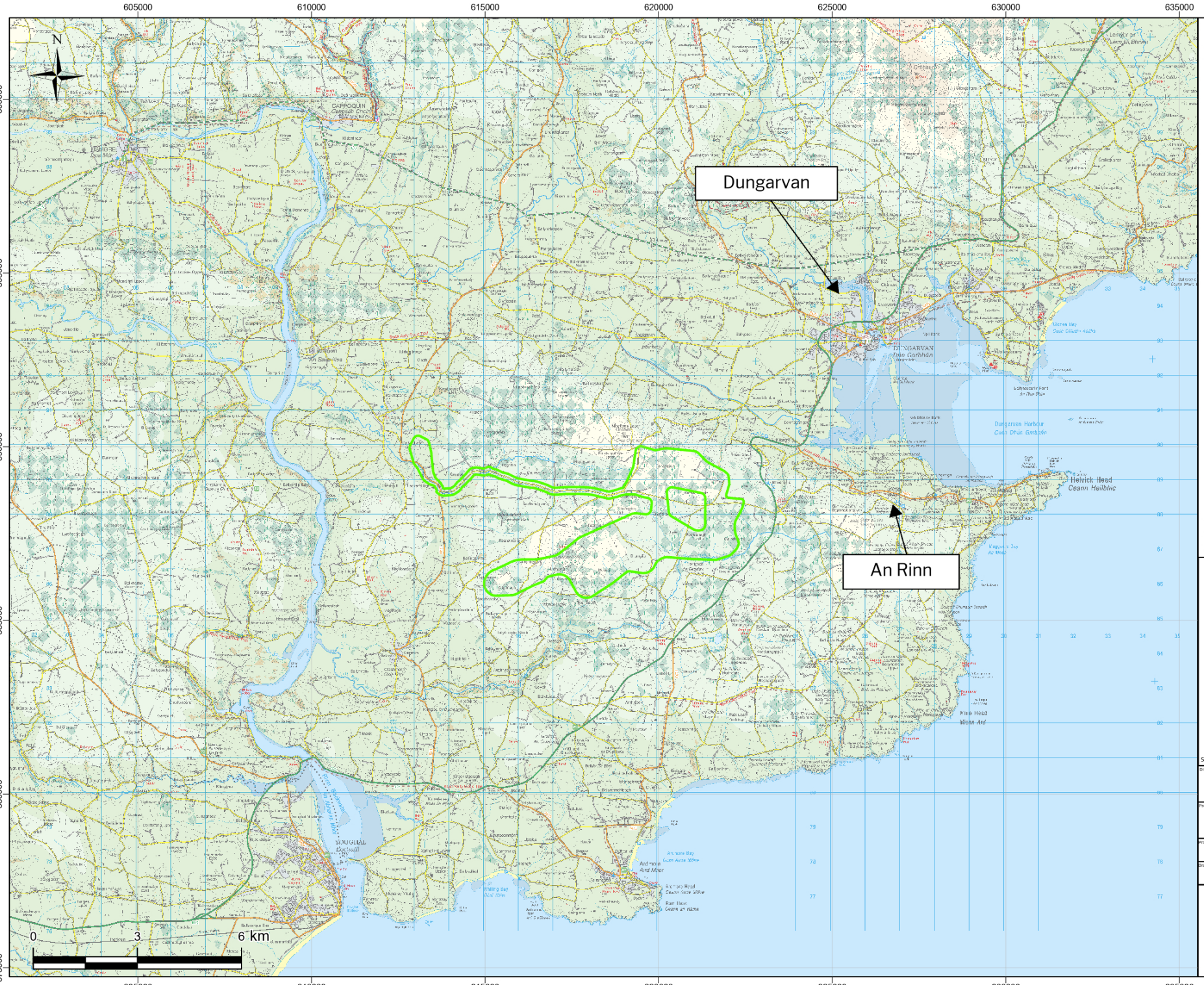
2. PROJECT DESCRIPTION

The Site is located within a rural setting in south Waterford, approximately 5km southwest of Dungarvan, Co. Waterford. The village of Clashmore is located approximately 3.1km south of the Site.

The Proposed Grid Connection includes the Proposed 110kV Underground Cabling Route from the Proposed 110kV Substation, in the townland of Clashbrack, Co. Waterford, to the Proposed 220kV Loop-in Substation in the townland of Ballycullane, Co. Waterford. The Proposed 110kV Underground Cabling Route measures approximately 9km in length and is located primarily within the curtilage of the public road corridor with two sections (approximately 788m and 262m) being located within private lands. Current land-use on the Proposed Wind Farm site is predominantly comprised of a mix of commercial forestry and pastoral agriculture. Current land-use along the Proposed Grid Connection comprises of public road corridor and private land principally used by agriculture. The surrounding land use is predominantly pastoral agriculture, commercial forestry and low-density residential use along local and regional roads.

The Site measures approximately 1,450 hectares and comprises a mix of agri-pastoral land and commercial forestry. The N25 national primary road runs in a north to south direction to the east of the Site, passing within 200m of the Site at its closest extent. The L-2024 local road traverses the northern section of the Proposed Wind Farm site in an east- west direction, with the L-6085 local road bisecting the eastern portion of the Site. The L-2023 also bisects the central section of the Proposed Wind Farm site. The Proposed Wind Farm site is also served by a number of existing agricultural roads and tracks. Existing site access is via forestry and agricultural entrances off the L-2023 and L-2024 local roads, as well as the L-6084 local road to the south of the Site and the L-6082 to the west of the Site. The co-ordinates for the approximate centre of the Site are X 619562, Y 587416 (ITM).

The location of the Site is shown in Figure 2-1.

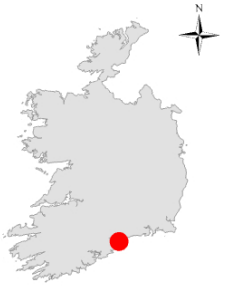


Map Legend

EIAR Site Boundary

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Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator



Site Location Context - NOT TO SCALE

Drawing Title
Site Location Context

Project Title
Slievegrine Renewable Energy Development

Project No.	Drawing No.	Scale
240740	2-1	1:100,000
Drawn By	Checked By	Date
SOR	NS	15/09/2026

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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 Site and the Proposed Project, was prepared by MKO and circulated to consultees in July 2025 and July 2026. As part of this exercise, prominent Irish conservation groups were contacted, and Bat Conservation Ireland (BCI), and the Department of Housing, Local Government and Heritage-Development Applications Unit (NPWS) were specifically invited to comment on the potential of the Proposed Project to affect bats.

Details of consultation responses specifically related to bats are provided in Section 4.1 below. Full consultation and scoping details are presented in Chapter 2 of this EIAR.

3.2 Desk Study

A desk study of published material was undertaken prior to conducting field surveys. The aim was to provide context to the Proposed Wind Farm site in order to assist bat survey planning and assessment. This included the identification of designated sites, species of interest or any other potential risk factors within the Proposed Wind Farm site. The results of the desk study including sources of information utilised are provided below.

3.2.1 Bat Records

The National Bat Database of Ireland holds records of bat observations maintained by Bat Conservation Ireland (BCI), including records from national monitoring schemes, roost records and ad-hoc observations. A search of the National Bat Database of Ireland was initially undertaken on the 11th March 2025 to inform the survey effort and repeated on the 31st July 2026 for bat records within a 10 km radius of the Proposed Wind Farm site. The 10 km radius is consistent with best-practice guidance for wind farm bat assessments (NatureScot (2021); BCI, 2026). Available bat records within a 10km radius of a central point of the Proposed Wind Farm site (ITM: X 619332, Y 587524) were requested from BCI on the 4th February 2026 and the records were provided by BCI on the 26th February 2026.

Records from the National Biodiversity Data Centre (NBDC) were also reviewed to identify bat species recorded within the relevant 10 km grid squares (hectads) surrounding the Proposed Wind Farm site.

3.2.2 Bat Species' Range

EU Member States are required to monitor the conservation status of natural habitats and species listed under the Habitats Directive and report their findings to the European Commission every six years under Article 17. In August 2025, Ireland submitted the fourth national assessment of conservation status for Annex-listed habitats and species, including all bat species (NPWS, 2025).

The 2025 Article 17 Reports were reviewed to determine the distribution and range of bat species in relation to the Proposed Wind Farm site. Particular attention was given to identifying species occurring at the edge of their known range, as these may present higher sensitivity in the context of wind energy developments (NatureScot (2021)).

3.2.3 Designated Sites

A search for European sites designated for the conservation of bats was undertaken within a 10 km radius of the Proposed Wind Farm site (NatureScot (2021)). Data was obtained from the National Parks and Wildlife Service (NPWS) website and map viewer. The search included European sites (Special Areas of Conservation, SACs) and nationally designated sites (Natural Heritage Areas, NHAs and proposed Natural Heritage Areas, pNHAs) relevant to bat conservation.

3.2.4 Landscape Features

3.2.4.1 Ordnance Survey Mapping

Ordnance survey maps (OSI 1:5,000 and 1:50,000) and aerial photographs were reviewed to identify any habitats and landscape features likely to be used by bats. Maps and images of the Proposed Wind Farm 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.

3.2.4.2 Underground Sites

The Geological Survey Ireland online mapping tool and the University of Bristol Speleological Society Cave Database for the Republic of Ireland were consulted to identify any natural subterranean sites, such as caves, with potential to support bat roosts within 10 km of the Proposed Wind Farm site (NatureScot (2021)). In addition, the National Inventory of Architectural Heritage and National Monuments Service datasets were reviewed for records of manmade underground structures, such as souterrains, within 10 km of the Proposed Wind Farm site that may provide suitable bat roosting habitat (NatureScot (2021)). These sources were last consulted on 31st July 2026.

3.2.4.3 National Biodiversity Data Centre Bat Landscape Mapping

The National Biodiversity Data Centre map viewer includes "Bat Landscape" models developed by Lundy *et al.* (2011) which assess habitat suitability for bat species across Ireland using Maximum Entropy modelling. The model outputs provide a habitat suitability index on a five-point scale ranging from high suitability (red) to low suitability (green).

The location of the Proposed Wind Farm was reviewed in relation to these habitat suitability indices in order to assess modelled bat habitat suitability within the Proposed Wind Farm site and the surrounding landscape. It should be noted that the model outputs are based on predictive habitat modelling rather than confirmed bat records. Nevertheless, they provide a useful indication of areas where conditions may be favourable for bats within the wider landscape.

3.2.4.4 Additional Projects in the Wider Landscape

A search for existing, permitted and proposed wind energy developments within 10 km of the Proposed Turbines was undertaken in line with best practice guidance (NatureScot (2021)). More details on the cumulative search procedure and the other infrastructure developments within the vicinity of the Proposed Turbines are provided in Chapter 2 of the EIAR.

All information gathered during the desk study was used to inform the design and spatial coverage of bat surveys undertaken at the Proposed Wind Farm site. In particular, the identification of potential roosting features, landscape connectivity and records of bat activity within the wider area helped guide the location of survey effort and informed the assessment of potential effects on bats associated with the Proposed Project, including potential cumulative effects with other developments in the wider landscape.

3.3 Field Surveys

3.3.1 Multidisciplinary Surveys

Multidisciplinary walkover surveys were undertaken throughout 2025. The Site was systematically and thoroughly walked in a ground-truthing exercise with the habitats on the Site assessed and classified. The habitats (including any culverts/bridges) were assessed for bat commuting, foraging and roosting suitability.

Multidisciplinary walkover surveys were undertaken on the following dates:

Table 3-1 Multidisciplinary Walkover Surveys and Bat Survey Effort

Multidisciplinary Survey	Dedicated Bat Survey
19th November 2024	10th April 2025
5th December 2024	8th May 2025
14th January 2025	3rd July 2025
23rd January 2025	26th August 2025
27th August 2025	27th August 2025
28th August 2025	22nd September 2025
5th May 2026	
6th May 2026	
7th May 2026	

3.3.2 Bat Habitat Suitability Appraisal

Targeted bat habitat suitability surveys were undertaken throughout 2025. These surveys focused on assessing habitats and features within the Site for their potential to support roosting, foraging and commuting bats.

Particular attention was given to features with roost potential, including trees, structures and watercourse crossings, as well as linear features that may function as commuting routes. Connectivity with the wider landscape was also considered.

Assessment was undertaken in accordance with the criteria set out in Collins (2023), which provides a standardised approach to classifying bat roost potential and the suitability of habitats for foraging and commuting. Habitats were assigned to one of the following categories *High*, *Moderate*, *Low*, *Negligible* or *None*, as described in **Appendix 1** of this report.

3.3.3 Roost Surveys

Daytime Roost Inspections

A search for roosts was undertaken within the Proposed Wind Farm and within 200 m plus the maximum rotor radius ((i.e. 81.5 m) of each proposed turbine location (NatureScot (2021)). The aim was to determine the presence of roosting bats and the need for further survey work or mitigation. Daytime roost inspections were carried out in April and August 2025. Walkover surveys were carried out and included a search for Potential Roosting Features (PRFs) in trees, buildings, and other structures where present. These were assessed for their potential to support roosting bats according to Collins (2023) (see **Appendix 1** for roost assessment criteria).

Nine structures, and their associated outbuildings, were identified within the Site and assessed for bat roost potential (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. Locations of all inspected structures are presented in Figure 3-1.

The Proposed 110kV Underground Cabling Route, including watercourse crossing infrastructure were also assessed for any suitability to host roosting bats. Surveys were carried out on the 23rd August 2025 and comprised an inspection of existing infrastructure to look for evidence of bat use and assess the roosting suitability according to Collins (2023) (Table 3-2).

Targeted ground-level inspections were undertaken on broadleaved trees within the Site with particular emphasis on trees scheduled for felling. Commercial conifer plantations outside the felling buffers and Proposed Project footprint were excluded from detailed tree inspection as they do not provide suitable roosting features for bats due to their species composition, uniform structure and intensive management regime, which limits the development of cavities, cracks, loose bark or other potential roost features.

Table 3-2 Structures inspected within the Site

Structure No.	Description	X ITM	Y ITM	Nearest Turbine	Distance to nearest turbine (m)
1	Derelict building	619576	589435	T1	279
2	Stone ruins	621261	587085	T11	245
3	Derelict building	618771	587134	T15	138
4	Derelict building	619463	586532	T17	196
5	Farmyard	619061	587476	T15	350
6	Residential and farmyard	619195	587115	T15	288
7	Farm/Construction Yard	617715	585723	T21	388
8	Stone Bridge	615126	589310	Water Crossing on Proposed 110kV Underground Cabling Route	N/A
9	Concrete Culvert	618282	588669	Water Crossing on Proposed 110kV Underground Cabling Route	N/A

Emergence Surveys

Emergence surveys at dusk were carried out which focused on the PRFs identified during the habitat appraisal. 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. Table 3-3 summarises survey effort in relation to emergence surveys carried out in 2025. 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 PRF structure. Surveys were carried out in favourable weather conditions.

Table 3-3 Emergence Surveys during the 2025 survey period

Date	Surveyors	Structure No.	Sunrise/ Sunset	Type	Weather
8th May 2025	Molly O'Hare and Emma Fitzgerald	3	21:07	Dusk Emergence	10˚C - 9 ˚C, dry, calm, Moon – Visible 87%, Cloud - 40%
3rd July 2025	Molly O'Hare and Emma Fitzgerald	4	21:55	Dusk Emergence	16 ˚C-14 ˚C, dry, calm-light breeze, Moon -Visible 60%, Cloud – 10%

26th August 2025	Molly O'Hare and Emma Fitzgerald	1	20:31	Dusk Emergence	16 °C-15 °C, dry, light breeze, Moon- NV, Cloud 85%
27th August 2025	Emma Fitzgerald and Marie Greaney	2	20:30	Dusk Emergence	15 °C-14 °C, dry, calm, Moon- NV, Cloud 0 -30%
27th August 2025	Molly O'Hare	6	20:30	Dusk Emergence	14 °C-12 °C, dry, calm, Moon- NV, Cloud 15-30%
27th August 2025	Emily Fair	5	20:30	Dusk Emergence	14 °C-12 °C, dry, light breeze, Moon- NV, Cloud 30-60%
22nd September 2025	Molly O'Hare and Emma Fitzgerald	7	19:28	Dusk Emergence	12 °C-10 °C, dry, calm, Moon- NV, Cloud 0-15%

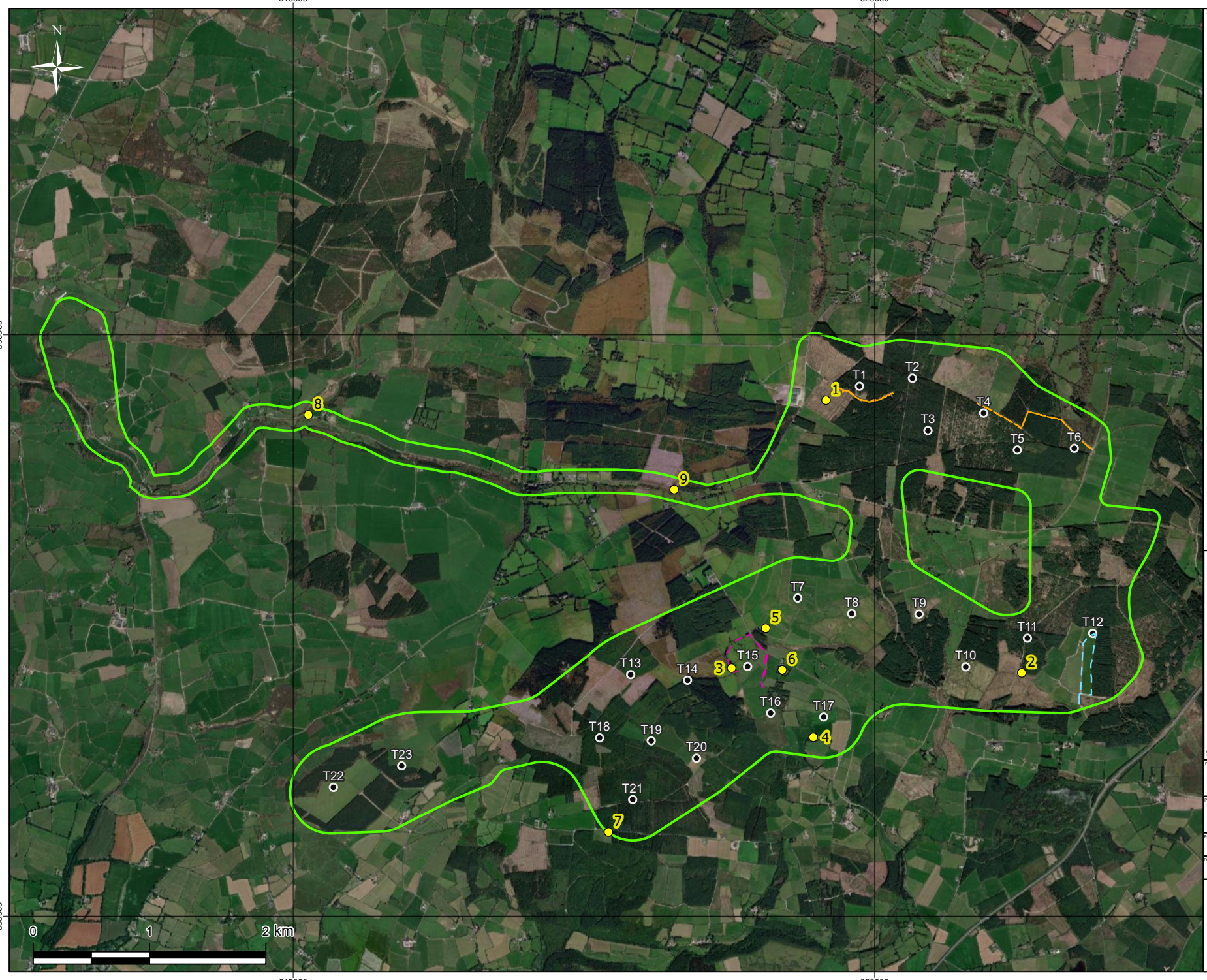
3.3.4 Manual Transects

Manual activity surveys comprised of walked transects after dusk. A series of representative transect routes were selected throughout the Proposed Wind Farm site. The aim of these surveys was to record species presence, relative abundance and behaviour (foraging and commuting) within the Proposed Wind Farm site, and to gather additional information on habitat features of importance to bats across the Proposed Wind Farm site. Transect routes were prepared with reference to the Proposed Wind Farm site, 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 undertaken in 2025 are presented in Figure 3-1.

Transects were walked by two surveyors, recording bats in real time. Transects commenced immediately after the dusk emergence surveys and were completed within 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. Transects surveys were undertaken in spring, summer and autumn 2025. Table 3-4 summarises survey effort in relation to manual transects.

Table 3-4 Survey Effort – 2025 Walked Transects

Date	Surveyors	Sunrise/ Sunset	Time	Weather	Transect (km)
8th May 2025	Molly O'Hare and Emma Fitzgerald	21:07	22:45 – 00:07	8°C, dry, calm, moon 75% visible, 40% cloud cover	1.9
3rd July 2025	Molly O'Hare and Emma Fitzgerald	21:55	23:55 – 00:55	12°C, dry, light breeze, moon 60% visible, 10% cloud cover	1.2
26th August 2025	Molly O'Hare and Emma Fitzgerald	20:31	22:15 – 23:43	12°C, dry, light breeze, moon not visible, 90% cloud cover	3.4



Map Legend

- EIAR Site Boundary
- Turbine Locations
- Structures
- Spring Transect Route 2025
- Summer Transect Route 2025
- Autumn Transect Route 2025

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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SITE LOCATION - NOT TO SCALE

Drawing Title: Survey Effort 2025

Project Title: Proposed Slievegrine Renewable Energy Development

Project No.	Drawing No.	Scale
240740	3-2	1:30,000
Drawn By	Checked By	Date
JG	MO'H	08/08/2026

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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 23 turbines are proposed, 15 detectors were deployed to ensure compliance with NatureScot (2021).(15 detectors were originally deployed to cover a 24 proposed turbine layout). Automated bat detectors were deployed for at least 10 nights in spring (April – May), 20 nights of summer (June – mid-August) and 10 nights of autumn (mid-August – October) (NatureScot (2021)).

Detector placement was based on the Proposed Turbine locations, if accessible, and the representative habitat at these locations if access to the specific location was not possible, as described in Table 3-5. Figure 3-2 presents static detector locations in relation to the final proposed turbine layout. Overall, a good spatial spread in relation to the Proposed Turbines and a representative sample of the range of available habitats was achieved.

Table 3-5 Ground-level Static Detector Locations 2025

Detector ID	X ITM	Y ITM	Habitat	Linear Feature within 50m	Corresponding/ Nearest Proposed Turbine
D01*	619847	589530	Conifer Plantation (WD4)	Forestry Edge	T01
D02	620312	589633	Conifer Plantation (WD4)	Forestry Edge	T02
D03	620977	589359	Conifer Plantation (WD4), Dry Meadows and Grassy Verges (GS2)	Forestry Edge	T04
D04	621196	589076	Conifer Plantation (WD4), Dry Meadows and Grassy Verges (GS2)	Forestry Edge	T05
D05	618470	586369	Improved Agricultural Grassland (GA1)	Hedgerow (WL1)	T20
D06	621893	587433	Improved Agricultural Grassland (GA1)	Forestry Edge	T12
D07	620375	587590	Recently felled Woodland (WS5)	Forestry Edge	T09
D08	621294	587350	Conifer Plantation (WD4)	Forestry Edge	T11
D09	617905	587015	Conifer Plantation (WD4), Dry Meadows and Grassy Verges (GS2)	Forestry Edge	T13
D10	617629	586538	Recently felled Woodland (WS5)	Forestry Edge	T18
D11	617926	585988	Conifer Plantation (WD4)	Forestry Edge	T21
D12	618901	587144	Improved Agricultural Grassland (GA1)	Hedgerow (WL1)	T15
D13	619103	586750	Improved Agricultural Grassland (GA1)	Forestry Edge	T16
D14	619351	587656	Improved Agricultural Grassland (GA1)	Hedgerow (WL1)	T7
D15*	615356	586129	Improved Agricultural Grassland (GA1)	Forestry Edge	T22

**D15 was redeployed in Spring 2025 and D01 was redeployed in Summer 2025.*

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

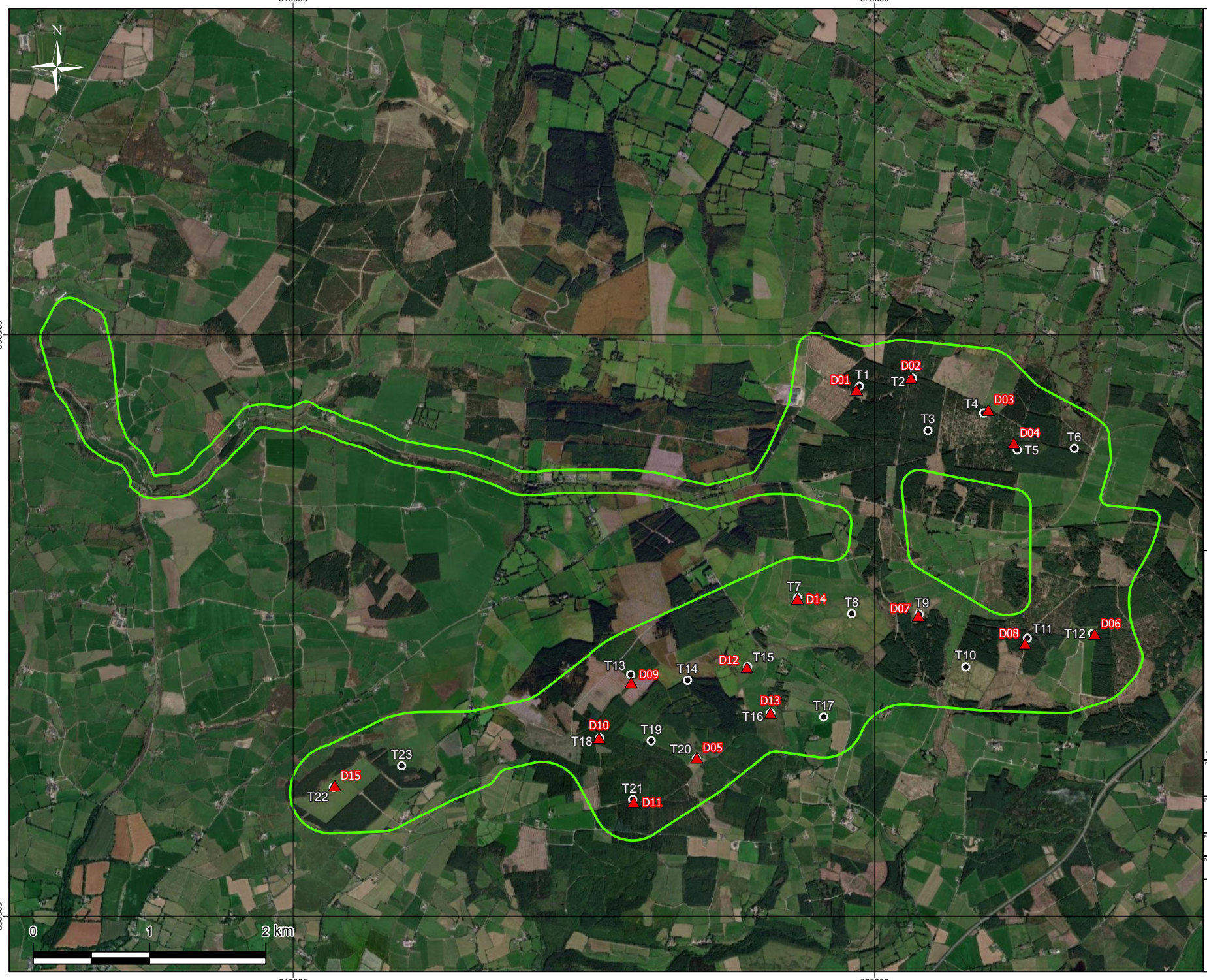
sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method when provided with GPS coordinates.

One detector (D15) was redeployed in Spring 2025 as it had fallen over during its original deployment due to livestock/machinery. Another detector (D01) was redeployed in Summer 2025 due to detector failure.

Onsite weather monitoring was undertaken concurrently with static detector deployments. One Vantage Pro 2 (Davis Instruments, CA, UCS) was deployed in spring and summer and Visual Crossing was used for autumn (due to transmission issues with the weather station deployed on site). Visual crossing utilises weather stations present within the area to gather night-time hourly weather data which was tracked remotely to ensure a sufficient number of nights (i.e. minimum 10-20 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). Table 3-6 summarises survey effort achieved in 2025 for each of the detector locations.

Table 3-6 Survey Effort - Ground-level Static Surveys 2025

Season	Survey Period	Total Survey Nights per Detector Location	Nights with Appropriate Weather
Spring	23rd April – 8th May 2025	15	13
Summer	11th June – 3rd July	22	20
Autumn	27th August – 23rd September 2025	27	17
Total Survey Effort		**64**	**50**
Spring 2025 (Detector D15 only)	8th May – 11th June 2025	34	13
Summer 2025 (Detector D01 only)	3rd July – 27th August 2025	55	20
Total Survey Effort (Redeployed)		**89**	**33**
Overall Total Survey Effort		**153**	**83**

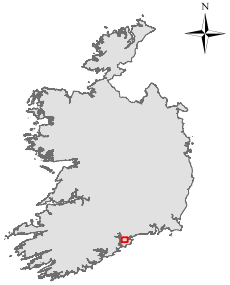


Map Legend

- EIAR Site Boundary
- Turbine Locations
- Static Detectors

Spatial Reference
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Projection: Transverse Mercator

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SITE LOCATION - NOT TO SCALE

Drawing Title: Static Detector Locations 2025

Project Title: Proposed Slievegrine Renewable Energy Development

Project No.	Drawing No.	Scale
240740	3-2	1:30,000
Drawn By	Checked By	Date
JG	MO'H	29/09/2026

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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 Wind Farm. 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 which consist of the 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 recorded with a SM4BAT static bioacoustics recording device. The recordings are illustrated using Wildlife Acoustics Kaleidoscope software.

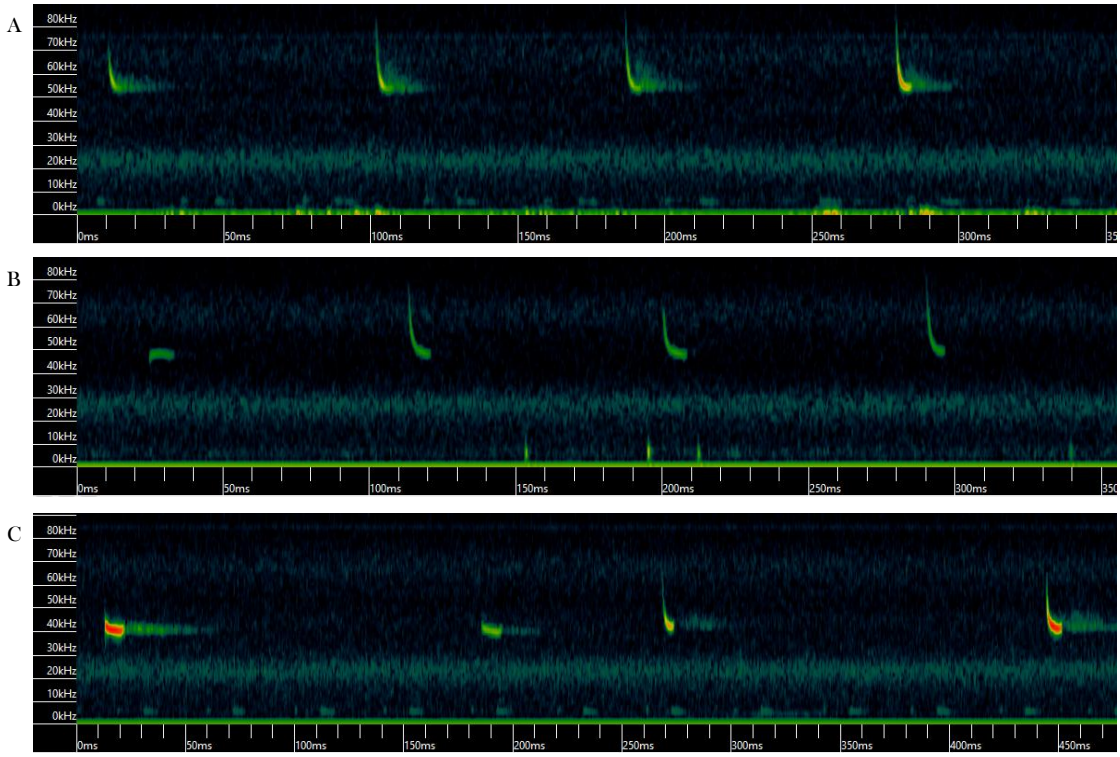


Plate 3-1 Spectrogram of echolocation pulses of (A) Soprano pipistrelle (Peak Frequency 55kHz), (B) Common pipistrelle (Peak Frequency 45kHz) and (C) Nathusius' pipistrelle (Peak Frequency 39kHz).

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.

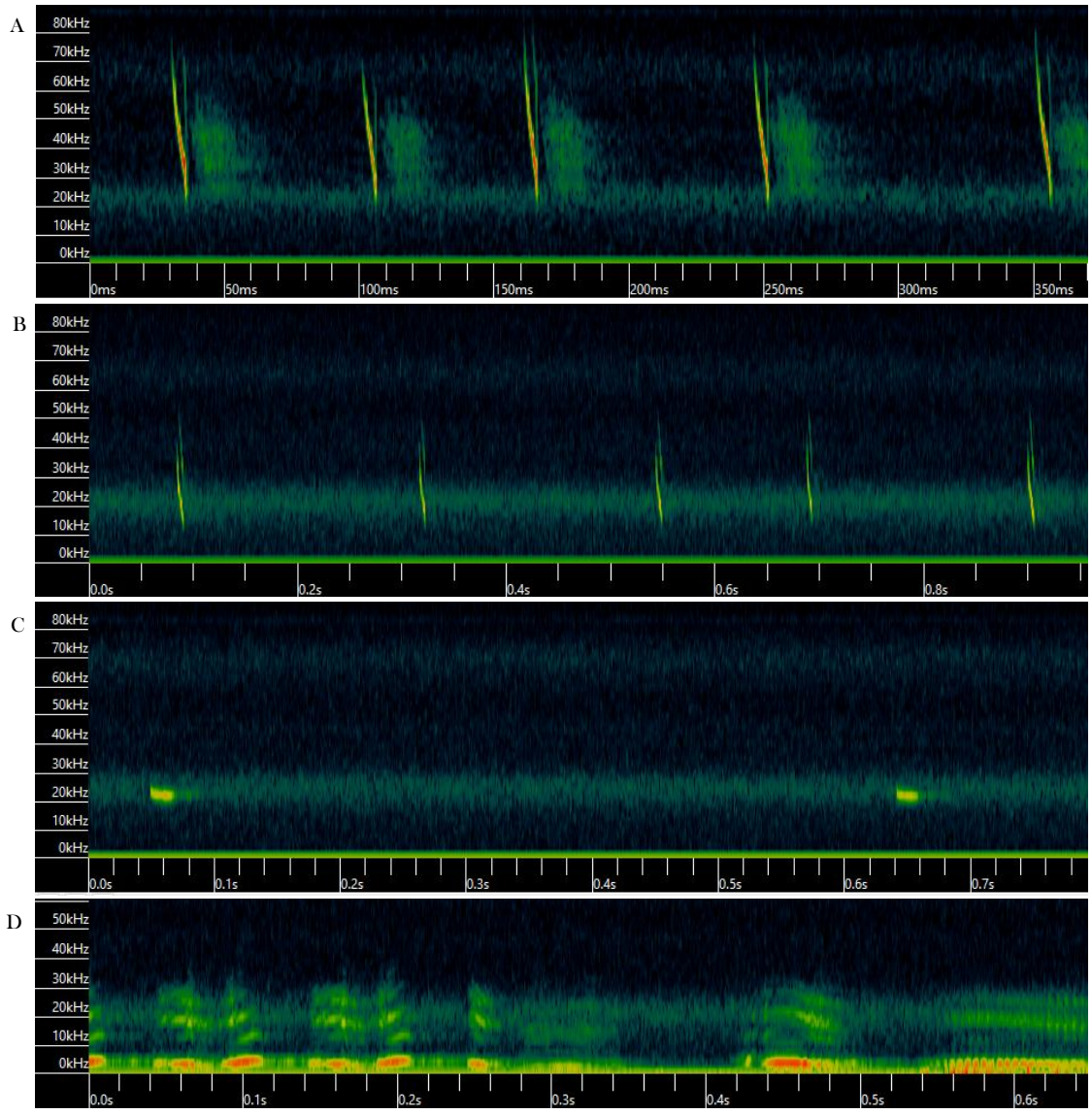


Plate 3-2 Spectrogram of typical echolocation pulses of (A) Myotis spp., *(B) Brown long-eared bat, (C) Leisler's bat and (D) typical non-bat sounds.*

Individual bats of the same species cannot be distinguished using echolocation alone; therefore, 'bat passes' were used as a measure of activity (Collins, 2023). A bat pass was defined as a recording of an individual species or species group's echolocation sequence containing at least two pulses and of a maximum duration of 15 seconds. All bat passes recorded during the surveys were classified in accordance with these criteria, allowing consistent comparison across survey periods and locations.

In some instances, more than one bat pass occurred within a single recording file. In such cases, the final species classification assigned to the file was based on the rarer or more difficult-to-detect species present. This precautionary approach minimises the risk of under-representing less frequently encountered taxa within multi-pass recordings. This conservative treatment ensures that activity levels are not biased towards more common, highly detectable species and supports a precautionary interpretation of potential impacts within the EIAR

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 Proposed Wind Farm 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 3-7.

Table 3-7 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				
	Myotis spp.	*Leisler's bat*	*Nathusius' pipistrelle*	*Soprano and Common pipistrelles*	*Brown long-eared bat*
Low	< 3.45	< 2.75	< 0.03	< 2.81	< 0.50
Moderate	3.45 – 10.35	2.75 – 8.24	0.03 – 0.08	2.81 – 8.43	0.50 – 1.50
High	> 10.35	> 8.24	> 0.08	> 8.43	> 1.50

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 3-8. 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 3-8 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 current 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 Wind Farm.

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 3-9, an adapted assessment of vulnerability of Irish bat populations to collision with wind turbine blades is provided. This adaptation of NatureScot (2021) 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 3-9 Population Vulnerability of Irish Bat Species (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 development 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) (Table 3-10) i.e. Table 3a from 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 Wind Farm site. All site assessment levels, as per NatureScot (2021) are presented in **Appendix 2** of this report.

Table 3-10 Site-risk Level Assessment Matrix (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 risk assessment was made by combining the site risk level (i.e. Low/Medium/High) and the Ecobat activity category (or the equivalent site-specific activity level thresholds), as shown in the overall risk assessment matrix table (Table 3-11) i.e. Table 3b from NatureScot (2021). 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) (Overall Risk Assessment is presented in **Appendix 3 of this report**).

Table 3-11 Overall Risk Assessment Matrix (Table 3b, NatureScot (2021).

	Ecobat activity category (equivalent site-specific activity level thresholds)					
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 3-9 above).

3.7 Limitations

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

The information provided in this report accurately and comprehensively describes the baseline environment; provides an accurate prediction of the likely potential effects of the Proposed Project ; prescribes mitigation as necessary; and describes the predicted residual impacts.

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

4.1.1 Bat Conservation Ireland

Bat Conservation Ireland were invited to comment on the potential of the Proposed Project to affect bats. No reply has been received as of 08/10/2026.

4.1.2 Development Applications Unit – National Parks and Wildlife Service (NPWS)

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 from the Department of Housing, Local Government and Heritage on the 10th of October 2025, in which there were no specific items relating to bats were provided

Representatives of the Project Team met with representatives of the National Parks and Wildlife Service (NPWS) on 10th February 2026 and 16th of July 2026 to discuss the Proposed Project and the ecological assessments undertaken for the EIAR. The discussion focused primarily on freshwater pearl mussel, habitat assessment methodologies and ecological mitigation measures associated with the Proposed Project. No specific comments or recommendations relating to bats were raised during either meeting.

4.2 Desk Study

4.2.1 Bat Records

Bat Conservation Ireland

A data request was sent to Bat Conservation Ireland for records of bat activity and roosts within a 10 km radius of an approximate central point within the Proposed Wind Farm site (ITM: X 619332, Y 587524).

Available bat records were provided by BCI on 26th February 2026. The search included roosts, transects and ad-hoc observations, with seven roosts, two transects and fifteen ad-hoc observations identified. Based on these previous bat records, six of Ireland's nine resident bat species were recorded within 10 km of the Proposed Wind Farm site central point. The results of the database search are provided in Table 4-1.

Table 4-1 Summary of Bat Conservation Ireland records within 10 km of the Proposed Wind Farm site centre point.

Survey Type	Species	X ITM	Y ITM	Date	Location
Roost	*Pipistrellus pygmaeus*	610950	591037	N/A	Aglish, County Waterford
	Plecotus auritus	627948	596037	N/A	Dungarvan, Co. Waterford
	Myotis daubentonii	621715	597044	N/A	Colligan Woodland, County Waterford
	Pipistrellus pygmaeus	610950	580038	N/A	County Waterford
	Plecotus auritus	608950	583038	N/A	Near Youghal Bridge and Clashmore, Co. Waterford

	Plecotus auritus, *Pipistrellus pipistrellus* (45kHz)	609950	578039	N/A	Youghal, Co. Waterford
	Pipistrellus pygmaeus, *Plecotus auritus*, *Myotis daubentonii*, *Pipistrellus pipistrellus* (45kHz)	622949	594037	N/A	Dungarvan, Waterford
Transects	*Myotis daubentonii*, Unidentified bat	623162	596181	N/A	Killadangan Bridge, Killadangan Transect
	Myotis daubentonii, *Myotis natterreri*, Unidentified bat	622483	591202	N/A	Twomile Bridge Transect
Ad-hoc	*Plecotus auritus*	613508	582084	09/07/2008	BATLAS 2010
	Myotis daubentonii, *Pipistrellus pipistrellus* (45kHz), *Pipistrellus pygmaeus*, Unidentified bat	613125	582763	09/07/2008	BATLAS 2010
	Myotis natterreri	611722	587118	10/07/2008	BATLAS 2010
	Pipistrellus pipistrellus (45kHz), *Nyctalus leisleri*	620370	579992	13/07/2017	BATLAS 2020
	Pipistrellus pipistrellus (45kHz), *Pipistrellus pygmaeus*, *Myotis daubentonii*	621178	580419	26/07/2017	BATLAS 2020
	Myotis daubentonii	621873	584517	27/07/2017	BATLAS 2020
	Pipistrellus pipistrellus (45kHz), *Pipistrellus pygmaeus*	627304	584540	20/08/2017	BATLAS 2020
	Pipistrellus pipistrellus (45kHz), *Pipistrellus pygmaeus*, *Nyctalus leisleri*	620240	585569	26/08/2018	BATLAS 2020
	Pipistrellus pipistrellus (45kHz)	628231	588349	19/08/2017	BATLAS 2020
	Pipistrellus pipistrellus (45kHz)	623500	588362	26/08/2017	BATLAS 2020
	Pipistrellus pipistrellus (45kHz), *Pipistrellus pygmaeus*, *Nyctalus leisleri*, *Myotis daubentonii*	622549	591337	09/07/2017	BATLAS 2020
	Pipistrellus pygmaeus	623849	593937	09/07/2017	BATLAS 2020
	Pipistrellus pipistrellus (45kHz)	628437	594945	16/09/2018	BATLAS 2020
	Pipistrellus pygmaeus	626256	594962	16/09/2018	BATLAS 2020
	Pipistrellus pipistrellus (45kHz), *Pipistrellus pygmaeus*	628851	596827	15/09/2017	BATLAS 2020

National Bat Database of Ireland

The National Bat Database of Ireland was searched for records of bat activity and roosts within 10 km of the Proposed Wind Farm site (last search 31st July 2026). Hectads X07, X08, X09, X17, X18, X19, X28 and X29 lie within 10 km of the Proposed Wind Farm site. Six of Ireland's nine resident bat species were recorded within 10 km of the Proposed Wind Farm site which are protected under Annex IV of the EU Habitats Directive and nationally under the Wildlife Act (HD Annex IV, WA). The results of the database search are provided in Table 4-2.

Table 4-2 NBDC Bat Records within 10 km of the Proposed Wind Farm site.

Hectads	Species	Database	Designation
X28	Brown long-eared bat (*Plecotus auritus)*	National Bat Database of Ireland	HD Annex IV, WA
X28	Common Pipistrelle (*Pipistrellus pipistrellus*)	National Bat Database of Ireland	HD Annex IV, WA
X28	Daubenton's Bat (*Myotis daubentoniid*)	National Bat Database of Ireland	HD Annex IV, WA
X28	Leisler's Bat (*Nyctalus leisleri*)	National Bat Database of Ireland	HD Annex IV, WA
X28	Soprano pipistrelle (*Pipistrellus pygmaeus*)	National Bat Database of Ireland	HD Annex IV, WA
X18	Brown long-eared bat (*Plecotus auritus)*	National Bat Database of Ireland	HD Annex IV, WA
X18	Daubenton's Bat (*Myotis daubentoniid*)	National Bat Database of Ireland	HD Annex IV, WA
X18	Natterer's Bat (*Myotis nattereri*)	National Bat Database of Ireland	HD Annex IV, WA
X18	Soprano pipistrelle (*Pipistrellus pygmaeus*)	National Bat Database of Ireland	HD Annex IV, WA
X19	Brown Long-eared Bat (*Plecotus auritus*)	National Bat Database of Ireland	HD Annex IV, WA
X19	Common Pipistrelle (*Pipistrellus pipistrellus*)	National Bat Database of Ireland	HD Annex IV, WA
X19	Daubenton's Bat (*Myotis daubentonii*)	National Bat Database of Ireland	HD Annex IV, WA
X19	Leisler's Bat (*Nyctalus leisleri*)	National Bat Database of Ireland	HD Annex IV, WA
X19	Soprano Pipistrelle (*Pipistrellus pygmaeus*)	National Bat Database of Ireland	HD Annex IV, WA
X29	Brown Long-eared Bat (*Plecotus auritus*)	National Bat Database of Ireland	HD Annex IV, WA
X29	Common Pipistrelle (*Pipistrellus pipistrellus*)	National Bat Database of Ireland	HD Annex IV, WA
X29	Daubenton's Bat (*Myotis daubentonii*)	National Bat Database of Ireland	HD Annex IV, WA
X29	Leisler's Bat (*Nyctalus leisleri*)	Heritage Council's Traditional Farm Buildings Scheme Fauna Records from 2016 to 2023	HD Annex IV, WA
X29	Natterer's Bat (*Myotis nattereri*)	National Bat Database of Ireland	HD Annex IV, WA
X29	Pipistrelle (*Pipistrellus pipistrellus*)	Heritage Council's Traditional Farm Buildings Scheme Fauna Records from 2016 to 2023	HD Annex IV, WA
X29	Soprano Pipistrelle (*Pipistrellus pygmaeus*)	National Bat Database of Ireland	HD Annex IV, WA
X29	Whiskered Bat (*Myotis mystacinus*)	Heritage Council's Traditional Farm Buildings Scheme Fauna Records from 2016 to 2023	HD Annex IV, WA
X17	Brown Long-eared Bat (*Plecotus auritus*)	National Bat Database of Ireland	HD Annex IV, WA
X17	Common Pipistrelle (*Pipistrellus pipistrellus*)	National Bat Database of Ireland	HD Annex IV, WA
X17	Daubenton's Bat (*Myotis daubentonii*)	National Bat Database of Ireland	HD Annex IV, WA
X17	Soprano Pipistrelle (*Pipistrellus pygmaeus*)	National Bat Database of Ireland	HD Annex IV, WA
X07	Brown Long-eared Bat (*Plecotus auritus*)	National Bat Database of Ireland	HD Annex IV, WA

X07	Common Pipistrelle (Pipistrellus pipistrellus)	National Bat Database of Ireland	HD Annex IV, WA
X07	Daubenton's Bat (*Myotis daubentonii*)	National Bat Database of Ireland	HD Annex IV, WA
X07	Leisler's Bat (*Nyctalus leisleri*)	National Bat Database of Ireland	HD Annex IV, WA
X08	Brown Long-eared Bat (*Plecotus auritus*)	National Bat Database of Ireland	HD Annex IV, WA
X08	Soprano Pipistrelle (*Pipistrellus pygmaeus*)	National Bat Database of Ireland	HD Annex IV, WA
X09	Common Pipistrelle (*Pipistrellus pipistrellus*)	National Bat Database of Ireland	HD Annex IV, WA
X09	Daubenton's Bat (*Myotis daubentonii*)	National Bat Database of Ireland	HD Annex IV, WA
X09	Leisler's Bat (*Nyctalus leisleri*)	National Bat Database of Ireland	HD Annex IV, WA
X09	Soprano Pipistrelle (*Pipistrellus pygmaeus*)	National Bat Database of Ireland	HD Annex IV, WA
X09	Whiskered Bat (Myotis mystacinus)	National Bat Database of Ireland	HD Annex IV, WA

4.2.2 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 Proposed Wind Farm site.

The Proposed Wind Farm site is outside the current known range for the Lesser horseshoe bat, Nathusius' pipistrelle and Whiskered bat and is within the range of all other bat species.

4.2.3 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 Wind Farm site is situated outside the known range of this species and no SACs designated for Lesser horseshoe bat occur within 10 km of the Proposed Wind Farm site.

Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) may be designated for any bat species. A search of NHAs and pNHAs within a 10km radius of the Proposed Wind Farm site did not identify any sites designated for bats. The pNHA Tallow (Disused Church) [000670] designated for the conservation of bats is located 13.8km from the Proposed Grid Connection and 17.5km from the closest Proposed Turbine. More information on this designated site can be found in Chapter 6, Section 6.3.1.1.

4.2.4 Landscape Features and Habitat Suitability

A review of mapping and photographs provided insight into the habitats and landscape features present at the Proposed Wind Farm site. In summary, the Proposed Wind Farm site is mainly composed of conifer plantation forestry , while the remainder of the Proposed Wind Farm site supports marginal farmland habitats. The biodiversity maps portal showed that there are four Ancient and Long-Established Woodlands within the 10km radius of the Proposed Wind Farm site. These woodlands are named Cladagh (1.1km away), Killeeshal (6.3km away), Rincrew Wood (7.2km away) and Ballynatray Demesne West (6.8km away) and contain mixed woodland, semi-natural broadleaf and conifer plantation.

A review of the National Inventory of Architectural Heritage (NIAH) and the National Monuments Service (NMS) datasets did not indicate the presence of subterranean sites within the Proposed Wind Farm site.

A search of the UBSS Cave Database for the Republic of Ireland and the GSI Karst Database found multiple subterranean karst features within the 10km radius located to the north-east and north-west of the Proposed Wind Farm site. There are four caves present to the northeast of the Proposed Wind Farm site with the closest cave being 5.8km away. There are thirteen caves present to the northwest of the Proposed Wind Farm site with the closest cave being 4.8km away. None of these caves have been associated with bat activity. Details of these caves are listed below in Table 4-3.

A review of the NBDC bat landscape map provided a habitat suitability index of 21.22 (Green) to 26.44 (Yellow). This indicates that the Proposed Wind Farm site has *Low* habitat suitability for bat species.

Table 4-3 Caves located within 10km of the Proposed Wind Farm site.

Name	Location (ITM)	Distance to the Proposed Wind Farm Site (km)	Description
Ballynahemery Cave	616534, 596226	6.8	33m long passage.
Ballynamintra Cave	616326, 594906	5.8	105m passage and chambers.
Ballynamuck Cave	624546, 594460	5.8	15m crawl.
Bewley Cave East	612643, 595062	8.4	60m passage to pool. Also called Cave of the Green Lake.
Bewley West Cave	612445, 595154	8.6	690m chambers and passages. Also called Greeneyes Cave. Caves flood from the inside.
Bridgewater Cave	616339, 595756	6.5	50m long network of muddy tubes.
Cappagh Quarry Cave	617243, 595860	6.2	45m single passage.
Carrigmurrish Cave	616834, 594685	5.4	460m long tunnels.
Kilgreany Cave	586036, 594378	4.8	60m to chamber.
Oonaglour Cave	615592, 595342	6.5	350m chambers and tunnels.
Shandon Cave	625673, 594236	6.2	47m tunnel.
Unknown	625522, 594387	6.2	NA
Unknown	625488, 594362	6.2	NA
Unknown	619825, 595359	5.4	NA
Unknown	619510, 595325	5.3	NA
Unknown	619155, 595526	5.5	NA
Unknown	618965, 595586	5.6	NA

4.2.5 Additional Projects in the Wider Landscape

Table 4-4 provides an overview of existing, permitted, and proposed wind farms located within 10km of the Proposed Turbines. An assessment of large-scale non wind farm projects can be found in Section 6.6 Chapter 6.

Table 4-4 Wind Farms within 10 km of the Proposed Turbines

Wind Farm	Status	No. of Turbines	Turbine Tip Height (m)	Approx. Distance from closest Proposed Turbine (km)
Ballycurreen Wind Farm	Existing	2	120	5.92
Knocknamona Wind Farm	Proposed	8	159	2.97
Moanbrack Wind Farm	Proposed	2	120	5.64
Woodhouse Wind Farm	Existing	8	126	4.86

4.3 Field Surveys

4.3.1 Bat Habitat Suitability Appraisal

4.3.1.1 Proposed Wind Farm Infrastructure Footprint

A total of eleven habitats were recorded within the Proposed Wind Farm site, including:

- Conifer plantation (WD4)
- Recently felled woodland (WS5)
- Improved agricultural grassland (GA1)
- Scrub (WS1)
- Wet grassland (GS4)
- Hedgerows (WL1)
- Stone walls and other stonework (BL1)
- Treelines (WL2)
- Drainage Ditches (FW4)
- Eroding/upland Rivers (FW1)
- Buildings and artificial surfaces (BL3)

The habitats within the Proposed Wind Farm site are dominated by Conifer plantation and grasslands with agricultural fields that are typically bordered by hedgerows or treelines and occasionally stone walls (Plate 4-2). Scrub can also be found throughout the Proposed Wind Farm site in various areas and forms a mosaic with grassland areas. Section 6.4 of Chapter 6 of the EIAR describes the various habitats within the Site in more detail.

The desktop study and walkover surveys were used to assess habitats for their suitability to support foraging, commuting, and roosting bats, according to Collins (2023). Bat habitat suitability categories, divided into *High*, *Moderate*, *Low*, *Negligible* or *None* are described fully in **Appendix 1 of this report**.

Areas of exposed grassland, agricultural land and artificial surfaces were considered of *Negligible* suitability (Plate 4-1, 4-4 and 4-7), i.e. no obvious habitat features on-site likely to be used as flight paths or by foraging bats.

Areas of scrub (Plate 4-9) and isolated treelines that may be used by a small number of bats and are poorly connected to the wider landscape, as well as closed canopy conifer forestry were considered of *Low* suitability for foraging and commuting bats (Plate 4-2).

Hedgerows, treelines, eroding/upland rivers, drainage ditches, Stone walls and other stonework, scrub and conifer plantation edges were considered of *Moderate* suitability for foraging and commuting bats as they provide connectivity as linear features within the Proposed Wind Farm site and to the surrounding

landscape (Plate 4-1, 4-3, 4-5 & 4-6). Hedgerows (WL1) are located throughout the Proposed Wind Farm site. The highest concentration of these habitats is within the centre of the Proposed Wind Farm site where they are found as field boundaries for the improved agricultural grassland (GA1) fields. The most frequently found species within the hedgerow habitat include gorse, bramble hawthorn, rowan, grey willow with bracken and nettle. Species found within treeline habitats (WL2) includes ash, hawthorn, ivy, sycamore, dog rose and grey willow.

With regard to roosting bats, structures located within the Proposed Wind Farm site were assessed for roosting suitability (Plate 4-8). All inspected structures were assessed as having *Low, Moderate* or *Negligible* roosting suitability. No structures with *High* roosting suitability were identified.

Seven buildings were inspected for bat roosting suitability. One structure was assessed as offering *Negligible* roosting potential, three structures had *Low* roosting potential, and four buildings had *Moderate* roosting potential. Details of the buildings inspection and dusk emergence surveys are presented below in Section 4.3.2.

All trees and treelines within the Proposed Wind farm site, particularly those scheduled for removal within felling buffers, were inspected for potential roost features (PRFs) following Andrews (2018), including rot holes, hazard beams, cracks/splits, partially detached bark, knot holes and branch junctions. One PRF was identified on a beech tree which is being retained, no further trees with PRFs were identified including those scheduled for felling. The beech tree was assessed as PRF-I, see Appendix 1 for assessment criteria. Any superficial features observed offered no roosting potential; accordingly, all other inspected trees were assessed as having no (*None)* roosting potential in line with Collins (2023). Further detail on inspected trees is provided in Section 4.3.2.



Plate 4-1 Hedgerows (WL1) and Treelines (WL2) along the improved agricultural grassland (GA1) near T19.



Plate 4-2 Stone wall (BL1) along the grassland habitat near T20.



Plate 4-3 Drainage ditch (FW4) located near T10.



Plate 4-4 Recently felled woodland (WS5) near T18.



Plate 4-5 Upland/Eroding River near T22.



Plate 4-6 Conifer plantation (WD4) located near T2



Plate 4-7 Wet grassland (GA2) located near T9.



Plate 4-8 Buildings and Artificial Surfaces (BL3) located near T11.



Plate 4-9 Scrub (WS1) located near T21.

4.3.1.2 Proposed Grid Connection site

The Proposed Grid Connection will comprise c.9km of Proposed 110kV Underground Cabling Route and a Proposed 220kV Loop-in Substation in the townland of Ballycullane, Co. Waterford. The Proposed 220kV Loop-in Substation will connect into the existing Knockraha-Cullenagh 220kV overhead line. The Proposed 110kV Underground Cabling Route measures approximately 9km in length and is located primarily within the existing public road corridor with two sections (approximately 262m and 788m) being located within proposed/ existing track across private land.

The Proposed Gird Connection will originate at the Proposed 110kV Substation which is situated within Conifer Plantation (WD4). The Proposed 110kV Underground Cabling Route will be installed predominantly within the existing road network, classified as buildings and artificial surfaces (BL3). The Proposed 220KV Loop-in Substation will be located on improved agricultural grassland (GA1). With

regard to commuting and foraging bats, habitats directly affected by the Proposed Grid Connection footprint, comprising buildings and artificial surfaces (BL3), were assessed as having *Negligible* suitability.

Other habitats recorded adjacent to the road network along the Proposed 110kV Underground Cabling Route include Conifer Plantation (WD4), Improved Agricultural Grassland (GA1), Depositing/lowland River (FW2) and Hedgerows (WL1). Further details of habitats adjacent to the Proposed 110kV Underground Cabling Route are provided in Section 6.4.1.11 of Chapter 6 of the EIAR.

Habitats adjacent to the Proposed 110kV Underground Cabling Route, such as improved agricultural grassland (GA1), were assessed as offering *Negligible* to *Low* suitability for commuting and foraging bats due to their generally open nature and limited structural connectivity.

Linear features adjacent to the Proposed 110KV Substation, the Proposed 110kV Underground Cabling Route and the Proposed 220KV Loop-in Substation including conifer plantation (WD4) edges, hedgerows (WL1), and Depositing/lowland River (FW2), were assessed as offering *Moderate* suitability for commuting and foraging bats, due to their connectivity with the wider landscape and the presence of linear vegetation providing navigational structure and shelter. However, these features are not directly impacted by the Proposed Grid Connection works. A small area within the Proposed Grid Connection site, X 613176, Y 589424 (ITM), will require vegetation removal to facilitate grid transformer delivery to the Proposed 220kV Loop-in Substation. The road edge habitat at this location has potential to provide commuting and foraging features for bats.

With regard to roosting bats, no buildings or trees capable of supporting bat roosts were identified within the Proposed Grid Connection footprint, and these areas were therefore assessed as having no *(None)* roosting potential. Water crossings along the grid connection are assessed below.

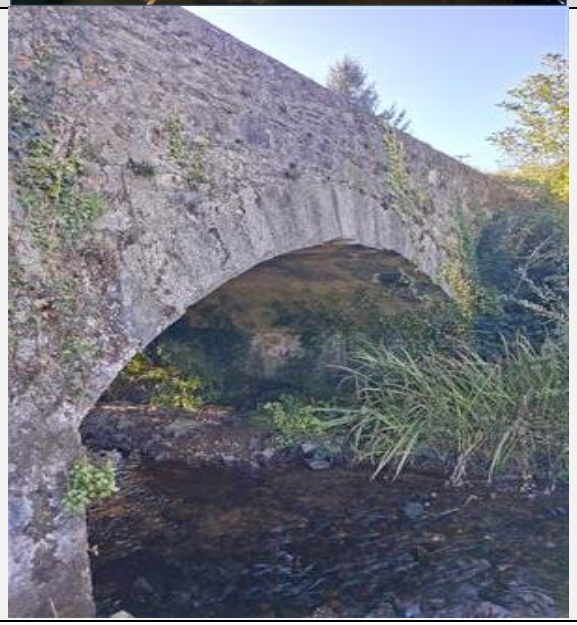
Watercourse Crossings

The Proposed 110kV Underground Cabling Route will traverse of 15 no. identified existing watercourse crossings of which 2 no. are EPA/OSI mapped. The two EPA/OSE mapped comprise existing structures, including a culvert and a bridge, which were assessed for bat roosting potential during field surveys. The remaining 13 watercourse crossings points identified had no structures or features to assess for bat roost suitability.

No evidence of bat roosting was recorded at any of the inspected structures during the surveys. Of the assessed watercourse crossing structures, one was assigned *Negligible* potential, and one was assigned *Low* potential. The findings are described in Table 4-5 below.

The construction methodology for the mapped watercourse crossings will use flatbed formation over and has been designed to eliminate the requirement for in-stream works on these locations requiring a crossing to be constructed to traverse the watercourse with the cabling ducts, as outlined in Section 4.8.2.8 of Chapter 4 of this EIAR.

Table 4-5 Bat Roost Suitability of Bridges/culverts along the Proposed 110kV Underground Cabling Route (EPA Mapped)

Crossing	X ITM	Y ITM	Bridge/Culvert type	Photo	Bat Roost Potential	Extent of Works
WC1	618282	588669	Concrete Culvert		-Built from concrete slabs -Only superficial cracks and cervices present -*Negligible* roosting potential	Flatbed formation over
WC2	615122	589312	Stone Arch Bridge		- One side of the bridge is overgrown with vegetation while the other side gives a clear flight path to surrounding land. - Few limited cracks and crevices on the face of the bridge. - Interior of bridge was well-pointed with very few small cracks and crevices. - No evidence of roosting bats. - *Low* roosting potential.	Flatbed formation over

4.3.1.3 Delivery Accommodation Works

As described in Chapter 4, Section 4.5.2 of this EIAR, the Port of Waterford has been selected and assessed to facilitate turbine delivery to the Site. It is proposed that the wind turbine components will be delivered from Belview Port (Port of Waterford), Co. Waterford to the Site via the N29 and N25 for approximately 62.8km, exiting at the L2024/N25 Junction in Pulla before heading west along the L2024 for 1.1km before reaching the main site entrance. All deliveries of turbine components to the Site will follow this route.

A turbine with the maximum blade length of 79.35 metres has been used in assessing the traffic impact of the Proposed Project. The blade transporter for such a turbine blade would have a total vehicle length of 84.6 metres, including the blade which overhangs the back of the vehicle. The total length of the tower transporter is 59.5 metres with the axles located at the front and rear of the load with no overhang; further details can be found in Chapter 15.

There are three areas of accommodation works required to facilitate the turbine delivery and delivery of abnormal loads. The first (TDR1) is located at the right turn at the L2024/N25 junction at X 623367, Y 588086 (ITM). It covers an area which has been classified as a grassy verge (GS2). To facilitate the transportation of turbine components off the N25 and onto the L-2024, minor, temporary accommodating works are required along the L-2024. To minimise any widening works required, load bearing mats will be utilised to allow the turbine delivery vehicle to make the turn. No trimming or felling will be required at this location.

The second location (TDR2) is located within the EIAR site boundary at X 622322, Y 588379 (ITM). An area of 0.26ha of conifer forestry will be felled at the entrance to the Site. This area of conifer forestry is accounted for in the overall conifer habitat loss of the Proposed Project. The conifer forestry consists of Sitka Spruce trees which does not typically support suitable roosting features due to its uniform structure and management regime.

4.3.2 Roost Surveys

4.3.2.1 Daytime Roost Inspections

Seven structures and their associated outbuildings were identified within and around the Proposed Wind Farm site as containing features with potential to support roosting bats. These were assessed during daytime surveys in accordance with the grading criteria described by Collins (2023) (see **Appendix 1 of this report**). Each structure was subject to external inspection, and internal inspection where accessible, to identify evidence of bat use and assess roosting potential.

Of the seven structures surveyed, four were assessed as having *Moderate* bat roost potential, three assessed as having *Low* roosting potential and two as *Negligible*. All structures will be avoided as part of the Proposed Project. Further details on the structures are provided below and are summarised in Table 4-6.

The following sections describe the structures grouped by their assessed roost potential, from *High* to *Negligible*, with photographs and key features noted for each.

Table 4-6 Structures Inspected for Roost Potential Within and Around the Proposed Wind Farm site

Structure No.	Description	X ITM	Y ITM	Nearest Turbine	Distance to nearest turbine (m)	Bat Roost Potential
1	Derelict building	619576	589435	T1	279	*Moderate*
2	Stone ruins	621261	587085	T11	245	*Low*
3	Derelict building	618771	587134	T15	130	*Moderate*
4	Derelict building	619463	586532	T17	196	*Moderate*
5	Farmyard	619061	587476	T15	350	*Negligible*

6	Residential and farmyard	619195	587115	T15	288	*Low/Moderate *Confirmed roost*
7	Farm/Construction Yard	617715	585723	T21	388	*Low*

4.3.2.1.1 Structures with Moderate Roost Potential

Derelict building (Structure 1, ITM: 619576, 589435)

Located approximately 279 m southwest of Turbine 1, this derelict building was assessed as having *Moderate* bat roost potential in accordance with Collins (2023). The building is surrounded by gorse and scrub with treelines and hedgerows in the surrounding landscape providing ecological connectivity. Due to the overgrown vegetation surrounding the building, interior access to the structure was not possible. The building is of brick construction with a slate roof. The roof has a hole which could provide potential access for bats, and a window is also visible which could also provide access. A chimney is also present with overgrown vegetation to one side of it. Plates 4-10 to 4-11 illustrate the external condition of the building and the surrounding landscape.

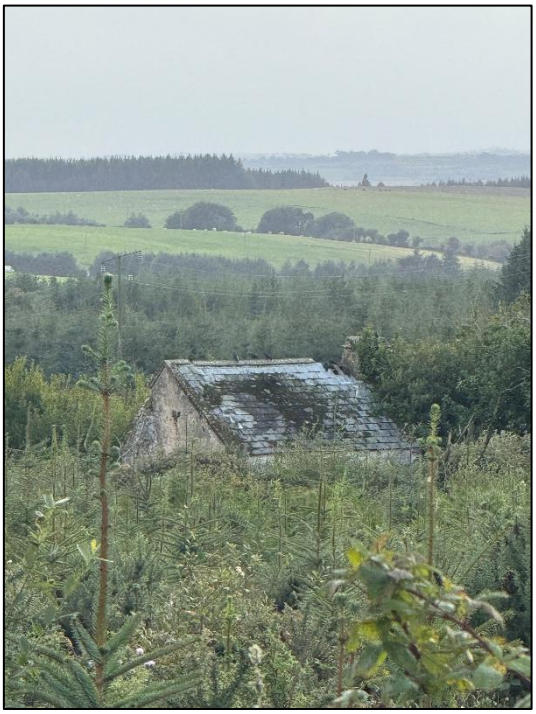


Plate 4-10 Structure 1 with the overgrown vegetation surrounding the building visible.



Plate 4-11 Close up of Structure 1 to show the hole in the roof and the chimney present on the right-hand side.

Derelict building (Structure 3, ITM: 618771, 587134)

Located approximately 138 m west of Turbine 15, this single-storey derelict building was assessed as having *Moderate* bat roost potential, in line with Collins (2023). The building lies within a larger agricultural setting comprising Improved Agricultural Grassland (GA1) and is surrounded by hedgerows and treelines, providing connectivity to the wider landscape.

The building has a concrete and brick rendered exterior and is roofed with slate, with a gap visible in the window on one gable-end wall that may provide access points for bats. Doors and other windows were boarded up with wood or bricks, and two intact chimneys were present. The area immediately surrounding the house is overgrown with scrub and brambles. Interior access to the building was not possible.

There is a small stone shed to the side of the building which had no windows or door visible, and one side was inaccessible as it was overgrown. The roof of the shed was a concrete/stone slab, and the

stonework walls had some cracks and crevices that could provide potential ingress points for crevice-roosting bats. No external evidence of roosting bats was recorded. Plates 4-12 to 4-15 show the external condition of the buildings.



Plate 4-12 Wide view of Structure 3 showing the overgrown vegetation surrounding the building.



Plate 4-13 Close-up of the gable-end window with the gap providing potential access for bats outlined in red.

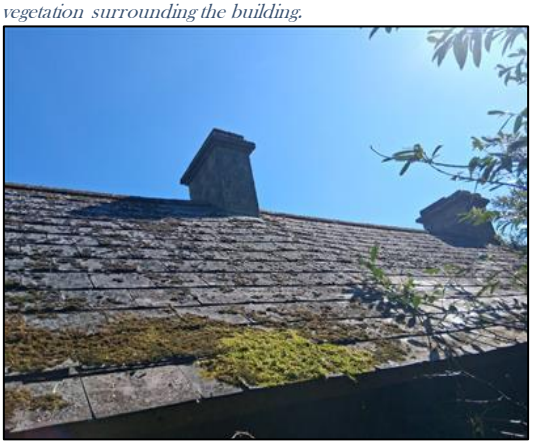


Plate 4-14 Roof of Structure 3 showing the two intact chimneys.



Plate 4-15 Stone Shed present to the side of Structure 3.

Derelict building (Structure 4, ITM: 619463, 586532)

Located approximately 196 m south of Turbine 17, this two-storey derelict building was assessed as having *Moderate* bat roost potential, in line with Collins (2023). The building lies within a larger agricultural complex comprising cattle and storage sheds with hedgerows and Improved Agricultural Grassland (GA1) in the surrounding area, providing connectivity to the wider landscape.

This building is of stone construction with a slate roof. The windows of the building were open, and the doors were closed but one door had a gap at the top which could provide access for bats. Interior access to the building was possible, however, the second storey was inaccessible. The cracks and crevices in the stonework were inspected with an endoscope, and no evidence of bats were identified. No other evidence of roosting bats was found. The *Moderate* classification reflects the availability of crevice features in the stonework and large interior space which offers shelter and protection that could be used by bats. Plates 4-16 to 4-18 show the exterior and interior condition of the building.



Plate 4-16 Exterior of Structure 4 showing the slate roof, open windows and gap above the door (outlined in red).



Plate 4-17 Interior of Structure 4 showing wooden floor panels of the second storey and the gaps in the stonework.

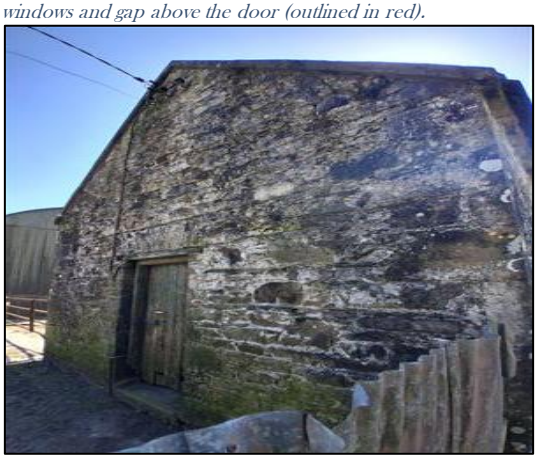


Plate 4-18 Gable-end of Structure showing the closed side-door

4.3.2.1.2 Structures/Outbuildings with Moderate and Low Roost Potential

Residential and farmyard (Structure 6, ITM: 619195, 587115)

Located approximately 288 m east of Turbine 15, this residential building and farm shed complex was assessed as having *Moderate* and *Low* bat roost potential, in line with Collins (2023). The residential building and farmyard lie within a larger agricultural setting comprising Improved Agricultural Grassland (GA1) and a treeline surrounds the complex with hedgerows present in the surrounding fields, providing connectivity to the wider landscape.

The residential building is occupied and was constructed with brick and roofed with tiles. Access for bats could be possible under roofing tiles and joints in the extension part of the house. There are two wooden sheds and a flat roofed corrugated iron shed beside the house with access possible under the top roof tiles. The residential building was assessed as having a *Low* roosting potential as there was no interior or exterior evidence of bats and the owners did not report any evidence of roosting bats in the attic space. The structure would offer suitable interior roosting conditions, but clear access points could not be identified (Plates 4-19 to 4-20). Three corrugated iron sheds are present within the farmyard which were also assessed as having *Low* roosting potential. Open doors and gaps in the roofing provide some potential access points. The structures do not provide appropriate conditions to be used by a large number of bats but may be used opportunistically. All three building are in use (Plates 4-21 to 4-23).

A derelict stone building with a slate roof is also present within the farmyard (Plates 4-24 to 4-26). This building was assessed as having *Moderate* roosting potential. Missing slates in the roof and gaps in the timber window frame provide potential access points for bats. The building was not in use by the owners, and the internal roofing structure is constructed from wooden beams offering suitable shelter to crevice dwelling species. No evidence of bats was found during the inspection.



Plate 4-19 Residential building assessed as having Low roosting potential.



Plate 4-20 Potential access point for bats under tiles of the residential building.



Plate 4-21 First of the corrugated iron sheds present within the farmyard.



Plate 4-22 Second Corrugated iron shed present within the farmyard.



Plate 4-23 Third corrugated iron shed present within the farmyard.



Plate 4-24 Derelict Stone shed assessed as having Moderate roosting potential.

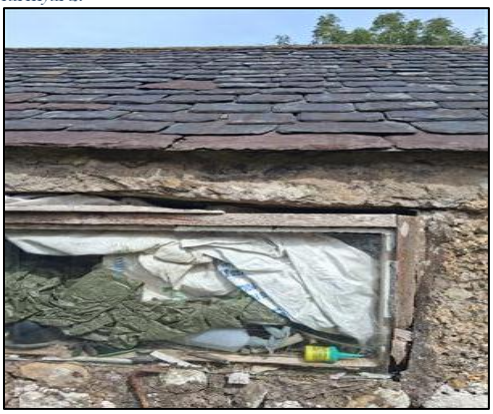


Plate 4-25 Gaps in timber frame of derelict stone shed.



Plate 4-26 Interior of the derelict stone shed.

4.3.2.1.3 *Structures with Low Roost Potential*

Stone ruins (Structure 2, ITM: 621261, 587085)

Located approximately 345 m west of Turbine 11, these stone ruins were assessed as having *Low* bat roost potential, in line with Collins (2023). The building lies within a conifer plantation setting and is surrounded by conifer plantation and some mixed woodland. The forestry edge habitat provides connectivity to the wider landscape.

The structure has no roof, and stonework walls which have some crevices that could provide potential for opportunistic roosting. The stone ruins are quite overgrown with ivy and brambles covering some of the walls and window access points. No evidence of roosting bats was found during the inspection. The interior and exterior condition of the stone ruins are presented in Plates 4–27 to 4-30.



Plate 4-27 Exterior of the stone ruins and overgrown vegetation.



Plate 4-28 Wooden frame window of the stone ruins with some gaps in the stonework visible.



Plate 4-29 Interior of the stone ruins - overgrown vegetation visible.



Plate 4-30 Interior of the stone ruins with ivy covering the walls.

Farm/Construction Yard (Structure 7, ITM: 617715, 585723)

Located approximately 388 m south of Turbine 21, the farmyard is situated within Improved Agricultural Grassland (GA1) and is bordered by mature conifer trees and hedgerows that form part of the local field boundary network, providing habitat connectivity across the surrounding landscape.

This farmyard was assessed as having *Low* bat roost potential in accordance with Collins (2023). The farmyard also comprises two corrugated iron sheds, one of which has block walls extending to approximately half its height. Both sheds contain exposed timber rafters. One shed is relatively open, with numerous gaps and holes in the corrugated iron sheeting and walls, providing multiple potential access points. The second shed is more enclosed but contains gaps between the walls and roof structure. Internally, both sheds appeared to be in active use for livestock housing. No evidence of bat use was

recorded during the internal inspection. Plates 4-31 to 4-34 illustrate the internal and external condition of the sheds within the farmyard.



Plate 4-31 Exterior of the half block half corrugated iron walled shed.



Plate 4-32 Interior of the more exposed shed, with large gaps in the walls visible.



Plate 4-33 Exterior of the more enclosed shed, with few gaps visible in the corrugated iron.



Plate 4-34 Interior of the more enclosed shed with evidence of livestock use

4.3.2.1.4 Structures with Negligible Roost Potential

Farmyard (Structure 5, ITM: 619061, 587476)

One farmyard within the Proposed Wind Farm site was assessed as having *Negligible* bat roost potential in accordance with Collins (2023). The farmyard comprised of two modern agricultural sheds and outbuildings in regular use for general farm storage, livestock or agricultural operations. All were of recent construction, typically using corrugated metal or concrete materials, and lacked suitable features such as crevices, cavities, or enclosed spaces that could support roosting bats. No evidence of bat use was recorded at any of these locations, and all were considered suboptimal for supporting either crevice- or void-roosting species (Plates 4-35 to 4-38).



Plate 4-35 Large corrugated iron shed within the farmyard.



Plate 4-36 Interior of large, corrugated iron shed – no potential for roosting bats.



Plate 4-37 Second corrugated iron shed present within the farmyard.

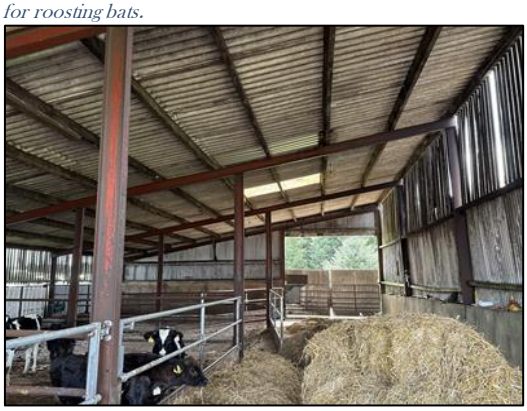


Plate 4-38 Interior of the second corrugated iron shed - in use for livestock.

4.3.2.1.5 Tree Inspections

Ground-level inspections of trees and treelines within the Site were undertaken throughout the 2025 surveys to assess their potential to support roosting bats. Surveys focused on areas where tree removal is required for wind farm infrastructure, including turbine bases and associated bat buffers, turbine hardstands, access roads, the Proposed Grid Connection, and the Turbine Delivery Route (TDR). These trees were assessed for their potential to support roosting bats according to Collins (2023) (see **Appendix 1** for roost assessment criteria).

In total, 35 trees within the Site were inspected during the 2025 survey period and no tree requiring removal as part of the Proposed Project had potential roost features for bats. The locations and outcomes of the inspections are shown in Figure 4-1, with a summary provided in Table 4-7 below.

Several individual willow trees near Turbine 10 were inspected (Plate 4-47). No PRFs were recorded and all were assessed as offering no (*None*) roosting potential. These trees are proposed for removal to accommodate bat buffer zones and turbine hardstands.

An ash tree present within the felling buffer of T16 (Plate 4-45) was inspected. Some small knot holes were present, but these were shallow, superficial PRFs and the tree was classified as having no (*None*) roosting potential. This tree is isolated in the middle of an agricultural field and lacks any connectivity to linear features in the surrounding landscape.

Two beech trees are present within the felling buffer of Turbine 22 (Plate 4-43). These trees are part of a larger conifer plantation of Sitka spruce. No PRFs were identified and the treeline was assessed as offering no (*None*) roosting potential.

Willow trees within the turbine buffer zone surrounding Turbine 7 (Plate 4-44) contained no PRFs and were assessed as having no (*None*) roosting potential.

Trees present to the east of Turbine 20 consisted of mature beech trees which are within the felling buffer of the turbine (Plate 4-48). No PRFs were visible and the treeline was assessed as offering no (*None*) roosting potential.

Some hawthorn and willow trees were present within the hedgerows and surrounding areas near Turbine 15 (Plate 4-46). No PRFs were visible and these trees were assessed as having no (*None*) roosting potential. These trees are outside the felling buffer for these turbines. No other trees with roosting suitability were identified within the part of the hedgerow required for removal to facilitate the bat buffer as they consisted of immature trees and shrubs.

An area of mixed woodland is present to the south of the proposed access track between T11 and T10 including Beech, Oak and Sycamore trees. Some small knot holes were present on an Oak tree however these were superficial when inspected and were assessed as having no (*None*) roosting potential. Compression forks present on the beech tree were as PRF-I; meaning the PRF is only suitable for individual bats, see Appendix 1. No evidence of roosting bats was identified during the inspection. These trees will not be removed to facilitate the Proposed Project. (Plate 4-49 to 4-50)

As part of the Proposed Grid Connection, approximately 177m of hedgerow is planned to be removed however this habitat will be reinstated once the works are completed. None of the linear habitat planned for removal have trees with potential roosting features. Trees proposed for removal consist primarily of hedgerow and scrub species such as hawthorn, holly and alder which were assessed as having no *(None)* roosting potential.

As part of the turbine delivery route accommodation works, an area of 0.26ha of conifer forestry will require felling at TDR2. This area of conifer forestry consists of Sitka spruce trees which do not provide suitable roosting features for bats.



Plate 4-39 Beech tree present within the felling buffer of T22.



Plate 4-40 Willow tree within the buffer of T7.



Plate 4-41 Example of an ash tree south of T16.



Plate 4-42 Example of hawthorn at treeline inspected north of T15.



Plate 4-43 Willow tree present within the hedgerow near T15.



Plate 4-44 Willow treeline located adjacent to T10.



Plate 4-45 Beech treeline located east of T20.



Plate 4-46 Compression fork present on a Beech tree south of T11.



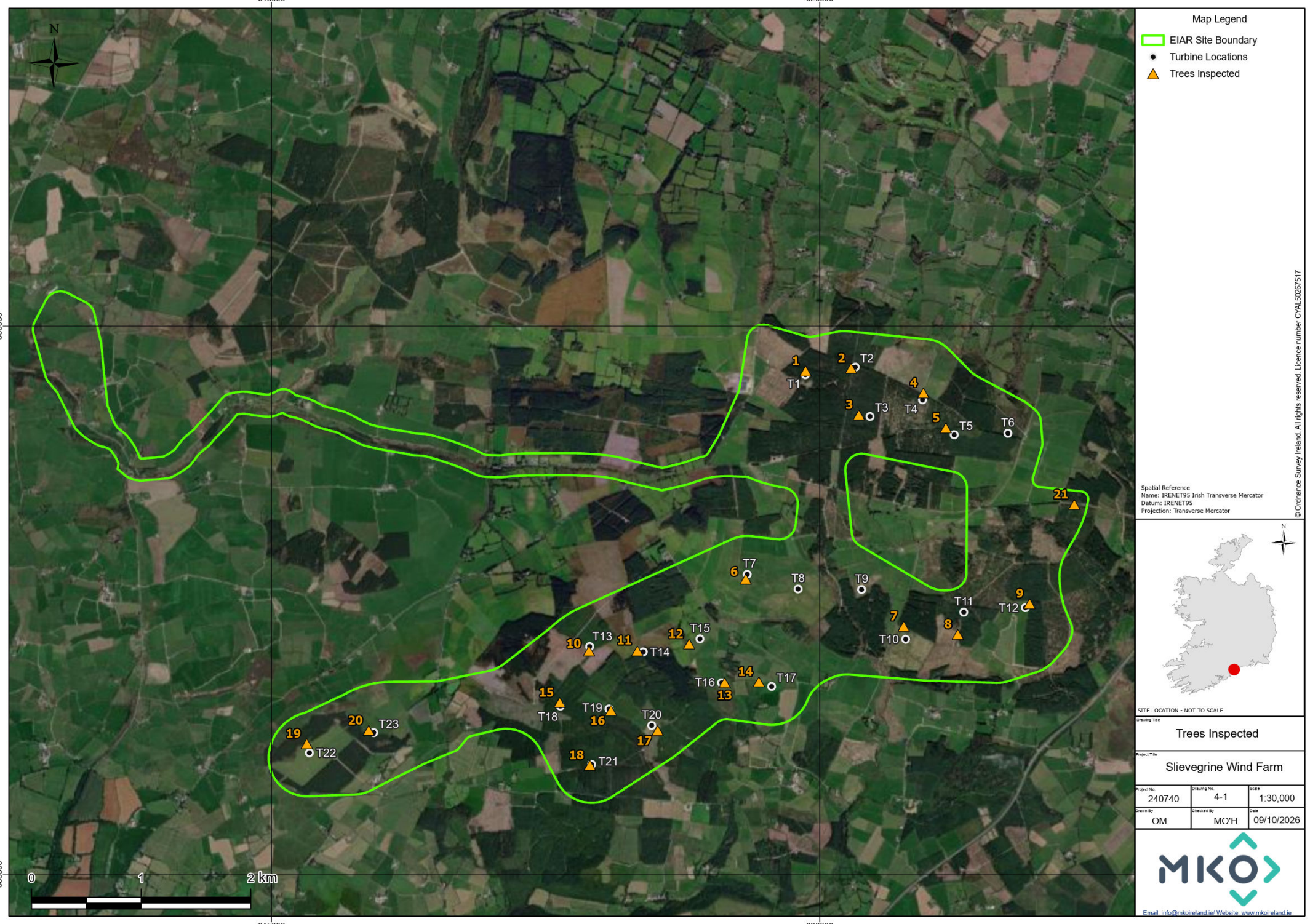
Plate 4-47 Knot hole present on an Oak tree present to the south of T11.

Table 4-7 Summary of tree inspections, roost potential, and proposed retention or removal within the Site.

Nearest Turbine/Infrastructure	Tree ID	Inspection Dates	PRFs / Notes	Trees/Hedgerows to be Removed / Retained	Bat Roost Suitability	X ITM	Y ITM
T1	1	10th April 2025	Conifer plantation - Sitka Spruce	Proposed removal for bat buffer and turbine hardstand	*None*	619874	589577
T2	2	10th April 2025	Conifer plantation - Sitka Spruce and Scots pine	Proposed removal for bat buffer and turbine hardstand	*None*	620289	589602
T3	3	10th April 2025	Conifer plantation - Sitka Spruce	Proposed removal for bat buffer and turbine hardstand	*None*	588921	5767857
T4	4	10th April 2025	Conifer treeline – Stika Spruce and Japanese larch	Proposed removal for bat buffer and turbine hardstand	*None*	620948	589377

T5	5	10th April 2025	Conifer plantation – Sitka Spruce	Proposed for removal for bat buffer and turbine hardstand	*None*	621153	589058
T7	6	27th August 2025	Grey Willow trees within hedgerow – no PRFs	Trees and hedgerow will be removed to accommodate the bat buffer and turbine hardstand	*None*	619328	587679
T10	7	23rd September2025	Willow treeline, no PRFs	Proposed removal for bat buffer and turbine hardstand	*None*	620769	620769
T11	8	27th August 2025	Mixed species including Beech, Oak, Sycamore and Sitka Spruce.	No removal proposed. Oak, Beech and Sycamore are located along access track.	*Sitka Spruce & Oak -None. Beech tree - PRF-I*	621259	587192
T12	9	10th April 2025	Conifer plantation – Sitka Spruce	Proposed removal for bat buffer	*None*	621918	587455
T13	10	27th August 2025	Conifer plantation – Sitka Spruce	Proposed removal for bat buffer and turbine hardstand	*None*	617899	587023
T14	11	10th April 2025	Conifer plantation – Sitka Spruce	Proposed removal for bat buffer and turbine hardstand	*None*	618340	587023
T15	12	23rd September 2025	Hawthorn and Grey willow – No PRFs	Proposed removal for access roads	*None*	618812	587086
T16	13	27th August 2025	Ash tree – small knot holes	Proposed removal for bat buffer and turbine hardstand.	*None*	619136	586733
T17	14	27th August 2025	Hedgerows with Grey Willow and Hawthorn – No PRFs	Proposed removal for turbine hardstand and access tracks.	*None*	619448	586741
T18	15	27th August 2025	Conifer plantatio	Proposed removal for	*None*	617632	586553

			n – Sitka Spruce	bat buffer and turbine hardstand.			
T19	16	10th April 2025	Conifer plantation – Sitka Spruce	Proposed removal for bat buffer and turbine hardstand.	*None*	618099	586480
T20	17	27th August 2025	Beech treeline – No PRFs visible from afar-close up inaccessible	Proposed removal to accommodate bat buffer	*None*	618525	586297
T21	18	10th April 2025	Conifer plantation – Sitka Spruce and Scots Pine	Proposed removal to accommodate bat buffer	*None*	617907	585980
T22	19	27th August 2025	Treeline with Sitka Spruce and Beech trees – No PRFs	Proposed removal to accommodate bat buffer	*None*	615324	586177
T23	20	10th April 2025	Conifer plantation – Sitka Spruce and Scots Pine	Proposed removal to accommodate bat buffer	*None*	615889	586298
TDR 2	22	10th April 2025	Conifer plantation – Sitka Spruce	Proposed removal to accommodate Turbine delivery	*None*	622322	588379



Map Legend

- EIAR Site Boundary
- Turbine Locations
- Trees Inspected

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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SITE LOCATION - NOT TO SCALE

Drawing Title: Trees Inspected

Project Title: Slievegrine Wind Farm

Project No.	Drawing No.	Scale
240740	4-1	1:30,000
Drawn By	Checked By	Date
OM	MO'H	09/10/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

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 identified within the Proposed Wind Farm site as having potential to support roosting bats. Table 4-8 summarises the locations surveyed, survey dates and results recorded.

The small stone shed (Structure 6) within the farmyard complex was confirmed as a small soprano pipistrelle bat roost. No other roosts were identified within the remaining structures.

Table 4-8 Emergence Survey Results 2025

Structure No.	PRF Suitability	X ITM	Y ITM	Survey Type	Date Surveyed	Survey Results
Derelict Building (Structure 3)	*Moderate*	618771	587134	Dusk Emergence Spring 2025	8th May 2025	No bats recorded emerging.
Derelict building (Structure 4)	*Moderate*	619463	586532	Dusk Emergence Summer 2025	3rd July 2025	No bats recorded emerging.
Derelict building (Structure 1)	*Moderate*	619576	589435	Dusk Emergence Autumn 2025	26th August 2025	No bats recorded emerging.
Stone Ruins (Structure 2)	*Low*	621261	587085	Dusk Emergence Autumn 2025	27th August 2025	No bats recorded emerging.
Residential and Farmyard (Structure 6)	*Low-Moderate – confirmed roost*	619195	587115	Dusk Emergence Autumn 2025	27th August 2025	Two Soprano pipistrelles confirmed emerging
Farmyard (Structure 5)	*Negligible*	619061	587476	Dusk Emergence Autumn 2025	27th August 2025	No bats recorded emerging.
Farm/Construction yard (Structure 7)	*Low*	617715	585723	Dusk Emergence Autumn 2025	22nd September 2025	No bats recorded emerging.

4.3.3 Manual Transects

Manual transects were undertaken in spring, summer and autumn 2025. Bat activity was recorded in all seasons. A total of 1,251 bat passes were recorded, including during emergence surveys. In general, soprano pipistrelle (n=615) was recorded most frequently, followed by common pipistrelle (n=546) and Leisler's bat (n=64). *Myotis* spp. (n=22) and brown long-eared bat (n=4) were less frequent (Plate 4-48).

Species composition and activity levels varied between survey periods. To account for differences in survey effort, results were expressed as bat passes per kilometre surveyed. Plate 4-49 presents results for individual species per survey period, while Figures 4-2 to 4-4 illustrate the spatial distribution of bat activity. Activity was concentrated along woodland edges, treelines, hedgerows, and other linear features such as roads and tracks.

The spring surveys recorded fewer bat passes (n = 160) compared with summer (n = 346) and autumn (n = 283). Common pipistrelle was most frequently recorded in spring and autumn, while soprano pipistrelle was recorded in similar numbers during summer. Leisler's bat activity peaked in spring and autumn. *Myotis* spp. was recorded in summer and autumn and the species was absent in spring, whereas brown long-eared bats were recorded in both spring and summer.

The additional emergence surveys recorded a total of 462 bat passes which were separate to the seasonal surveys, but they have been included in the total species composition for a comprehensive overview of the bat species present at the Proposed Wind Farm Site.

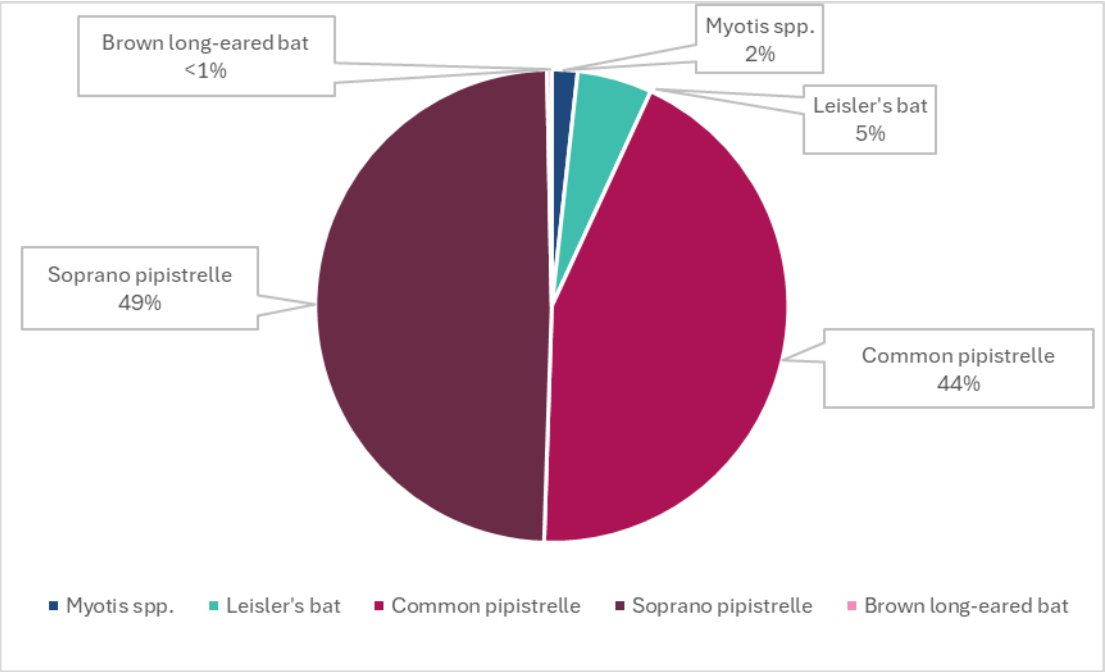


*Plate 4-48 2025 Manual Activity Surveys (Total Species Composition) * This includes additional emergence surveys to reflect species composition across the Proposed Wind Farm site.*

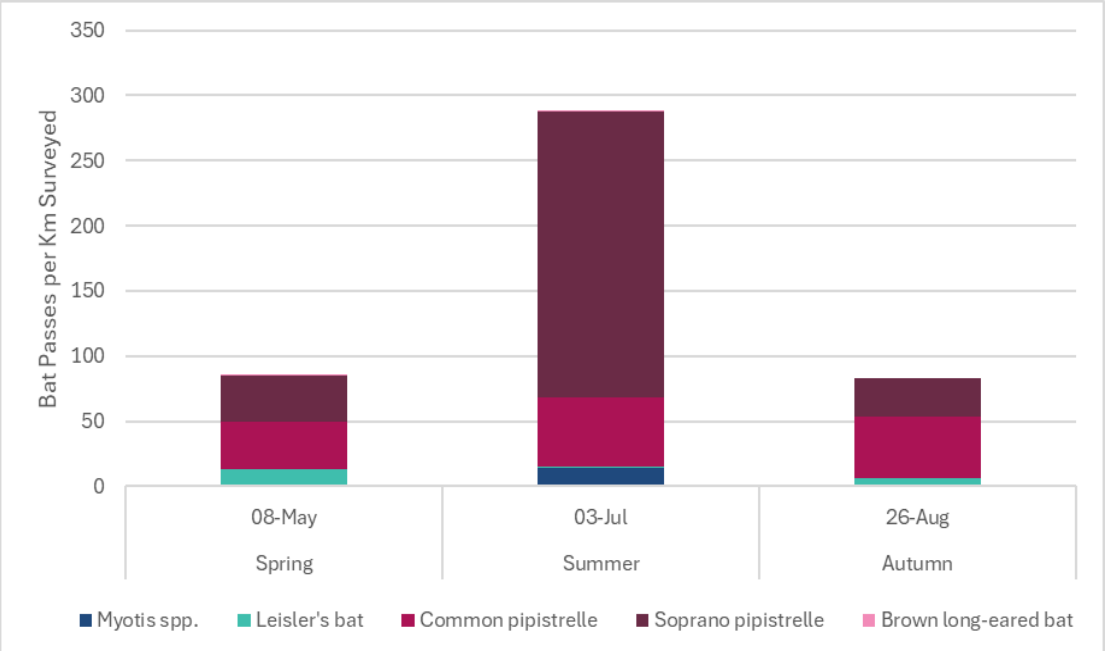


*Plate 4-49 2025 Transect Results – Species Composition Per Survey Period *This only includes the spring, summer and autumn surveys, additional surveys are not included.*



Map Legend

- EIAR Site Boundary
- Turbine Locations

Manual Results 2025.06.27

- Leislers
- Brown Long Eared
- Common Pipistrelle
- Soprano Pipistrelle
- Spring Transect Route 2025

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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SITE LOCATION - NOT TO SCALE

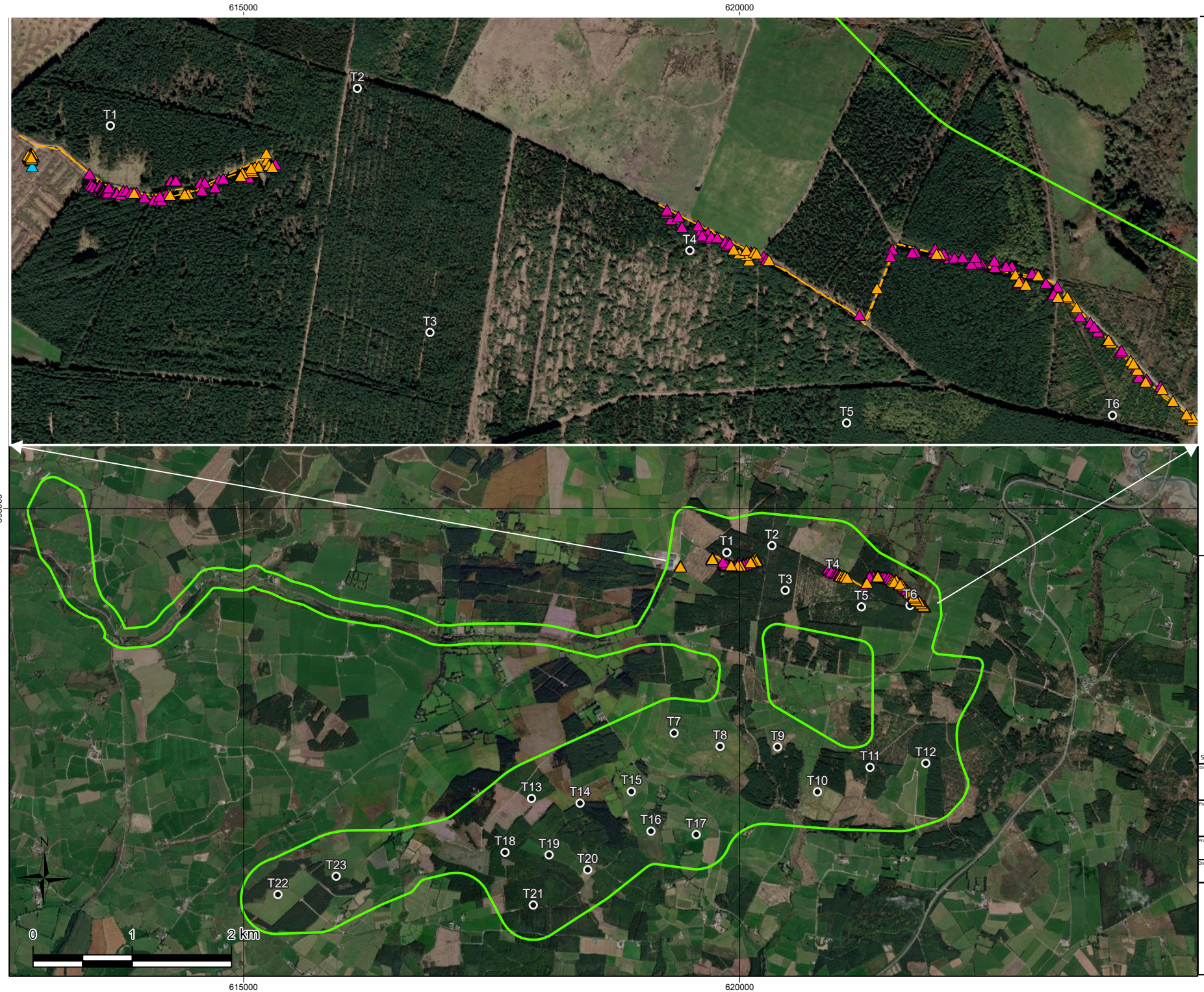
Drawing Title: Spring Manual Transect Results 2025

Project Title: Proposed Slievegrine Renewable Energy Development

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JG	MO'H	08/08/2026

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Email: info@mkoireland.ie/ Website: www.mkoireland.ie


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Map Legend
EIAR Site Boundary
Turbine Locations
Manual Results 2025.05.08
Leisler's
Common Pipistrelle
Soprano Pipistrelle
Summer Transect Route 2025
Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator
© Ordnance Survey Ireland. All rights reserved. Licence number CYAL50267517
N
SITE LOCATION - NOT TO SCALE
Drawing Title
Summer Manual Transect Results 2025
Project Title
Proposed Slievegrine Renewable Energy Development
Project No. 249740
Drawing No. 4-3
Scale 1:35,000
Drawn By JG
Checked By MO'H
Date 29/09/2026
MKO
Email: info@mkoireland.ie/ Website: www.mkoireland.ie



Map Legend

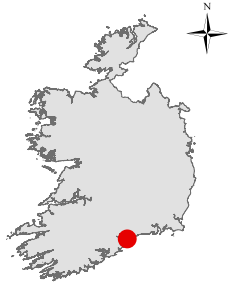
- EIAR Site Boundary
- Turbine Locations

Manual Results 2025.08.26

- Common Pipistrelle
- Leisler's
- Myotis species
- Soprano Pipistrelle
- Autumn Transect Route 2025

Spatial Reference
Name: IRENET95 Irish Transverse Mercator
Datum: IRENET95
Projection: Transverse Mercator

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SITE LOCATION - NOT TO SCALE

Drawing Title
Autumn Manual Transect Results 2025

Project Title
Proposed Slievegrine Renewable Energy Development

Project No.	Drawing No.	Scale
249740	4-4	1:35,000
Drawn By	Checked By	Date
JG	MO'H	08/08/2026

Email: info@mkoireland.ie/ Website: www.mkoireland.ie

4.3.4 Ground-level Static Surveys

In total, 70,748 bat passes were recorded across all deployments in 2025. In general, Common pipistrelle (n=22,125) occurred most frequently, followed closely by soprano pipistrelle (n=22,055) and Leisler's bat (n=19,284). Instances of *Myotis* spp. (n=6,229) and brown long-eared bat (n=1,054) were recorded less frequently. Nathusius' pipistrelle (n=1) was rare. Plate 4-50 presents relative species composition across all ground-level static detector surveys.

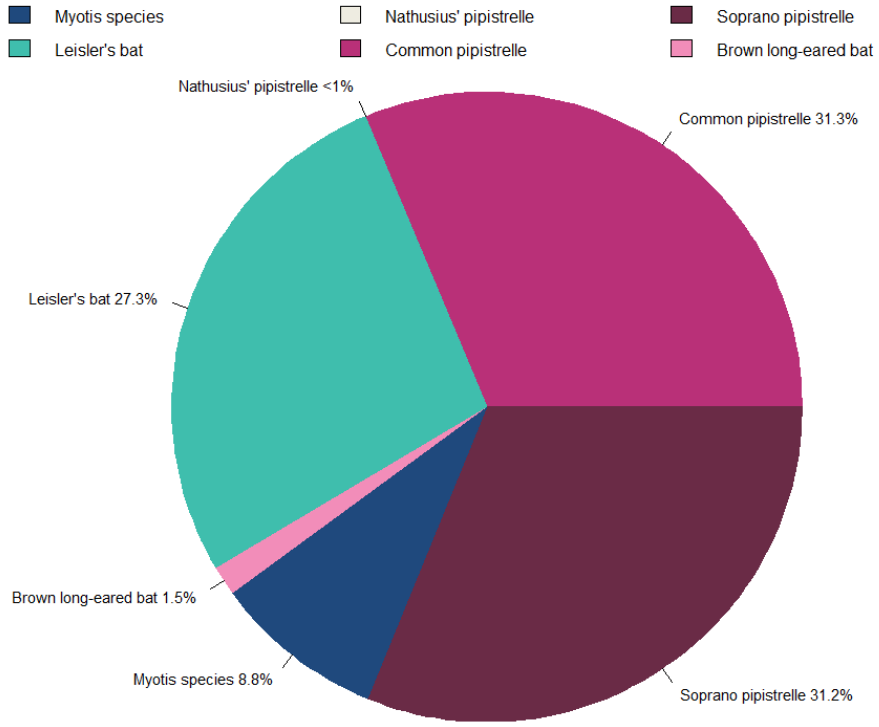


Plate 4-50 2025 Static Detector Surveys: Species Composition Across All Deployments (Total Bat Passes)

Bat activity was standardised as bat passes per hour (bpph) for each survey season to account for potential bias associated with varying night lengths. The results are presented in Plate 4-51 and Table 4-9. Spring activity was dominated by Leisler's bat, while summer and autumn activity was primarily associated with common pipistrelle and soprano pipistrelle. Leisler's bat, Common pipistrelle, Soprano pipistrelle and *Myotis* spp. were recorded consistently across all three survey periods, whereas brown long-eared bat was recorded infrequently. Only one bat pass of Nathusius' pipistrelle was recorded in spring.

For analysis purposes, the data from the redeployment of D15 in Spring and D01 in Summer was adjusted to ensure consistency across the data analysis. For D15, only the data from 8th of May to the 23rd of May was included once 10 nights of suitable weather was achieved. For D01, only the data from the 5th to the 29th July was included once 20 nights of suitable weather was achieved. This ensured consistency across the data analysis so that all detectors had 10 nights of suitable weather in Spring, 20 nights of suitable weather in summer and 10 nights of suitable weather in autumn.

The median bat activity recorded at each detector during each survey period is presented in Plates 4-52 and 4-53 (the latter uses a varied scale axis to illustrate differences between detectors). Results indicate clear seasonal and spatial variation in median activity levels. In spring, summer and autumn, activity at detector D06 was notably higher than at all other locations, dominated by soprano pipistrelle passes; this detector was situated within an agricultural field adjacent to a conifer plantation edge. During summer, overall bat activity decreased substantially and *Myotis spp.* activity increased markedly at detector D01 while Leisler's bat activity decreases across all detector locations. In autumn, common and soprano

pipistrelles dominated and the activity levels of Leisler's bat increased. Activity remained generally low throughout the survey periods at detectors D12, D13, D14 and D15.

The Median Nightly Pass Rate (i.e. total bat passes per hour, per night) was used to provide a robust measure of typical bat activity at the Proposed Wind Farm, reducing the influence of occasional high-activity nights on overall results (Plate 4-54). This approach is recommended in order to account for variability in nightly activity caused by weather conditions, seasonal changes, and other environmental factors (Lintott & Mathews, 2018). Zero data, when a species was not detected on a night, was also included. Plates 4-55 to 4-57 present the weather suitability across the deployment periods.

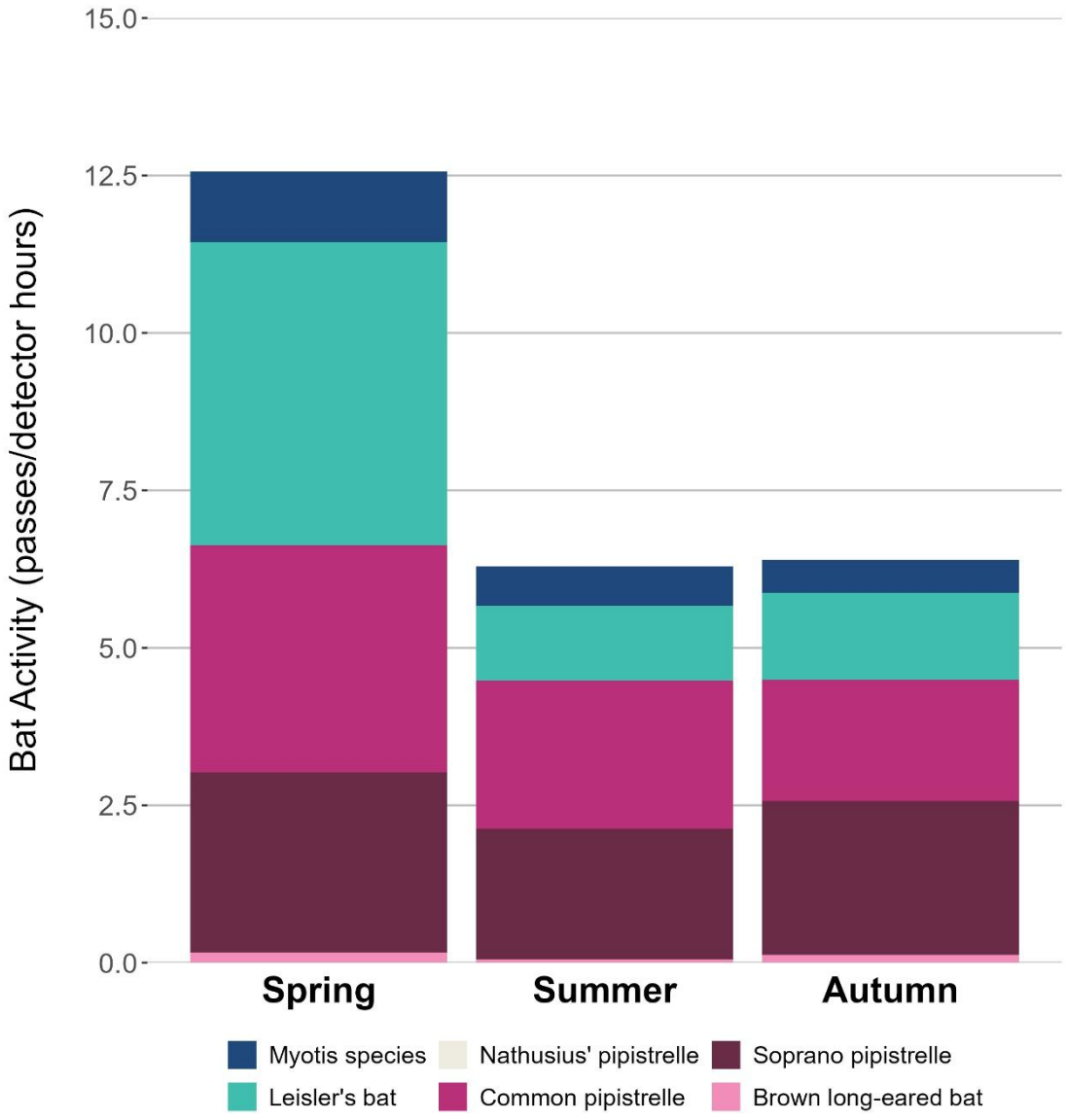


Plate 4-51 2025 Static Detector Surveys: Species Composition Across All Deployments (Total Bat Passes Per Hour, All Nights)

Table 4-9 Static Detector Surveys: Species Composition Across All Deployments (Total Bat Passes Per Hour, All Nights)

	Spring	Summer	Autumn
Total Survey Hours per Detector	**137.075**	**160.503**	**295.458**
Myotis spp.	0.902	0.902	0.902

	Spring	Summer	Autumn
Leisler's bat	4.921	1.241	1.427
Nathusius' pipistrelle	0	0	0
Common pipistrelle	3.785	2.438	2.035
Soprano pipistrelle	2.923	2.088	2.532
Brown long-eared bat	0.14	0.054	0.132

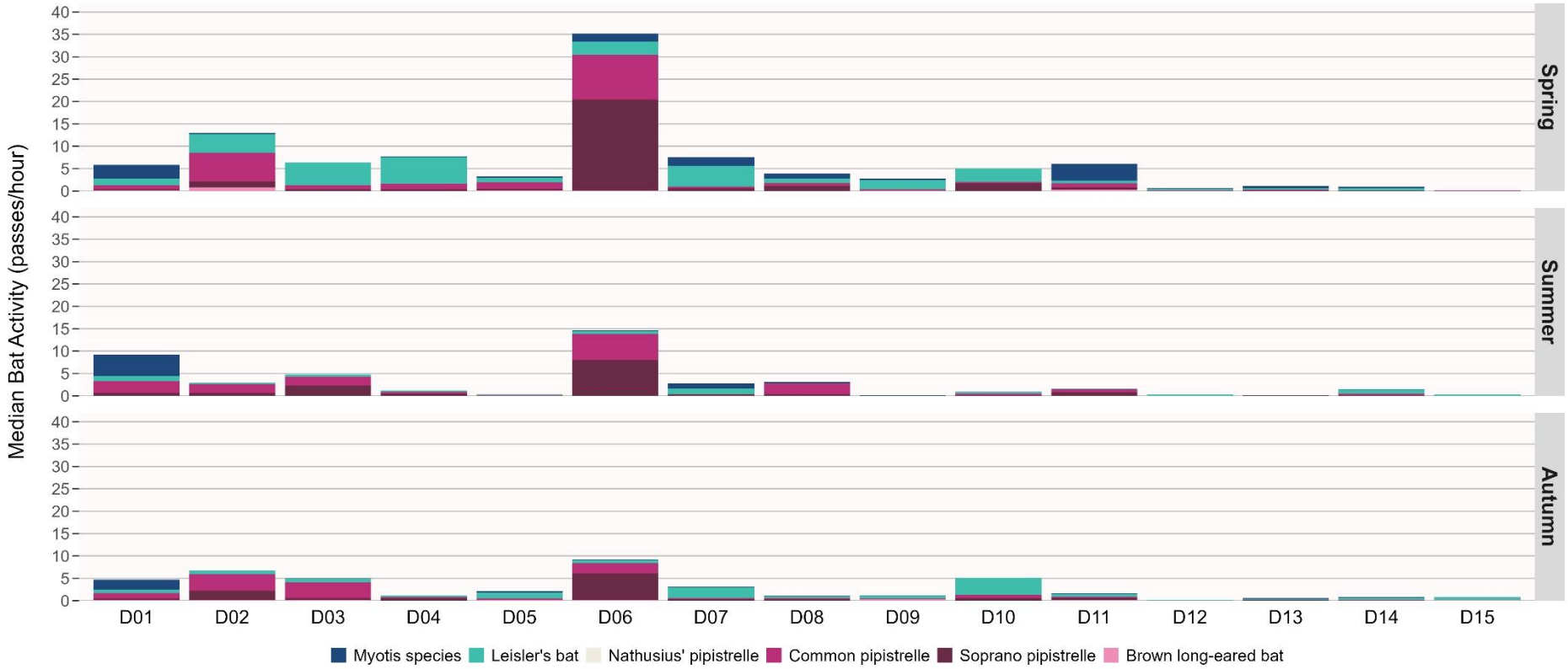


Plate 4-52 Static Detector Surveys: Median Bat Pass Rate (bpph) Including Absences, Per Location Per Survey Period.

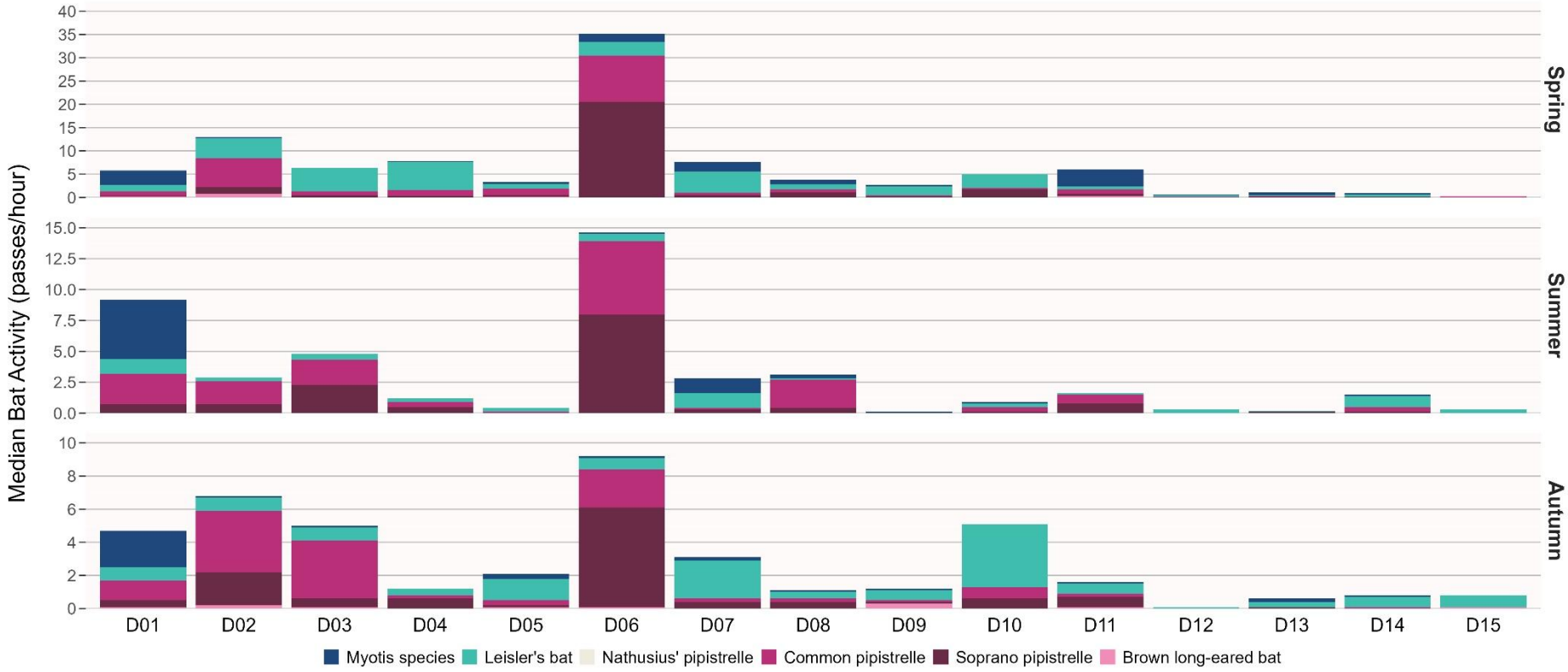


Plate 4-53 Static Detector Surveys: Median Bat Pass Rate (bpph) Including Absences, Per Location Per Survey Period (Varied Axis Scale).

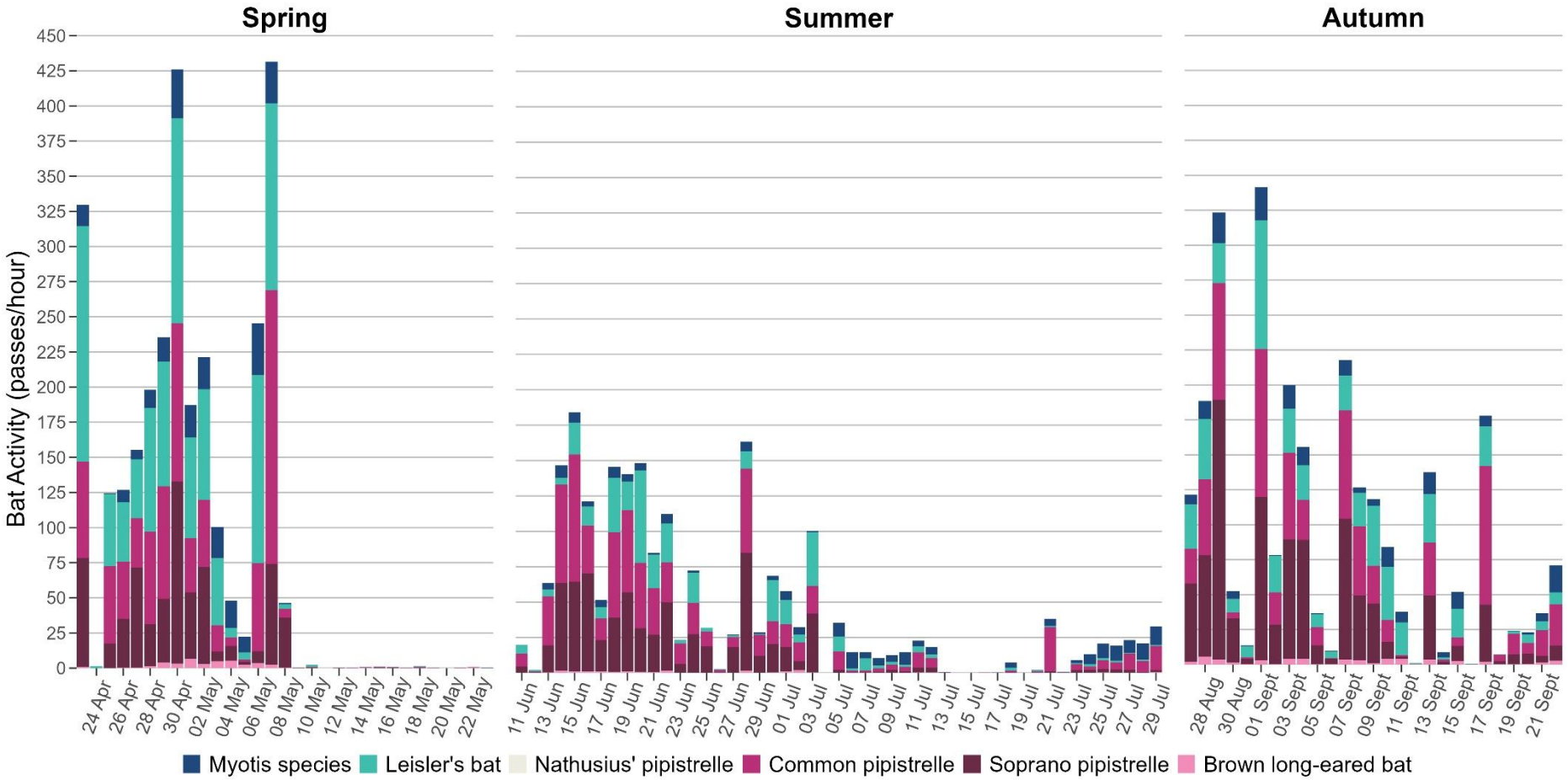


Plate 4-54 Static Detector Surveys: Median Bat Pass Rate (bpph) Including Absences, Per Season Per Night. The 8th -23rd May applies to the redeployed detector D15 only. The 5th July – 29th July applies to the redeployed detector D01 only.

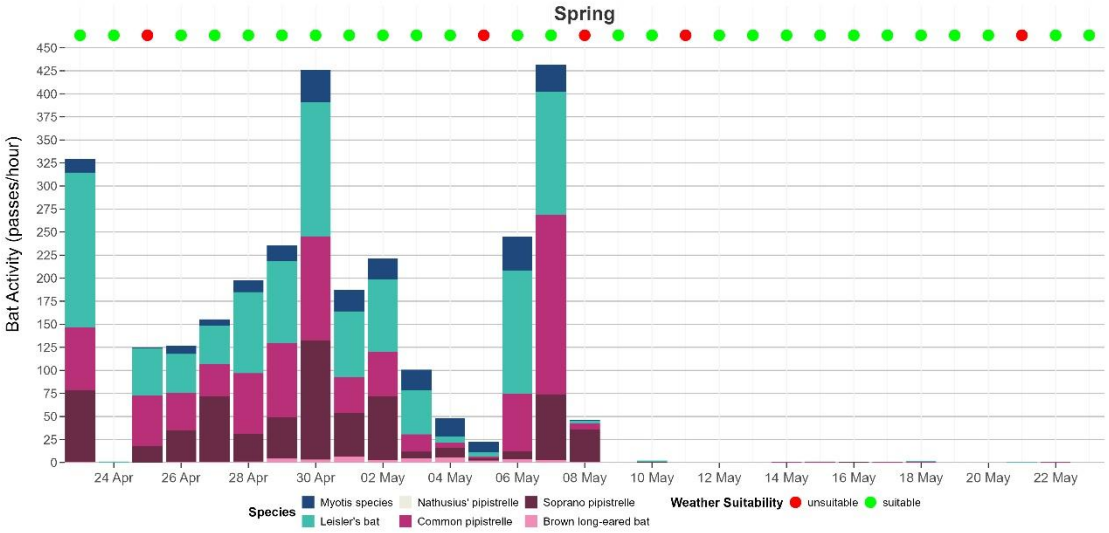


Plate 4-55 Static Detector Surveys: Spring Median Bat Pass Rate (bpph) Including Absences, Per Night with Weather Suitability. The 8th -23rd May applies to the redeployed detector D15 only

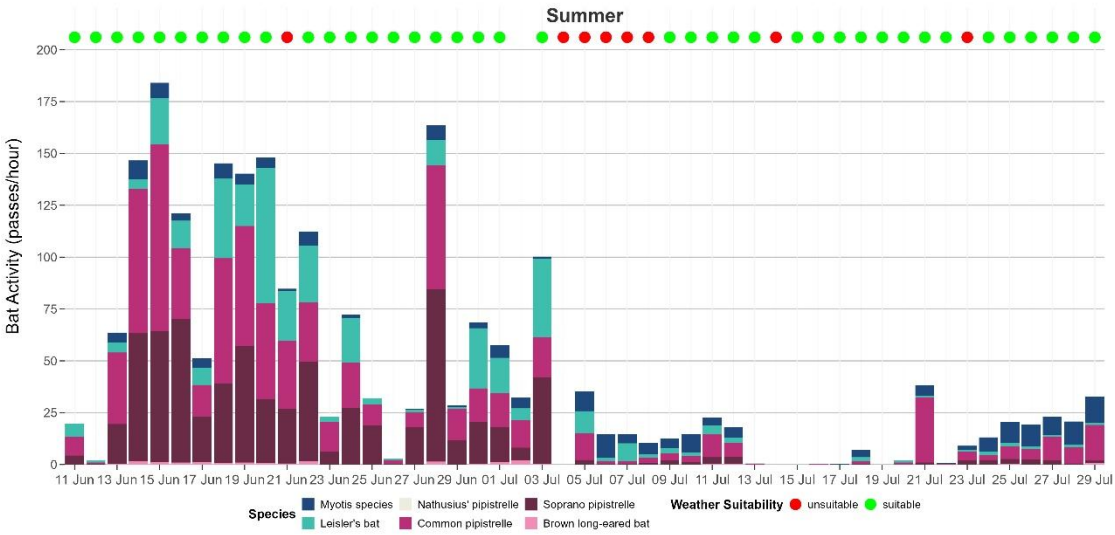


Plate 4-56 Static Detector Surveys: Summer Median Bat Pass Rate (bpph) Including Absences, Per Night with Weather Suitability. The 5th July – 29th July applies to the redeployed detector D01 only.

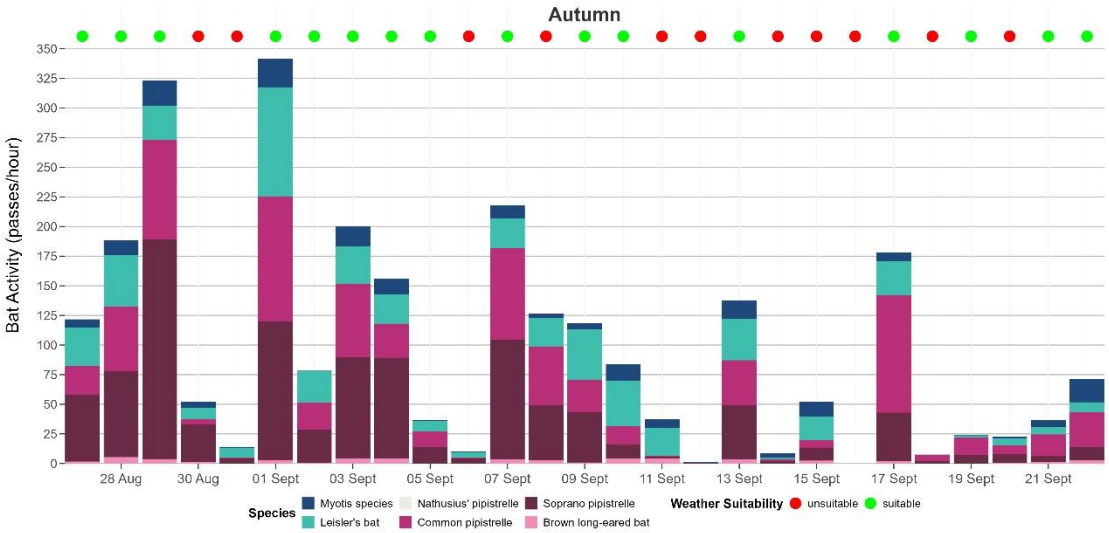


Plate 4-57 Static Detector Surveys: Autumn Median Bat Pass Rate (bpph) Including Absences, Per Night with Weather Suitability

4.4 Assessment of Bat Activity Levels 2025

4.4.1 Adapted Site-specific Ranges

Low, *Medium* and *High* activity levels were assigned to median and maximum pass rates (bpph) identified during spring, summer and autumn at the detectors deployed across the Proposed Wind Farm site, as adapted from Mathews *et al.* (2016). Table 4-10 shows the results of the site-level assessment as calculated on a site-specific activity level based on the Site-Specific Ranked Activity Scoring presented in table 3-8 in Section 3.5 above. Where no maximum activity at a detector is reported, no data was recorded for that species throughout the deployment.

Leisler's bat typically exhibited *Low* to *Moderate* median activity levels in spring and autumn with generally *Low* activity observed in summer. The highest median activity level was detected at D04 during spring, recording Moderate median activity of 6.05 bpph and a maximum activity of 28.5 bpph. This detector was situated within a treeline (WL2) adjacent to conifer plantation (WD4). The highest maximum activity of 44.1 bpph was recorded at D10, which was situated within recently felled woodland.

For **common pipistrelle**, median bat activity was generally *Low* to *Moderate* across summer and autumn. Common pipistrelle exhibited increased activity during the spring season, as D06 recorded *High* median activity (10 bpph), accompanied by significantly higher maximum activity levels (62.8 bpph) compared to the rest of the Proposed Wind Farm site during those periods. This detector was situated within improved agricultural grassland (GA1) adjacent to a conifer plantation edge.

Soprano pipistrelle generally displayed *Low* median bat activity, with occasional instances of *Moderate* Activity in summer. One instance of *High* median activity (20.4 bpph) was recorded at D06 in spring. Two significant outliers were identified at D06 in spring and autumn with maximum activity levels of 81.3bpph in spring and 107.1 bpph in autumn.

***Myotis* spp.** recorded *Low* activity compared to other species across the Proposed Wind Farm. Median activity was generally *Low* in all three seasons, with the exception of D01, which recorded *Moderate* median activity in summer (4.8bpph) and D11 which recorded *Moderate* median activity (3.65 bpph) in spring. *High* Maximum activity was also observed at D04 during spring at a value of 13.8 bpph and at D11 in Spring at a value of 13.3 bpph.

Brown long-eared bat exhibited *Low* median activity at all detectors in all periods across the Proposed Wind Farm, excluding D02 which recorded *Moderate* median activity (0.75 bpph) during spring. One outlier was identified at D11 in autumn with maximum activity levels of 3 bpph.

Nathusius' pipistrelle was absent throughout the seasons except for one pass recorded at D12 in spring (Maximum activity – 0.1 bpph).

Table 4-10 Median Nightly Bat Activity (bpph) per Species, per Season, per Detector Location 2025 None, Low, Moderate, High, Outliers are highlighted in Orange.

Species	Season	Bat activity (bpph)	D01	D02	D03	D04	D05	D06	D07	D08	D09	D10	D11	D12	D13	D14	D15
Myotis spp.	Spring	Median	3.1	0.25	0	0.15	0.4	1.7	2	1.05	0.35	0	3.65	0.1	0.5	0.3	0
		Maximum	5.2	3.9	0.6	13.8	1.8	6.6	5.4	2.8	2.3	0.3	13.3	0.6	2.4	1.2	0.1
	Summer	Median	4.8	0	0	0	0	0.1	1.2	0.3	0.1	0.1	0	0	0	0.1	0
		Maximum	12.7	0.4	0.5	0.7	0.3	0.7	5	3.8	1	0.6	0.7	0.1	0.7	1.9	0.3
	Autumn	Median	2.2	0.1	0.1	0	0.3	0.1	0.2	0.1	0.1	0	0.1	0	0.2	0.1	0
		Maximum	10.6	4.5	10.2	1.1	3.6	2.4	3.8	0.7	1.2	0.6	0.8	0.7	1.2	7.4	0.3
Leisler's bat	Spring	Median	1.4	4.25	5.05	6.05	0.95	3	4.6	1.05	2	3	0.65	0.4	0.25	0.5	0
		Maximum	14.3	28.8	18.5	28.5	2.9	31.2	31.5	23.2	20.9	44.1	26.9	1.7	1.9	2.2	1.4
	Summer	Median	1.2	0.3	0.5	0.3	0.3	0.6	1.2	0.1	0	0.3	0.1	0.3	0.1	0.9	0.3
		Maximum	10.8	5.5	4.7	2.3	3.7	5.5	19	1.1	5.1	35.9	3.3	2.6	3	4.8	4.6
	Autumn	Median	0.8	0.8	0.8	0.4	1.3	0.7	2.3	0.4	0.6	3.8	0.6	0.1	0.3	0.6	0.7
		Maximum	6.1	4.2	7.7	3.3	3.8	2.8	10.2	1.5	4.1	39.9	2.5	2.1	2.2	10.4	3.8
Nathusius' pipistrelle	Spring	Median	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-

		Maximum	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-
	Summer	Median	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Maximum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Autumn	Median	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Maximum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Common pipistrelle	Spring	Median	0.9	6.3	0.9	1.2	1.45	10	0.45	0.6	0.2	0.3	0.9	0.1	0.2	0.05	0.2
		Maximum	8.4	35.4	54.7	41.3	14.7	62.8	7.5	2.1	6.4	6.3	5.3	2.2	2.6	0.9	0.9
	Summer	Median	2.5	1.9	2	0.4	0.1	5.9	0.1	2.3	0	0.4	0.7	0	0	0.4	0
		Maximum	31.5	20.4	20.1	6.5	1.2	41.5	4.3	14.7	11.9	10.4	9.1	0.7	1	22.4	0.7
	Autumn	Median	1.2	3.7	3.5	0.2	0.3	2.3	0.2	0.2	0.1	0.7	0.2	0	0	0.1	0
		Maximum	16.7	19.9	62.2	10.7	4.5	35.7	2.9	3.4	1.4	9.3	2.5	1.8	0.4	0.5	0.3
Soprano pipistrelle	Spring	Median	0.2	1.4	0.4	0.35	0.35	20.4	0.55	1.15	0.15	1.7	0.55	0	0.1	0.1	0
		Maximum	2.6	13	3.8	2.3	35.4	81.3	3.9	2.4	1.1	19	16.3	0.9	1.8	0.5	0.5
	Summer	Median	0.7	0.7	2.3	0.5	0	8	0.3	0.4	0	0.1	0.8	0	0.1	0.1	0
		Maximum	3.3	7.7	10.6	6.2	0.4	70.8	23	3.4	8.4	2.6	10.6	0.3	0.8	8	0.4

	Autumn	Median	0.4	2	0.5	0.6	0.1	6	0.4	0.4	0.1	0.6	0.6	0	0.1	0	0
		Maximum	9.5	9.2	10.5	12.8	1.8	107.1	8.9	8.1	2.3	26.6	8.4	0.6	0.6	0.6	9.1
Brown long-eared bat	Spring	Median	0.2	0.75	0	0	0.15	0.05	0	0	0.05	0	0.25	0	0	0	0
		Maximum	0.7	2	0.3	0.2	0.6	1.1	0.2	0.3	0.4	0.3	3	0.2	0.6	0.1	0.3
	Summer	Median	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0
		Maximum	0.6	1.1	0.3	0.1	0.3	0.3	0.3	-	0.7	0.4	0.3	0.1	0.3	0.5	0.1
	Autumn	Median	0.1	0.2	0.1	0	0.1	0.1	0	0	0.3	0	0.1	0	0	0	0.1
		Maximum	0.8	1.2	1.2	0.4	0.5	0.9	0.4	0.4	1.4	0.6	0.4	0.3	0.5	0.4	0.5

4.5 Importance of Bat Population Recorded at the Proposed Wind Farm site

Ecological evaluation within this section follows the approach outlined in Chapter 3 of the *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (TII, 2009).

All bat species in Ireland are protected under international and national legislation, including the Bonn Convention (1992), Bern Convention (1982), and the EU Habitats Directive (92/43/EEC). In Ireland, they are also protected under the Wildlife Acts 1976 (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011.

Bats have been assessed as Ecological Receptors of **Local Importance (Higher Value)** based on the presence of a regularly occurring bat population recorded within the Proposed Wind Farm site, including a confirmed roost and use of the site for foraging and commuting.

A historically recorded Leisler's bat roost has been known to occur within the Tallow pNHA. The roost record is located over 17km from the closest proposed turbine. This distance is beyond the 13.4km Irish Leisler's bat foraging range reported by Shiel *et al.* (1999) and cited in BCI (2026). Given this distance, the potential for significant impacts on the roost as a result of the Proposed Project is unlikely.

During the 2025 survey period, one active roost was confirmed through dusk emergence surveys. One structure supported a small soprano pipistrelle roost with 2 individuals recorded in 2025. No large or significant maternity roosts (i.e. >100 individuals or of National Importance) were identified within the Proposed Wind Farm site.

5. RISK AND IMPACT ASSESSMENT

This risk and impact assessment has been undertaken in accordance with NatureScot (2021). As per NatureScot (2021), 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 Proposed Wind Farm 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 a proposed development on bats is related to site-based risk factors, including habitat and development features. The site risk assessment, as per Table 3a of NatureScot (2021), 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	One low-value roost (2no. Soprano pipistrelles) was identified within the Proposed Wind Farm site. No maternity roosts or roosts of National Importance were identified within the Proposed Wind Farm site. The Site is dominated by commercial conifer forestry and open grassland. Habitat features of relevance to bats are limited to plantation edges, hedgerows and treelines and a small number of linear features including watercourses and localised stone walls which provide commuting and foraging opportunities throughout the Site and the wider area. Bat activity recorded during surveys were generally low to moderate and typical of upland forestry landscapes, with activity largely associated with conifer edge habitats. The Site does not represent a habitat mosaic of particularly high quality. While bat activity was confirmed throughout the Site (including *High* activity peaks at some detectors), and the Site provides forging and commuting habitats, it does not present a habitat mosaic of significance for bats.	Moderate
Project Size	Following the criteria set out in NatureScot (2021) the project is of *Medium* scale as it consists of 23 no. turbines. Although individual turbine heights exceed 100m, the overall development remains well below the threshold for a large project under NatureScot (2021). The project has therefore been assessed as being of medium size. There are four other wind farms within 10 km, two of which are existing and four are in the planning system.	Medium
Site Risk Assessment (Plate 3-3, NatureScot (2021))	Taking account of confirmed low-value roosts, moderate habitat value, and a medium-scale project, the site is assessed as posing a **Medium Site Risk (3)** to bats.	**Medium Site Risk (3)**

5.1.2 Assessment of Collision Risk

The following high-risk species were recorded during the dedicated surveys at the Proposed Wind Farm site:

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

Overall collision risk for these species was determined in accordance with Table 3b of NatureScot (2021) guidance (Appendix 3), by cross-referencing the site risk level (Medium) with species-specific activity categories. Assessments were undertaken for both **median** activity (representing typical conditions) and **maximum** activity (representing peak levels). NatureScot (2021) recommends using the most appropriate measure (i.e. median or maximum) to determine overall risk. As per NatureScot (2021) 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

Overall activity levels were *Low* for the above species; therefore, no significant collision related effects are anticipated. Activity levels for these species will continue to be assessed during operational monitoring following the implementation of best practice mitigations provided.

5.1.2.1 Leisler's bat

The Site lies within the current known range of the Leisler's bat in Ireland (NPWS, 2025). Leisler's bats are considered a species of high population vulnerability due to their high risk of turbine collision (NatureScot, 2021). A roost of international importance was identified 13.8km from the Site and 17.5km form the closest Proposed Turbine which is designated for the conservation of Leisler's bats. Leisler's bat was recorded during all static and manual activity surveys in 2025 across the Proposed Wind Farm site. When interpreted in the context of the medium site risk (see Section 4.5) and using Table 3b of NatureScot (2021), Leisler's bat activity was characterised by *Low* typical collision risk in all seasons (based on median activity rates), and *Medium* collision risk at peak activity levels (see Table 5-2).

Walked transect results detected higher activity levels of Leisler's bat activity during the spring period, consistent with its known seasonal increase in activity levels.

Based on the combined transect and static survey results, the local habitat context characterised mainly by agricultural grassland, conifer plantation and linear features such as hedgerows and treelines, the overall collision risk for Leisler's bat at the Proposed Wind Farm site is assessed as *Low* at typical activity levels, but with *Medium* risk at peak levels.

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

Survey Period	Site Risk	Typical Activity (Median)	Typical Risk Assessment (as per Table 3b NatureScot 2021)	Activity Peaks (Maximum)	Peak Risk Assessment (as per Table 3b NatureScot 2021)
Spring 2025	Medium (3)	Low-moderate (2)	Typical Risk is Low (6)	Moderate – High (4)	Peak Risk is Medium (12)
Summer 2025*		Low (1)	Typical Risk is Low (3)	Moderate (3)	Peak Risk is Medium (9)
Autumn 2025		Low (1)	Typical Risk is Low (3)	Moderate (3)	Peak Risk is Medium (9)

**The summer median value for D02 was identified as an outlier and was excluded from the assessment of Typical Activity as it considerably skews the data, providing an inaccurate representation of the typical activity observed across the Proposed Wind Farm.*

5.1.2.2 Soprano pipistrelle

The Site lies within the current known range of the soprano pipistrelle (NPWS, 2025). This species is classified as a common species with medium population vulnerability and is considered to have a high collision risk (Table 3-9). Soprano pipistrelle activity was recorded throughout the survey periods at the Proposed Wind Farm site. When evaluated against the identified site risk and in accordance with Table 3b (NatureScot, 2021), the overall typical activity risk for soprano pipistrelle was *Low* during all seasons. However, peak activity levels reached *Moderate* resulting in a Medium peak risk classification (see Table 5-3 below). Two outliers were identified at D06, and typical activity levels were *Moderate – High* at this detector in spring and summer.

Based on site visits and survey data, including walked transects, the typical (median) activity levels correspond with the habitat composition of the Proposed Wind Farm site, characterised mainly by agricultural grassland, conifer plantation and linear features such as hedgerows and treelines.

Therefore, the collision risk to the local soprano pipistrelle population is assessed as *Low* at typical activity levels and *Medium* risk at peak activity levels across all seasons, particularly at D06 where peak activity levels were recorded.

Table 5-3 Soprano pipistrelle - Overall Risk Assessment

Survey Period	Site Risk	Typical Activity (Median)	Typical Risk Assessment (as per Table 3b NatureScot 2021)	Activity Peaks (Maximum)	Peak Risk Assessment (as per Table 3b NatureScot 2021)
Spring 2025*	Medium (3)	Low (1)	Typical Risk is Low (3)	Moderate (3)	Peak Risk is Medium (9)
Summer 2025		Low (1)	Typical Risk is Low (3)	Moderate (3)	Peak Risk is Medium (9)
Autumn 2025*		Low (1)	Typical Risk is Low (3)	Moderate (3)	Peak Risk is Medium (9)

**The spring and autumn median value for D06 was identified as an outlier and was excluded from the assessment of Typical Activity as it considerably skews the data, providing an inaccurate representation of the typical activity observed across the Proposed Wind Farm.*

5.1.2.3 Common pipistrelle

The Site is located within the current range of the common pipistrelle (NPWS, 2025). Common pipistrelle is classified as a common species with medium population vulnerability and a high collision risk (Table 3-9). This species was recorded during all activity surveys across the Proposed Wind Farm site. When assessed against the identified site risk and following Table 3b of Nature Scot (2021), overall typical activity risk for common pipistrelle was *Low* across all seasons. Peak activity levels were consistently *Moderate* to *High* across all seasons, resulting in a *Medium* peak risk classification (see Table 5-4 below).

Based on site visits and survey data, including walked transects, the typical (median) activity reflects the habitat composition of the Proposed Wind Farm site, characterised mainly by agricultural grassland, conifer plantation, and linear features such as hedgerows and treelines.

Therefore, a *Low* typical collision risk and a *Medium* peak risk is assigned to the local population of common pipistrelle throughout all survey seasons.

Table 5-4 Common pipistrelle - Overall Risk Assessment

Survey Period	Site Risk	Typical Activity (Median)	Typical Risk Assessment as per Table 3b NatureScot (2021)	Activity Peaks (Maximum)	Peak Risk Assessment as per Table 3b NatureScot (2021)
Spring 2025		Low (1)	Typical Risk is Low (3)	Moderate (3)	Peak Risk is Medium (9)

Summer 2025	Medium (3)	Low (1)	Typical Risk is Low (3)	Moderate-high (4)	Peak Risk is Medium (12)
Autumn 2025		Low (1)	Typical Risk is Low (3)	Moderate (3)	Peak Risk is Medium (9)

5.1.2.1 Nathusius' pipistrelle

The Site is outside the current known range of Nathusius' pipistrelle (NPWS, 2025), although a small number of bat passes were recorded during the 2025 static detector surveys. Nathusius' pipistrelle is considered a rarer species, of high population vulnerability and high collision risk (Table 3-9). Despite the site being beyond its typical Irish range, detections occurred at low levels at D12 suggesting occasional presence or exploratory movements rather than sustained use of the Site.

When assessed in the context of the site risk and in accordance with Table 3b (NatureScot, 2021), typical activity risk for Nathusius' pipistrelle was *Low* across all seasons. Peak activity reached *High* levels only in spring at D12, however peak risk is assessed as Low due to the absence of the species across all other detector locations and seasons. (see Table 5-5 below).

No activity was recorded during walked transects, and detections from static monitoring were infrequent and of low intensity. This is consistent with the surrounding landscape of the Proposed Wind Farm site, characterised mainly by agricultural grassland, conifer plantation, and linear features such as hedgerows and treelines, and located beyond the species' known core distribution.

Accordingly, the collision risk to the local population of Nathusius' pipistrelle is considered *Low* across all survey seasons.

Table 5-5 Nathusius' pipistrelle - Overall Risk Assessment

Survey Period	Site Risk	Typical Activity (Median)	Typical Risk Assessment (as per Table 3b NatureScot 2021)	Activity Peaks (Maximum)	Peak Risk Assessment (as per Table 3b NatureScot 2021)
Spring 2025	Medium (3)	Low (1)	Typical Risk is Low (3)	Low (1)	Peak Risk is Low (3)
Summer 2025		Low (1)	Typical Risk is Low (3)	Low (1)	Peak Risk is Low (3)
Autumn 2025		Low (1)	Typical Risk is Low (3)	Low (1)	Peak Risk is Low (3)

5.1.3 Collision Risk Summary

Following NatureScot (2021) guidance and the site-specific activity thresholds detailed in Section 3.5, typical site-level collision risk for high-risk bat species at the Proposed Wind Farm site was assessed as *Low*. At peak activity levels, the risk assessment reached *Medium* for Leisler's bat, common pipistrelle, and soprano pipistrelle (see Tables 5-2 to 5-4).

Overall bat activity levels are considered representative of the habitat composition at the Proposed Wind Farm site, which includes agricultural grassland, conifer plantation, and linear features such as hedgerows and treelines, all of which provide suitability for foraging and commuting bats. Both static detector data and manual transect surveys indicated typical activity for an intensively farmed landscape, though comparatively elevated activity was noted in specific areas.

Detailed detector-level analysis identified one location that recorded *High* median activity for high collision-risk species (Table 5-6 below). Most high activity records occurred in spring, with D06 (T12) exceeding high activity thresholds for common pipistrelle and soprano pipistrelle.

These findings indicate localised peaks in bat activity along edge habitats such as treelines, particularly at D06 (representative of proposed T12), which was situated within improved grassland with a conifer plantation edge within 50m of the detector. Walked transects also recorded higher Soprano pipistrelle

activity during summer, attributed to 2 to3 individuals foraging up and down along the conifer plantation edge at proposed T12 where D06 was located. Accordingly, a site-specific monitoring and mitigation strategy has been developed in accordance with NatureScot (2021), outlined in Section 6 below.

Table 5-6 Detector Location Recording High Median Activity in 2025 for High-risk Bat Species

Detector ID	Corresponding Turbine	Species	*High* Median Activity Survey Period
D06	T12	Soprano pipistrelle	Spring 2025
D06	T12	Common pipistrelle	Spring 2025

5.2 Loss or Damage to Commuting and Foraging Habitat

Wind farm developments have the potential to result in the loss or modification of habitats used by bats for commuting and foraging, primarily during the construction phase. These impacts may arise through vegetation removal, habitat fragmentation and localised disturbance associated with turbine bases, crane hardstands, access tracks and turbine delivery route accommodation works.

The Proposed Wind Farm site is dominated by agricultural grassland and commercial conifer plantation, which were assessed as providing a range of *Negligible* to *Moderate* suitability for commuting and foraging bats. Habitats of greater relevance to bats are limited to localised linear features, including plantation edges, hedgerows, scrub, watercourses and occasional treelines, which provide *Moderate* suitability for commuting and foraging bats within the Proposed Wind Farm site.

Direct habitat loss associated with the Proposed Project footprint will primarily affect areas of closed canopy conifer plantation and grassland habitats of *Negligible* to *Low* suitability. These habitats do not represent key commuting or foraging features for bats and are widely available within the surrounding landscape. As such, the loss of these habitats is not expected to result in a significant reduction in foraging resources or connectivity for the local bat population. The Proposed 110kV Substation and associated construction compound is located within conifer plantation. The removal of approximately 69.27ha of conifer plantation is not anticipated to result in the loss of high-value bat commuting or foraging habitat. Any localised loss of plantation edge habitat will be limited in extent and will not result in fragmentation at the site scale. Opening up previously closed canopy forestry also has the potential to increase the extent of forestry edge habitat which is known to support both foraging and commuting. As such, the loss of this habitat is not expected to result in a significant reduction in foraging resources or connectivity for the local bat population. No net loss of bat commuting, or foraging habitat is anticipated in this area.

Approximately 2,580m of hedgerow and 68m of treeline will be lost to accommodate the Proposed Project footprint. Approximately 177m of hedgerow will be lost along the Proposed 110kV Underground Cabling Route, however this habitat will be reinstated once the works are completed. A small area of vegetation removal is required within the Proposed Grid Connection site required to facilitate grid transformer delivery to the Proposed 220kV Loop-in Substation. This junction provides road edge habitat for potential commuting and foraging bats; however, the remaining habitats will continue to provide suitable commuting and foraging habitat for bats, with no anticipated loss of habitat connectivity. Therefore, no significant effects on bats are anticipated.

There are minimal turbine delivery route accommodation works required at two locations to facilitate the delivery of components to the Site. No trimming or felling will be required at the first location (TDR1), which covers an area of grassy verge. The second location (TDR2) requires the felling of 0.26ha of conifer forestry at the entrance to the Site. This area of conifer forestry is accounted for in the overall conifer habitat loss of the Proposed Project. The removal of habitat at these locations is not anticipated to result in the loss of suitable commuting and foraging habitat as these habitats are widely available within the surrounding landscape therefore, no significant effects on bat commuting or foraging habitats are anticipated from the turbine delivery route.

Further details on vegetation removal required within and around the Proposed Project footprint is detailed in Chapter 4 and Chapter 6 of this EIAR. Any tree removal will be undertaken to maintain Proposed Wind Farm infrastructure and an appropriate buffer between turbine blade tips and adjacent canopy/habitat feature, in line with current best practice (NatureScot (2021)).

To offset this loss of linear features, approximately 5.5km of hedgerow planting is proposed within the Site in areas where bat commuting and foraging activity was recorded during the 2025 surveys to enhance the connectivity within the Site. This will result in a net gain of hedgerow habitat within the site. Hedgerow planting will incorporate native species be indigenous to the local area. New hedgerows will be planted between November – March when the woody hedge plants are dormant, they will be closely spaced and protected from livestock. There is 3.6 ha of native woodland establishment proposed at the southern boundary of the Proposed Wind Farm site.. These measures aim to strengthen existing habitat connectivity and ecological function. It is recommended that this planting is implemented during the earliest phase of construction, as outlined in Chapter 6, to ensure replacement habitat establishes as quickly as practicable.

While these measures will maintain and enhance ecological corridors in the long term, a short-medium term reduction in connectivity may occur until newly planted or enhanced hedgerow becomes fully established. Final details of this enhancement planting are provided in the Biodiversity Management and Enhancement Plan (BMEP) (Appendix 6-4). Following the implementation of the replanting plan, as outlined in the BMEP, no significant effects in relation to habitat fragmentation or loss of commuting or foraging habitat for bats is anticipated.

Given the large proportion of the Site that will remain undisturbed, and the reinstatement of linear features along the Proposed 110kV Underground Cabling Route and the net gain of linear habitat as part of the BMEP, no significant effects on bat commuting or foraging habitat are predicted as a result of the Proposed Project.

5.3 Loss of, or Damage to, Roosts

Wind farm developments could have the potential to result in the loss of, or disturbance to, bat roosts through direct impacts to structures or trees supporting roosting bats, or through indirect effects such as noise, vibration and artificial lighting during construction and operation.

Seven built structures within the Proposed Wind Farm site were assessed during the 2025 survey season. Of these seven structures, one (Structure no. 6) was confirmed to support a small roost of soprano pipistrelle (2 individuals observed in autumn 2025), It is located 288m from the closest proposed turbine location. This confirmed roost and the associated linear habitat features will be avoided as part of the Proposed Project.

One beech tree south of T11 identified with PRF-I, although no evidence of roosting bats was identified. This tree is outside of the Proposed Project footprint and will not be felled. The habitats within the Proposed 110kV Substation and construction compounds consist entirely of Conifer Plantation (WD4), which does not typically support suitable roosting features due to its uniform structure and management regime. Targeted inspections of non-conifer trees within the Proposed Project footprint did not identify any potential roost features and were assessed as having no (*None*) roosting suitability. As such, no impacts to tree roosts are anticipated.

The Proposed 110kV Underground Cabling Route will follow existing road corridors and agricultural fields. There is an anticipated loss of 177m of hedgerow habitat and no tree species with roosting potential are present. Therefore, no loss of roosting habitat is anticipated along the Proposed 110kV Underground Cabling Route. There are two watercourse crossings along the Proposed 110kV Underground Cabling Route. WC1, a concrete culvert was assessed as having *Negligible* roosting potential. WC2, a bridge, was assessed as having *Low* roosting potential. No bats were identified roosting within both structures, and no evidence of roosting was found during the surveys. Flatbed formation over works is proposed at both water crossings. No structural modifications are required on existing bridge or culvert infrastructure associated with crossings along the Proposed 110kV Underground Cabling Route as works will be confined to the existing road infrastructure. As such, no loss or damage to potential roosting habitat is anticipated as a result of these works.

There are minimal turbine delivery route accommodation works required at two locations to facilitate the delivery of components to the Site. At the second accommodation location (TDR2) an area of 0.26ha of conifer forestry will be felled. The conifer forestry consists of Sitka spruce trees, and no PRF's were identified on trees proposed to be removed. No trees with PRF's or structures with roosting potential were identified along the Proposed Turbine Delivery Route accommodation areas.

Overall, taking into account the low conservation significance of identified roost, its retention within the Site, and the implementation of mitigation measures, the Proposed Project is not predicted to result in significant adverse effects with regard to loss or damage of bat roosts.

5.4 Displacement of Individuals or Populations

Displacement may occur where bats avoid areas due to disturbance associated with construction activities, operational turbine presence, noise, vibration, artificial lighting, or the loss and alteration of commuting and foraging habitat. This can reduce the use of otherwise suitable habitat within the Site by individual bats and, where extensive, has the potential to affect local bat populations.

Construction Phase

Potential sources of displacement during construction include noise and vibration associated with turbine and infrastructure construction, including rock breaking (where required), vegetation clearance, and temporary disturbance associated with construction activities.

Construction activities associated with the Proposed Project, including any rock breaking required will not occur in proximity to the confirmed soprano pipistrelle roost. These works will be undertaken in accordance with the construction methodology and noise control measures outlined in Chapter 12. Given the separation distance and the presence of intervening habitats, disturbance effects on roosting bats are not anticipated.

Temporary disturbance may also arise from construction of the Proposed 110kV Underground Cabling Route including underground cabling works and flatbed formations at watercourse crossings. These activities will be localised and temporary in nature and will not result in fragmentation of habitat or a substantial reduction in habitat availability. No bat roosts were identified at, or in the immediate vicinity of, the Proposed 110kV Underground Cabling Route water crossing locations. Any short-term noise and vibration associated with these works are unlikely to differ significantly from existing background conditions such as road traffic to which bats in the area are already accustomed. Consequently, any construction-related displacement of individual bats is expected to be highly localised, temporary and reversible.

Habitat Loss and Alteration

A number of treelines, hedgerows and conifer edge habitat located within turbine felling buffers and along sections of the Proposed Grid Connection and TDR will require removal or partial clearance. While these features contribute to local habitat connectivity, the overall layout has been designed to avoid significant fragmentation, retain the majority of existing linear habitat features and avoid identified bat roosts.

To offset habitat losses and maintain connectivity for commuting and foraging bats, the Proposed Project includes habitat enhancement measures, including approximately 5.5km of hedgerow planting and 3.6ha of native woodland creation. These measures are detailed in Section 6.1 and the Biodiversity Management and Enhancement Plan (BMEP) (Appendix 6-4). It is recommended that this planting is implemented during the earliest phase of construction, as outlined in Chapter 6, to ensure replacement habitat establishes as quickly as practicable.

Artificial Lighting

Artificial lighting has the potential to alter bat commuting and foraging behaviour, particularly for light-sensitive species such as brown long-eared bat and Myotis species. A site-specific lighting strategy in line with Section 6.1.2 will be implemented in accordance with current best-practice guidance to minimise light spill, maintain dark corridors and avoid illumination of retained linear features, sensitive habitats and known roost locations.

With these measures in place, significant displacement effects resulting from artificial lighting are not anticipated.

Operational Phase

During operation, bats may exhibit avoidance behaviour in the immediate vicinity of turbines. However, available evidence indicates that any such effect is generally confined to a relatively small area surrounding individual turbines and does not typically result in displacement across wider landscapes.

Baseline surveys recorded generally *Low* to *Moderate* levels of bat activity across the Proposed Wind Farm site, with activity concentrated along habitat edges and linear features rather than within the turbine envelope itself. No evidence was recorded to indicate intensive use of the turbine areas by large numbers of bats or the presence of habitats supporting regionally important concentrations of commuting or foraging bats.

Given the limited extent of habitat loss, the retention of the majority of commuting and foraging features, the avoidance of confirmed roosts, and the provision of habitat enhancement measures, any operational displacement is expected to be restricted to a small number of individual bats within the immediate vicinity of turbines.

Assessment of Effects on Individuals and Populations

Some displacement of individual bats may occur locally during construction and operation of the Proposed Project. However, such effects are expected to be limited in spatial extent, temporary or reversible in nature, and confined primarily to the immediate vicinity of construction activities and turbine infrastructure.

The Proposed Project has been designed to avoid confirmed roosts, maintain ecological connectivity across the site and retain the majority of suitable commuting and foraging habitat. In addition, habitat enhancement measures will provide a long-term net gain in linear and woodland habitat availability.

As a result, the displacement of bats is not expected to reduce the availability of critical resources, disrupt the functioning of the identified soprano pipistrelle roost, or adversely affect the conservation status, viability or long-term persistence of local bat populations. Accordingly, significant displacement effects on individual bats are not anticipated, and no significant displacement effects at the local population level are predicted.

6. BEST PRACTICE AND MITIGATION MEASURES

This section describes the best practice and site-specific mitigation measures that are included 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, as amended). Plant machinery will be switched off when not in use, and works will be managed to minimise unnecessary noise generation. Methodology and mitigation outlined in Chapter 12: '*Noise and Vibration*' will be followed to minimise noise and vibration during construction.

Operational noise associated with the Proposed Project will arise principally from the wind turbines and electrical and mechanical plant, including Proposed 110kV Substation and the Proposed 220kV Loop-in Substation.

All wind turbine and electrical infrastructure associated with the Proposed Project will be specified, installed and maintained in accordance with relevant standards and manufacturer guidance to minimise unnecessary noise generation and the potential for unintended high-frequency noise emissions. In addition, a minimum 5m buffer will be maintained between the proposed substation fence lines and the nearest retained linear habitat features. The treelines and hedgerows surrounding the proposed substations will be retained as bat commuting and foraging habitat and additional hedgerow will be planted within the agricultural field adjacent to the Proposed 220kV Loop-in Substation.

These measures have been incorporated into the assessment presented in Section 5.4 and will minimise the potential for operational noise to result in disturbance, displacement or behavioural effects on bats.

6.1.2 Lighting Restrictions

In accordance with the Institute of Lighting Professionals Guidance Note 08/23 (ILP, 2023), lighting associated with the Proposed Project will be designed to maintain dark commuting corridors and minimise light spill onto woodland, scrub, treelines, hedgerows, and other habitats used by bats.

During the construction phase, lighting requirements will be temporary and limited to areas where required for health, safety and security purposes, including security and temporary compounds and works associated with the proposed substations. Where works are required during hours of darkness, lighting will be directed away from retained woodland, treelines, hedgerows, and bat commuting or foraging habitats. Directional accessories, including baffles, hoods, cowls and louvres, will be used where appropriate to reduce light spill and focus illumination only where required. The same restrictions will apply during decommissioning.

During the operational phase, lighting associated with the Proposed Project will be kept to the minimum necessary for operation, maintenance, safety and security purposes. Turbines will not be continuously illuminated, other than where aviation lighting is required. External lighting associated with the Proposed 110kV Substation and the Proposed 220kV Loop-in Substation will be motion-activated and will not be continuously illuminated. Luminaires will be fully shielded, have a 0% upward light ratio and be directed away from retained boundary habitats.

All permanent lighting (excluding aviation lighting) will utilise warm-spectrum LED sources with a correlated colour temperature of 3000K or less. Lighting will be designed and operated to maintain dark commuting corridors along retained habitat features and avoid fragmentation of bat commuting routes. A

buffer of dark, unlit habitat will be maintained between the proposed substations fence line and the nearest retained treeline or hedgerow.

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

With regard to the potential for lighting to increase collision risk, it is noted that there will be limited illumination of the turbines in the form of aviation lighting. Post-construction monitoring will be carried out (as outlined below) to assess any potential changes in bat activity patterns and collision risk. Significant effects as a result of lighting are not anticipated; however, if in the course of this monitoring, any potential for significant effects on bats is identified, the site-specific mitigation measures will be reviewed and any changes necessary will be implemented to avoid any such impacts.

6.1.3 Collision Risk Mitigation Measures

6.1.3.1 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), to reduce the risk of bat activity occurring within the rotor-swept zone.

While larger buffers (100–200m) 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 specifications. Three different turbine models are proposed as part of the Proposed Wind Farm and therefore there are three different proposed turbine dimensions – for turbines T22 and T23 the following dimensions apply, tip height: 170m; rotor diameter: 150m; hub height: 95m, for turbines T1-T6 and T13-T21 the following dimensions apply, tip height: 175m; rotor diameter: 150m; hub height: 100m, and for turbines T7-T12 the following dimensions apply, tip height: 185m; rotor diameter: 162m; hub height: 104m.

Two separate feature heights were used to reflect the two habitats present at proposed turbine locations, which are conifer plantation and hedgerows. A precautionary height of 2m for hedgerow habitats and 15m for conifer plantation were applied. These turbine specifications and habitat heights were used to calculate the felling radius. 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 site. 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 NatureScot (2021), NIEA (2021) and 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 buffers for hedgerow habitat and conifer habitat for the Proposed Turbines are presented in table 6-1 below. Bat buffers meeting this requirement will be established and maintained around all proposed turbines.

Table 6-1 Required bat felling buffers for the Proposed Turbines in hedgerow and conifer habitats.

Habitat	T1 - T6, T13 - T21	T7 - T12	T22 & T23
Hedgerow	78m	82m	84m
Conifer	92m	96m	96m

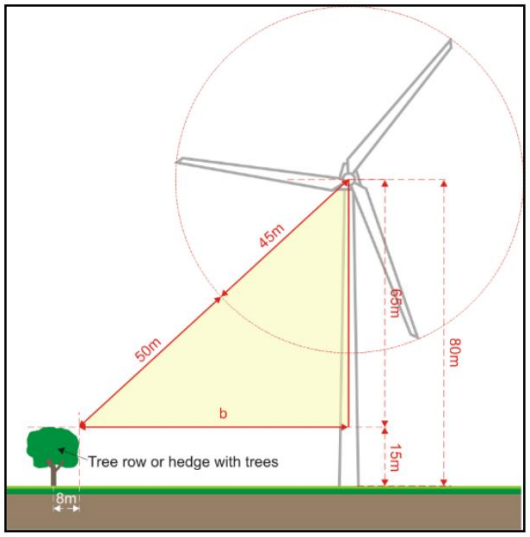


Plate 6-1 Calculation of buffer distances (NatureScot, 2021).

6.1.3.2 Blade Feathering

NIEA (2021) also recommend that, in addition to buffers applied to habitat features, all wind turbines are subject to 'feathering' of turbine blades when wind speeds are below the cut-in speed of the proposed turbine. This means that the turbine blades are pitched at 90 degrees or parallel to the wind to reduce their rotation speed to below two revolutions per minute while idling. This measure has been shown to significantly reduce bat fatalities (by up to 50%) in some studies (NIEA, 2021).

Blade feathering below the turbine cut-in speed is expected to be implemented automatically through the turbine control system. Feathering will be limited to periods and locations as follows:

- Seasonal Application:

Feathering will be applied during the main bat activity season (typically April–October) when bats are active and at potential increased risk of collision (sunrise to sunset) and only when there is no rain or light rain present. Blade feathering will not be applied during winter months (November - March) when bats are largely inactive.

- Spatial Targeting:

Feathering will be implemented only at T6 which is located in an area of high bat activity, as identified through baseline surveys. Section 5.1.3 of this report further outlines this area which recorded high bat activity for high collision risk bat species.

Should any variations in activity or risk levels be identified during post-construction monitoring, this will be adjusted accordingly as part of the mitigation and monitoring strategy.

In the event that blade feathering is not available for the selected turbine model, an equivalent operational measure will be implemented to ensure that turbines do not rotate at low wind speeds when electricity generation is not occurring. This may include operational controls such as manual stop or stop-on-demand procedures during periods when turbines would otherwise idle below cut-in speed.

6.1.4 Biodiversity Management and Enhancement Plan

The Proposed Project is predominantly located within conifer plantation and grasslands with agricultural fields that are typically bordered by hedgerows or treelines and occasionally stone walls. These areas of hedgerows and treelines have been largely retained or avoided. However, there will be a requirement to remove areas of hedgerow and treelines to facilitate the development.

The loss of linear features will largely be as a result of the construction of new roads, turbine hard-standing areas and turbine buffers required to avoid impacts on bats as per NatureScot recommendations. The total linear loss of hedgerow habitats within the Site is 2,580m including the temporary loss of 177m along the Proposed 110kV Underground Cabling Route, however this will be reinstated after works on the grid connection are completed. 68m of Treeline habitat will be lost.

A replanting plan has been curated to provide alternative commuting and foraging opportunities within the Site. Approximately 5.5km of hedgerow habitat replanting with native species will occur within the site which includes 1.2km of riparian hedgerow planting along existing rivers to further increase the biodiversity value within the area and result in a net gain in hedgerow habitat within the Site. Additionally, approximately 3.6 ha of woodland will be planted within the southeastern section of the Proposed Wind Farm site.

Overall, the proposed planting of new linear habitat, along with riparian woodland, will result in a net gain of linear landscape and woodland features within the Site. These measures will enhance both foraging and commuting opportunities for bats that use the area. All planting will consist of species indigenous to the local area. Further details are provided in Appendix 6-4, Biodiversity Management and Enhancement Plan (BMEP).

6.2 Post-Construction Bat Monitoring Plan

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.

Taking a precautionary approach and given that high collision risk was recorded at median and peak activity levels, an adaptive monitoring and mitigation strategy has been devised for the Proposed Project, in line with the case study example provided in Appendix 5 of NatureScot (2021) and based on the site-specific data.

6.2.1 Fatality Monitoring

Carcass searches will be undertaken to quantify any bat mortality associated with turbine operation. In accordance with the most up to date best practice guidance 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 within a radius of **92.5m from the turbine base**, equivalent to half the turbine tip height based on the largest Proposed Turbine model (185m), in accordance with best practice guidance.

Carcass searches shall be conducted in accordance with NIEA (2021) guidance and surveys will cover all bat activity seasons (i.e. spring, summer and autumn periods). Carcass searches should be carried out at all turbine locations if feasible. However, for a wind farm consisting of 23 Turbines, it is recommended that carcass searches, at a minimum, will be undertaken at 13 representative turbines (57% of the wind farm), selected on the basis of predicted collision risk, habitat association and pre-construction bat activity levels. The monitoring turbines shall include all turbines identified as high risk in Section 5 of this report. The monitoring programme may be adapted following review of Year 1 results.

Carcass persistence (scavenger removal) trials and searcher efficiency (SEEF) trials will be undertaken to quantify the probability of carcass detection, thus allowing robust estimation of collision mortality. 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 correct observed carcass counts and calculate realistic estimates of bat mortality.

6.2.2 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, if practical to do so **eight 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.

6.2.3 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.

6.2.4 Monitoring Duration and Reporting

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

Where mortality remains below the defined threshold, the mitigation and curtailment regime in place at that time will be maintained. The final scope, methodology, search effort and turbine selection is to be agreed with the relevant competent authority and informed by best practice guidance in place at the time of implementation. The monitoring programme may be adapted, where required, to reflect site-specific findings, technological developments, updated guidance and the results of monitoring undertaken during the operational phase. An annual monitoring report will be prepared and submitted to the Planning Authority and relevant statutory consultees by the owner or operator of the Wind Farm. The reports 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.

6.3 Residual Effects

Taking into account the sensitive design of the Proposed Project and the implementation of best practice mitigation and adaptive mitigation measures, no significant long-term residual effects on bats are anticipated with regard to:

1. Collision mortality, barotrauma and other injuries,
2. Loss or damage to roosts, and
3. Displacement of individuals or populations.

However, a temporary residual effect at the local geographic scale is anticipated in relation to the loss of commuting and foraging habitat, due to the removal of treelines and hedgerows required to facilitate construction and bat buffers. While habitat loss will be offset through a comprehensive native woodland and hedgerow enhancement and replanting programme, replacement planting will require several years to develop the structural characteristics necessary to function effectively as bat commuting and foraging habitat. Although replanting is recommended to be carried out at the earliest possible stage during the construction phase, a period of approximately 5 to 10 years is anticipated before replacement hedgerows and treelines provide comparable ecological connectivity, during which a temporary minor reduction in habitat connectivity may occur.

6.4 Cumulative Effects

A thorough review of publicly available information relating to wind farm developments within 10km of the Proposed Turbines confirms that the Proposed Wind Farm site is located within a landscape with an existing concentration of operational wind energy infrastructure. There are two existing wind farm sites (Ballycurreen Wind Farm and Woodhouse Wind Farm), and two proposed wind farm sites

(Knocknamona Wind Farm and Moanbrack Wind Farm) located within 10 km of the Proposed Turbines. The projects and/or plans considered are detailed in Section 2.8 in Chapter 2 of the EIAR. A more detailed cumulative assessment is presented in Chapter 6.

The key cumulative pathway for bats is collision mortality, with additional potential for cumulative effects through loss, fragmentation or displacement from commuting and foraging habitat. However, the Proposed Project includes a project-specific risk assessment, and incorporates a range of mitigation measures, including turbine-specific blade feathering, buffering, lighting controls, habitat measures and operational monitoring.

Following the detailed assessment provided in the preceding sections and in Chapter 6, it is concluded that, the Proposed Project will not result in any residual adverse effects on bats, when considered on its own. There are two existing wind farm sites, and two proposed wind farm sites located within 10 km of the Proposed Project. No potential for the Proposed Project to contribute to any cumulative adverse effects on any bat populations is predicted when considered in-combination with other plans and projects.

In the review of the projects that was undertaken, no connection, that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Proposed Project.

Subject to the full implementation of the proposed mitigation measures and taking into consideration the reported residual impacts from other plans and projects in the area and the predicted impacts with the current proposal, the Proposed Project is not predicted to give rise to significant residual cumulative effects on bats.

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 best practice guidance. Following consideration of the residual effects (post mitigation) it is noted that the Proposed Project will not result in any significant effects on bats.

All potential impacts, including collision risk, loss of potential roosting features, displacement, and habitat fragmentation, have been assessed in detail. Appropriate design measures and targeted mitigation have been integrated into the project to avoid or reduce impacts.

Provided that the Proposed Project is constructed and operated in accordance with the design, best practice and mitigation that is described within this report, significant effects on bats are not predicted at any geographic scale.

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APPENDIX 1

BAT HABITAT SUITABILITY APRAISAL

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

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).