APPENDIX 6-1

BAT SURVEY REPORT

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1. INTRODUCTION

MKO was commissioned to complete a comprehensive assessment of the potential effects on bats as part of an application for planning permission of a proposed renewable energy development at Slieveacurry, Co. Clare. This report provides details of the bat surveys undertaken, including survey design, methods and results, and the assessment of potential effects of the Proposed Project on bats. Where necessary, mitigation is prescribed to minimise the potential for likely significant effects.

Bat surveys undertaken throughout 2024, 2025 and 2026 were undertaken in accordance with the methodologies set out in NatureScot (2021). Survey methods comprised a combination of desk-based review, habitat and landscape appraisal, preliminary roost assessments, roost surveys, manual activity surveys and ground-level static detector surveys. The impact assessment, including collision risk evaluation, has been carried out with reference to NatureScot (2021) and relevant guidance published by the Northern Ireland Environment Agency (NIEA) Natural Environment Division (August 2021, amended April 2024). Mitigation measures have been developed in accordance with these guidance documents. The Bat Conservation Ireland (2026) guidance 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.

The assessment and recommended mitigation measures outlined in this report has been designed in accordance with NatureScot (2021), with further consideration of the Northern Ireland Environment Agency (NIEA) Natural Environment Division guidance (August 2021, amended May 2022), where relevant.

As detailed in Section 1.1.2 in Chapter 1 of the EIAR, for the purposes of this Bat Report, the various project components are described and assessed using the following references:

- Where the 'Proposed Project' is referred to, this encompasses the entirety of the project for the purposes of this EIA in accordance with the EIA Directive. The Proposed Project is described in detail in Chapter 4 of this EIAR.
- Where the 'Site' is referred to, this relates to the primary study area for the EIAR, as delineated by the EIAR Site Boundary in green as shown on Figure 1-1 of the EIAR and encompasses an area of approximately 1,260 hectares.
- Where the 'Proposed Grid Connection Site' is referred to, this refers to the part of the Site containing the proposed extension to the existing 110kV Slieveacallan substation at and the 33kV underground cabling connection from the wind farm road to the proposed substation extension.
- Where the 'Proposed Wind Farm Site' is referred to, this refers to the portion of the Site containing the proposed turbines and ancillary infrastructure, excluding the Proposed Grid Connection Site.
    - The 'Proposed Turbines' refers to the 9 no. turbines associated with the Proposed Wind Farm Site as outlined above.
- Where the 'Proposed Enhancement Site' is referred to, this refers to the portion of the Site containing the proposed biodiversity and ornithology enhancement and management areas, excluding the Proposed Wind Farm Site and Proposed Grid Connection Site.

A detailed description of the Proposed Description 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 may also affect bats through direct mortality and indirect impacts such as habitat loss and disturbance. Global syntheses report bat fatalities at wind farms and highlight potential cumulative, population-level risks (Arnett *et al.*, 2016). In a European context, studies collated by Voigt *et al*.

(2022) estimate approximately 1.5–30 bats killed per turbine per year. UK carcass-search data indicate 0–5.25 bats per turbine per month during peak activity (July–October), with substantial between-site variation (Mathews *et al.,* 2016). While these figures are not directly transferable in an Irish context, the broadly similar bat assemblages of Ireland and Britain make them a useful reference point for assessing potential risks.

Known mechanisms of bat mortality at wind farms include collisions with moving blades (Horn *et al.,* 2008; Cryan *et al.,* 2014) and barotrauma (Baerwald *et al.,* 2008)—internal injuries caused by sudden air pressure changes. Bats may also be attracted to turbines due to behavioural and environmental factors such as habitat associations, mating activity, and weather conditions.

Robust pre-construction bat surveys were undertaken to establish baseline activity and assess the potential risks associated with turbine operation and associated infrastructure. 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 United Kingdom 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 *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 United Kingdom, wind farm-specific recommendations were previously included in Chapter 10 of *Bat Surveys: Good Practice Guidelines (2nd Edition)* (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 *Bats and Onshore Wind Turbines: Interim Guidance for Assessing Risk to Bats from Wind Turbines in England*, interpreting EUROBATS recommendations within a UK context. Further technical interpretation has been provided through publications by the Chartered Institute of Ecology and Environmental Management (CIEEM), including technical guidance notes and practitioner advice.

The most comprehensive and widely applied technical guidance for onshore wind energy developments is *Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation* (NatureScot, 2021). This document provides detailed, evidence-based recommendations on survey design, impact assessment (including collision risk and displacement), and mitigation, including operational curtailment. In the absence of Ireland-specific guidance of equivalent technical detail, NatureScot (2021) is widely applied in Ireland.

In Ireland, *Bat Survey Guidelines for Wind Turbine/Wind Farm Developments in Ireland* (Bat Conservation Ireland, 2012a) outlines surveyor competencies, health and safety considerations, survey methodologies and reporting standards. While this document provides important national context, it predates the expansion of the evidence base relating to bat activity and mortality at wind farms and is therefore 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 *Guidance on Wind Energy Development and Bats* (NIEA, 2021; amended April 2024), which builds upon the NatureScot framework and provides additional direction on survey effort, seasonal coverage and mitigation design.

General bat survey methodology and best practice were also informed by *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition)* (Collins, 2023), which provides up-to-date guidance on survey design, detector deployment, manual survey techniques, roost assessment and data interpretation. This guidance was used to ensure that all survey methods employed were consistent with current professional standards.

A more recent Ireland-specific guidance document, *Bat Survey, Assessment and Mitigation Guidelines for Onshore Wind Turbines in Ireland* (Bat Conservation Ireland, 2026), was published during the preparation of this report, following completion of the baseline bat surveys for the Proposed Project. This document provides a consolidated, Ireland-specific framework for bat survey, assessment and mitigation, building upon established guidance including NatureScot (2021), NIEA (2021; amended April 2024), EUROBATS guidance (Rodrigues et al., 2015), and Collins (2023).

This guidance has been reviewed in the preparation of this report. Where parameters are consistent with established guidance (e.g. spatial buffers applied within the desk study), this has been acknowledged. However, the 2026 guidance has not been applied to the survey design, impact assessment, mitigation or post-construction monitoring, as the baseline surveys were completed prior to its publication and the assessment has been undertaken using the established NatureScot (2021) framework.

In addition, ecological evaluation of bat populations has been undertaken with reference to *Guidelines for the Assessment of Ecological Impacts of National Road Schemes* (National Roads Authority (NRA), 2009), which provides a recognised framework for assigning ecological importance at different geographic scales (e.g. local, county, national and international). Consideration has also been given to species valuation principles outlined in Wray et al. (2010), *Valuing bats in ecological impact assessment*, together with the most recent conservation status assessments presented in *The Status of EU Protected Habitats and Species in Ireland: Article 17 Report* (NPWS, 2025). These sources have informed the evaluation of species importance within an Irish context and have been used to support the interpretation of species-specific sensitivity and risk within the assessment.

The survey scope and impact assessment presented in this report have been undertaken in accordance with NatureScot (2021), with additional reference to NIEA (2021; amended April 2024), and informed by Collins (2023), ensuring current best practice was applied throughout. Bat Conservation Ireland (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.

1.3 Irish Bats: Legislation, Policy and Status

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

In addition, Irish species are further protected by national legislation (Wildlife Acts 1976, as amended). Under this legislation, it is an offence to intentionally disturb, injure or kill a bat, or disturb its roost. 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 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). The influence of Pressures and Threats for bats are ranked from Low to Medium) for each species in the 2025 Article 17 report.

Bat Species	Conservation Status	Principal Threats
Common pipistrelle *Pipistrellus pipistrellus*	Favourable	**PX04** No pressures or threats
Soprano pipistrelle *Pipistrellus pygmaeus*	Favourable	**PX04** No pressures or threats
Nathusius' pipistrelle *Pipistrellus nathusii*	Unknown	**PD01** Wind, wave and tidal power (including infrastructure) (only in the future)
Leisler's bat *Nyctalus leisleri*	Favourable	**PD01** Wind, wave and tidal power (Low) **PF02** Construction or modification (e.g. of housing and settlements) in existing built-up areas (L)
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 (M)
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.) (L) **PB09** Clear-cutting, removal of all trees (L) **PE01** Roads, paths, railroads and related infrastructure (L) **PF01** Conversion from other land uses to built-up areas (L) **PF02** Construction or modification (e.g. of housing and settlements) in existing built-up areas (L)
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.) (L) **PB09** Clear-cutting, removal of all trees (L) **PE01** Roads, paths, railroads and related infrastructure (L) **PF01** Conversion from other land uses to built-up areas (L) **PF02** Construction or modification (e.g. of housing and settlements) in existing built-up areas (L)
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.) (M) **PB09** Clear-cutting, removal of all trees (M) **PE01** Roads, paths, railroads and related (M)infrastructure (M) **PF01** Conversion from other land uses to built-up areas (M) **PF02** Construction or modification (e.g. of housing and settlements) in existing built-up areas (M) **PA15** Use of other pest control methods in agriculture (excluding tillage) (M) **PF13** Drainage, land reclamation and conversion of wetlands, marshes, bogs, etc. for built-up areas (L) **PH04** Vandalism or arson (incl. human-introduced wildfire) (L)

Bat Species	Conservation Status	Principal Threats
		PJ01 Temperature changes and extremes due to climate change (L) **PM07** Natural processes without direct or indirect influence from human activities or climate change (L)

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.

Survey scoping was prepared by Aoife Joyce. The daytime walkover survey and inspections were carried out by Nathan Finn and Fred Moseley. Manual activity surveys were carried out by Nathan Finn, Fred Moseley and Cormac Roberts. Data manual ID was carried out by Nathan Finn and Fred Moseley. This report was prepared by David Culleton and Tim Murphy was reviewed and approved by Aoife Joyce. Staff's roles, relevant ecological experience and training is presented in Table 1-2 below.

Table 1-2 Project team experience, qualifications and training.

Staff	Role	Training
Aoife Joyce (B.Sc., M.Sc., MCIEEM)	Project Director	B.Sc. (Hons) Environmental Science, University of Galway, Ireland. M.Sc. (Hons) Agribioscience, University of Galway, Ireland. Ecological Impact Assessments, Appropriate Assessment Screening Reports, Natura Impact Statements, Advanced Bat Survey Techniques (BCI), Bat Impacts and Mitigation (CIEEM), Bat Tree Roost Identification and Endoscope Training (BCI), Bats in Heritage Structures (BCI), Bats and Lighting (BCI), Kaleidoscope Pro Analysis (Wildlife Acoustics). Full member of Chartered Institute of Ecology and Environmental Management.
David Culleton (B.Sc., M.Sc.)	Bat Ecologist	B.Sc. Zoology, University College Cork, Ireland. M.Sc. Conservation Behaviour, Atlantic Technological University, Galway, Ireland. Specialist Bat Trapping, Handling and Identification (BCI), Bat Detector and Survey Training (BCI), Kaleidoscope Pro Analysis (Wildlife Acoustics), Endoscope Training (Internal), Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal).
Nathan Finn (B.Sc., M.Sc.)	Bat Ecologist	B.Sc. (Hons) Science, National University of Ireland, Galway. M.Sc. (Hons) Environmental Science, University College Dublin. Bat Detector and Survey Training (BCI), Kaleidoscope Pro Analysis (Internal), Endoscope Training (Internal), Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal).
Frederick Mosley (B.A., M.Sc.)	Seasonal Bat Ecologist	B.A. (Hons) Biological and Biomedical Science Mod. Zoology, Trinity College, Dublin (2022) M.Sc. Marine Biology, University College Cork (2023) Kaleidoscope Pro Analysis (Wildlife Acoustics), Endoscope Training (Internal), Structure and Tree Inspection (Internal), Manual Transect Survey

		(Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal)
Tim Murphy (B.Sc)	Project Bat Ecologist	B.Sc. (Hons) Environmental Biology, University College Dublin. Kaleidoscope Pro Analysis (Wildlife Acoustics), Endoscope Training (Internal), Structure and Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal), Kaleidoscope Pro Analysis for Birds and Land Animals (Wildlife Acoustics), Bat: Assessing the Impact of Development on Bats Mitigation & Enhancement (CIEEM Webinar)
Cormac Roberts	Bat Ecologist Intern (2024 & 2025)	Currently in final year of B.Sc. Environmental Science with Ecology, Atlantic Technological University, Sligo. Assisted on over 40 dusk emergence and re-entry surveys across two bat activity periods, along with additional survey work completed outside of MKO. Experience includes Bat Habitat Appraisal (Internal), Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Emergence and Re-Entry Surveys (Internal), and Kaleidoscope Pro Analysis (Internal).

2. PROJECT DESCRIPTION

The Site is located approx. 7km south of Ennistimon, Co. Clare and 8km west of Inagh, Co. Clare. The town of Miltown Malbay is located approx. 5.8km east of the nearest proposed turbine (T07). The Proposed Wind Farm Site is located in an upland setting comprising predominantly cutover bog with areas of commercial forestry, agricultural land and low density residential properties.

Current land-use on the Site comprises coniferous forestry, agriculture and public road corridor.

The Site location is described in detail in Chapter 1 of the EIAR.

The Proposed Project will consist of the provision of the following:

- *(i) 9 No. wind turbines with an overall ground-to-blade tip height of 175 metres; rotor diameter of 150 metres; and hub height of 100 metres, and a meteorological mast with a height of 30 metres, and subsequent decommissioning of the wind turbines and meteorological mast, following a thirty five-year operational period from the date of full commissioning of the wind turbines;*
- *(ii) Associated wind turbine and meteorological mast foundations and hardstanding areas;*
- *(iii) An extension to the existing 110kV substation compound in the townland of Knockalassa (Including the provision of a new control building (floor area of 112.5 sq.m) with welfare facilities, all associated electrical plant and apparatus for an additional 110kV bay, security fencing, underground cabling, underground wastewater holding tank, site drainage and all ancillary works);*
- *(iv) Underground electrical (33kV) and communications cabling connecting the proposed wind turbines and meteorological mast to the 110kV substation extension via proposed and existing private access road/tracks and the R460 regional road;*
- *(v) Temporary accommodation works to facilitate the delivery of turbine components and other abnormal sized loads on the L6230, L1076, L2118 and L1074 local roads;*
- *(vi) Upgrade and widening works to the L6230 local road and access junction off the L6230 local road;*
- *(vii) Upgrade of existing tracks/roads and provision of new site access roads and hardstanding areas;*
- *(viii) A borrow pit;*
- *(ix) 2 no. temporary construction compounds (including site offices and welfare facilities, with a combined floor area of 202.5 sq.m);*
- *(x) Peat and Spoil Management;*
- *(xi) Site Drainage;*
- *(xii) Tree felling and vegetation removal;*
- *(xiii) Biodiversity Management and Enhancement Plan measures (including hedgerow planting, peatland, marsh fritillary and hen harrier habitat enhancement areas);*
- *(xiv) Operational stage site signage; and*
- *(xv) All associated site development works and apparatus.*

This application seeks a ten-year planning permission and a 35-year operational life from the date of commissioning of the Proposed Project.

The Proposed Project site location is shown on Figure 2-1.

510000

515000

680000

N

Lough Keagh

T1

T2

T3

T4

T5

T6

T7

T8

T9

L1074

R460

R474

Cloonanaha National School

Kildeema River

Slievecallan 391 m

Slievecallan 110 kV Substation

Lough Boolynagreana

Caheraran River

0 1 2 km

Map data © OpenStreetMap contributors, Microsoft, Facebook, Google, Esri Community Maps contributors, Map layer by Esri

Map Legend

- EIAR Site Boundary
- Proposed Turbine Layout

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

SITE LOCATION - NOT TO SCALE

Drawing Title

Site Location

Project Title

Slieveacurry Wind Farm, Co. Clare

Project No.	Drawing No.	Scale
240538	2-1	1:24,000
Drawn By	Checked By	Date
AM	MNR	21/04/2026

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

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 application site and the Proposed Project, was prepared by MKO and circulated to consultees in March 2025. 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. Further details of the consultation and scoping process, including the full range of consultees and responses received, are provided in Chapter 2 of the main 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 Project 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 Site and the surrounding region. The results of the desk study including sources of information utilised are provided below.

3.2.1 Previous Baseline Surveys

The Site was previously surveyed by MKO in 2019 and 2022 to establish baseline bat activity. These baseline surveys comprised a combination of static detector monitoring, manual walked and driven transects, and roost inspections, undertaken in accordance with best-practice guidance available at that time, including SNH, 2019, NatureScot, 2021 and Collins, 2016. Although now outside the valid temporal scope for this EIAR, the data are presented as supplementary information to provide additional context on baseline conditions and to complement the 2024, 2025 and 2026 survey results. Results from the baseline surveys are summarised in Section 4.2 below.

3.2.2 Bat Records

A search for existing bat records was undertaken within a 10 km radius of a central point of the Proposed Wind Farm Site (ITM: 512330, 680316). Data were sourced from the National Bat Database of Ireland (Bat Conservation Ireland, BCI) and the National Biodiversity Data Centre (NBDC). Records included results from national monitoring schemes, roost records, and ad-hoc observations. Data were provided by BCI on 7th July 2025 and supplemented by NBDC bat records for the relevant 10 km grid squares (R06, R07, R16 and R17). The 10 km search radius follows established best-practice guidance for wind farm bat assessments (BCI, 2012; Hundt, 2012; NatureScot, 2021). A subsequent data check with Bat Conservation Ireland confirmed on 16th February 2026 that no additional bat records have been received for the Site since this extract.

3.2.3 Bat Species' Range

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

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

3.2.4 Designated Sites

A search for designated conservation sites for bats was undertaken within a 10 km radius of a Proposed Wind Farm Site central point (ITM: 512330, 680316). Data were obtained from the National Parks and Wildlife Service (NPWS) map viewer and website. The search included European designated sites (Special Areas of Conservation, SACs) and nationally designated sites (Natural Heritage Areas, NHAs and proposed Natural Heritage Areas, pNHAs) relevant to bat conservation. The 10 km radius is consistent with best-practice guidance for wind farm bat assessments (BCI, 2012; Hundt, 2012; NatureScot, 2021).

3.2.5 Landscape Features

3.2.5.1 Ordnance Survey Mapping

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

3.2.5.2 Geological Survey Ireland

The University of Bristol Speleological Society (UBSS) Cave Database for the Republic of Ireland and the GSI Karst Database were consulted to identify any natural subterranean sites, such as caves, with potential to support roosting bats within 10 km of the Proposed Wind Farm Site (BCI, 2012). The database was last searched on 13th February 2026. In addition, the National Inventory of Architectural Heritage (NIAH) and the National Monuments Service (NMS) datasets were reviewed for records of manmade underground structures (e.g. souterrains) within 10 km of the Proposed Wind Farm Site that may provide suitable potential bat roosting opportunities. These datasets were also last searched on 13th February 2026.

3.2.5.3 National Biodiversity Data Centre Bat Landscape Mapping

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

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

3.2.5.4 Additional Projects in the Wider Landscape

A search was conducted to identify permitted, operational and proposed wind energy developments within 10km of the Proposed Turbines (NatureScot, 2021). This search adhered to methodologies outlined in Chapter 2, Section 2.9. The Wind Energy Ireland (WEI) interactive wind map

(windenergyireland.com) was reviewed in conjunction with wind farm planning applications from Clare County Council. Other infrastructure developments and proposals (e.g. large road projects and extractive industries) were also noted. Information on the location and scale of these developments was gathered to inform cumulative effects. More details on other infrastructure developments within the vicinity of the Proposed Project can be found in Chapter 2 of the main EIAR.

3.2.6 Multidisciplinary Surveys

Multidisciplinary walkover surveys were carried out on various dates in 2024, 2025 and 2026 are summarised in Table 3-1 below. 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.

Table 3-1 Multidisciplinary Survey Effort

Multidisciplinary Survey	Dedicated Bat Survey
6th September 2024	28th May 2024
12th September 2024	11th June 2024
4th February 2025	4th July 2024
9th April 2025	30th July 2024
10th April 2025	4th September 2024
14th July 2025	26th September 2024
15th July 2025	3rd February 2026
16th July 2025	4th February 2026
3rd February 2026	
4th February 2026	

3.3 Field Surveys

3.3.1 Bat Habitat Suitability Appraisal

Bat walkover surveys were carried out in 2024, 2025 and 2026. During these surveys, habitats within the Site were assessed for their suitability to support roosting, foraging, and commuting bats. Connectivity with the wider landscape was also considered.

Suitability was assessed according to Collins (2023) which provides a grading protocol for roosting habitats and for commuting and foraging areas. Suitability categories are divided into *High*, *Moderate*, *Low*, *Negligible* & *None* and are described fully in **Appendix 1**.

3.3.2 Roost Surveys

Daytime Roost Inspections

In accordance with NatureScot (2021), targeted roost searches were undertaken within 200m plus the rotor radius (75 m) of proposed turbine locations associated with the Proposed Development. In addition, buildings and structures present within the wider Study Area were identified and inspected for their potential to support roosting bats.

The Proposed Wind Farm Site was visited throughout 2024, during which no structures or trees with Potential Roosting Features (PRFs) were identified within 275m of Proposed Turbines. Three

structures and associated outbuildings were identified within the wider Study Area (Table 3-2) and were assessed for bat roost potential using the criteria set out in **Appendix 1**. Roost assessments comprised detailed inspection of external features and, where accessible, internal areas, with attention given to evidence of bat use including live or dead specimens, droppings, feeding remains, urine splashes, fur oil staining and audible bat noises. The locations of all inspected structures are presented in Figure 3-2, with further details provided in Section 4.3.

The Study Area is dominated by peatland, grasslands and commercial conifer plantation habitats. In addition, smaller areas of scrub, hedgerow and wet willow alder ash woodland occur.

Detailed tree roost inspections were focused on trees scheduled for felling within bat buffer zones and within areas subject to potential disturbance including the Turbine Delivery Route (TDR) works areas, grid connection and relevant portions of the Proposed Enhancement Lands, in order to identify the presence of potential roost features (PRFs), in accordance with Collins (2023). No PRFs were identified within these areas. The broadleaved trees present were generally young, small in stature and scrubby in form, and did not exhibit features associated with potential bat roosts.

The commercial conifer plantation within the Study Area was excluded from detailed tree roost inspection, as such trees do not typically provide suitable roosting features for bats due to their species composition, uniform age and structure, and intensive management regime, which limits the development of cavities, cracks, loose bark or other features associated with bat roosting. Nevertheless, all trees within the Study Area were subject to general visual inspection during walkover surveys to confirm the absence of potential roost features.

The Proposed Grid Connection Site, including watercourse crossing infrastructure, and turbine delivery route accommodations works areas, were also assessed for any suitability to host roosting bats. Surveys were carried out in July 2024 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 PRF locations within and around the Site

Structure	Potential	ITM	Nearest turbine	Approx. distance to nearest turbine
Disused Stone structure with corrugated roof	Low	511790, 678903	T7	425m
Farm Complex (Dwelling, farm shed and stone storage shed)	Low	512887, 681128	T2	529m
Derelict brick building	Negligible	510933, 679144	T7	560m

Emergence Surveys

Emergence surveys at dusk were carried out in 2022 and 2024 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 15 minutes before sunset and concluded 90 minutes after sunset. Table 3-3 summarises survey effort in relation to emergence surveys. Where possible, species identification was made in the field and any other relevant information was also noted, e.g., numbers, behaviour, features used, etc. All bat echolocation was recorded for subsequent analysis to confirm species identifications. Structures assessed as having *Negligible* roosting potential were not subject to further survey (Collins, 2023).

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 Survey Effort - Emergence Surveys 2022 & 2024

Date	Location (ITM)	Surveyors	Sunrise/ Sunset	PRF	Weather
2022					
26th May 2022	512887, 681128	Keith Costello, Laura Granicz	21:43	Stone shed	11-12 ˚C, dry, light-moderate breeze.
2024					
4th September 2024	511790, 678903	Nathan Finn and Fred Moseley	20:17	Disused Stone structure with corrugated roof	10-14°C Dry, calm, moon not visible, cloud cover 0-70%

3.3.3 Manual Transects

Manual activity surveys comprised night-time bat walkover (NBW) surveys undertaken after dusk. A series of representative transect routes were selected throughout the Site, with the aim to record species presence, relative abundance, behaviour (commuting and foraging), and to gather supplementary information on habitat features of importance to bats within the Site. NBW routes were designed with reference to the indicative turbine layout, findings from the desktop study and day-time walkover surveys and considering health and safety concerns and access constraints. As such, transects generally followed existing roads and tracks. To ensure additional coverage of the Proposed Project, some sections of the autumn transect was partially driven. The driven transect portions followed the methodology described by Roche *et al.* (2012). Transect routes undertaken in 2024 are presented in Figure 3-1.

Transects were walked/driven by two surveyors, recording bats in real time. Transects commenced immediately after the dusk emergence survey (where undertaken) and were completed for up to 3 hours after sunset. Surveyors were equipped with active full spectrum bat detectors, the Batlogger M bat detector (Elekon AG, Lucerne, Switzerland), and all bat activity was recorded for subsequent analysis to confirm species identifications. Transects surveys were undertaken in spring, summer and autumn 2024. The initial spring transect was scheduled for 27th May; however, survey conditions deteriorated shortly after commencement, rendering the weather unsuitable for reliable bat activity recording. Consequently, the transect was rescheduled and completed at the earliest suitable opportunity in June. Persistent periods of rainfall during the latter half of May 2024 resulted in unsuitable survey conditions, necessitating the extension of survey efforts into June. Given the upland location of the Site, this revised timing remains consistent with standard guidance for optimal seasonal bat surveying in Ireland. Table 3-4 summarises survey effort in relation to manual transects.

Table 3-4 Survey Effort - Manual Transects 2024

Date	Surveyors	Sunrise / Sunset	Survey Type	Time	Weather	Transect (km)
11th June 2024	Nathan Finn and Cormac Roberts	22:01	Walked Transect	22:01 – 01:01	9-14˚C, Dry, 60 % cloud cover, calm	4.5 km
30th July 2024	Nathan Finn and Fred Moseley	21:34	Walked Transect	21:34 – 01:03	15˚C, Dry, calm, 60% 20% cloud cover	3.8 km
4th September 2024	Nathan Finn and Fred Moseley	20:17	Dusk Emergence and Driven Transect	20:02 – 23:17	14°C-10°C. Light-Dry, Calm, 70%-0%	3 km
Total Survey Effort for 2024						**11.3km**

510000

515000

680000

N

T1

T2

T3

T4

T5

T6

T7

T8

T9

0

1

2 km

Microsoft Vantor

Map Legend

- Proposed Turbine Layout
- EIAR Site Boundary
- Spring Transect Route
- Summer Transect Route
- Autumn Transect Route

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Survey Effort

Project Title

Slieveacurry Wind Farm,
Co. Clare

Project No.	Drawing No.	Scale
240538	3-1	1:24,000
Drawn By	Checked By	Date
AM	MNR	21/04/2026

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

3.3.4 Ground-level Static Surveys

Where developments have less than 10 no. turbines, NatureScot (2021) requires one detector per turbine, while for larger developments the guide suggests an additional detector for every three turbines. Given that 9 no. turbines were proposed, 9 no. detectors were deployed to ensure compliance with NatureScot guidance. 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/NIEA, 2021). Detector locations were based on indicative turbine locations. The static detector locations, relative to the final layout of the Proposed Turbines, are shown in Figure 3-2 and detailed in Table 3-5.

Table 3-5 Ground-level Static Detector Locations 2024

ID	Location (ITM)	Habitat	Linear Feature within 50m	Corresponding/ Nearest Turbine(s)
D01	511790, 680786	Conifer Plantation (WD4)	Conifer Plantation (WD4)	T01
D02	512458, 680835	Conifer Plantation (WD4), Upland Blanket Bog (PB2)	Conifer Plantation (WD4)	T02
D03	511581, 680403	Upland Blanket Bog (PB2)	N/A	T03
D04	512074, 680307	Conifer Plantation (WD4)	Conifer Plantation (WD4)	T04
D05	512851, 680509	Improved agricultural grassland (GA1)	N/A	T05
D06	512391, 679843	Upland Blanket Bog (PB2)	N/A	T06
D07	511487, 679202	Upland Blanket Bog (PB2)	Conifer Plantation (WD4)	T07
D08	511996, 679450	Upland Blanket Bog (PB2)	Conifer Plantation (WD4)	T08
D09	511810, 679875	Conifer Plantation (WD4)	Conifer Plantation (WD4)	T09

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

Onsite weather monitoring was undertaken concurrently with static detector deployments. One Vantage Pro 2 (Davis Instruments, CA, UCS) was deployed each season and night-time hourly data was tracked remotely to ensure a sufficient number of nights (i.e. minimum 10-20 nights) with appropriate weather conditions were captured (i.e. dusk temperatures above 8˚C, wind speeds less than 5m/s and no or only very light rainfall). Table 3-6 summarises survey effort achieved in 2024 for each of the detector deployments.

Table 3-6 2024 Survey Effort - Ground-level Static Surveys

Season	Survey Period	Total Survey Nights per Detector Location	Nights with Appropriate Weather
Spring 2024	28th May – 11th June 2024	15	13
Summer 2024	4th July – 28th July 2024	25	25
Autumn 2024	4th September – 26th September 2024	22	22
Total Survey Effort		**62**	**60**

510000

515000

680000

N

D01
T1
D02
T2
T5
D05
T4
D04
D03
T9
D09
D06
T8
D08
T7
D07

0 1 2 km

Microsoft, Vantor

Map Legend

- 2024 Spring Detector Locations
- Proposed Turbine Layout
- EIAR Site Boundary

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title
Static Detector Location

Project Title
Slieveacurry Wind Farm, Co. Clare

Project No.	Drawing No.	Scale
240538	3-2	1:24,000
Drawn By	Checked By	Date
AM	MNR	21/04/2026

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

3.4 Bat Call Analysis

All sound recordings were analysed using bat call analysis software, Kaleidoscope Pro v.5.6.8 (Wildlife Acoustics, MA, USA). The aim was to identify, to a species or genus level, the bats present at the Proposed Wind Farm Site. 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, 1999) to manually verify species identification. All recordings were manually reviewed in Kaleidoscope to determine the final species identification.

Myotis species potentially Daubenton's bat (*Myotis daubentonii*), Whiskered bat (*Myotis mystacinus*) and Natterer's bat (*Myotis nattereri*) were considered as a single group, due to the difficulty in distinguishing them based on echolocation parameters alone (Russ, 1999). 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 an SM4BAT static bioacoustics recording device. The recordings are illustrated using Wildlife Acoustics Kaleidoscope software.

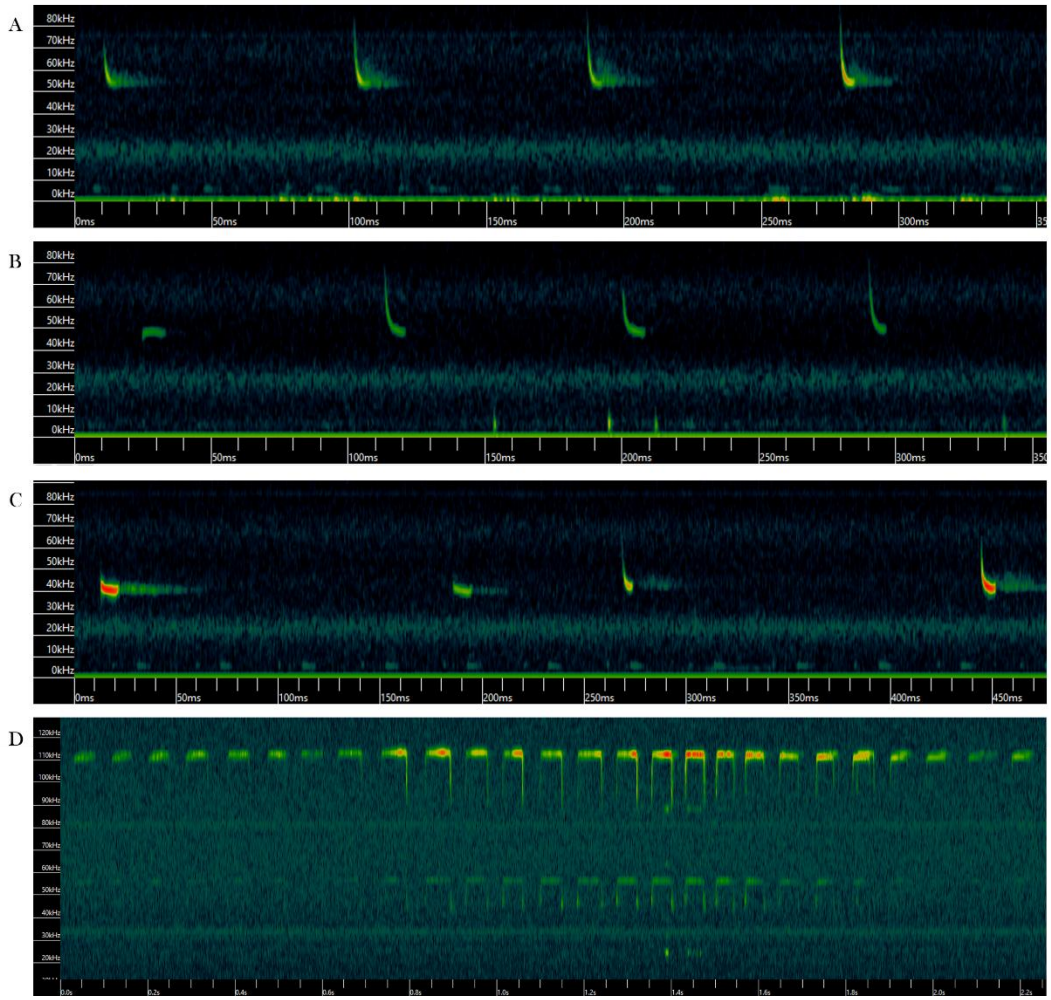

Plate 3-1 Spectrogram of echolocation pulses of (A) Soprano pipistrelle (Peak Frequency 55kHz), (B) Common pipistrelle (Peak Frequency 45kHz), (C) Nathusius' pipistrelle (Peak Frequency 39kHz) and (D) Lesser horseshoe bat (Peak Frequency 114kHz).

Echolocation calls by brown long-eared bats (*Plecotus auritus*) are intrinsically quiet and hard to record by static equipment while echolocation calls by Lesser horseshoe bats (*Rhinolophus hipposideros*) are directional and can be missed by detectors, particularly manual detectors. To address this, MKO employs omni-directional microphones to limit under-recording for the latter species. Manual checking of recorded data includes also those labelled by the Kaleidoscope software as 'Noise' files and 'No ID' files. Manually verifying and checking these files ensures that all calls for hard to detect species have been captured. Despite manual checking, a level of underrepresentation is still expected for these two species, and this is accounted for in the assessment of activity levels. Plate 3-2 shows typical spectrograms of echolocation pulses for *Myotis* spp., brown long-eared bat, Leisler's bat and a typical noise file, all recorded with the same SM4BAT recording device and illustrated using Wildlife Acoustics Kaleidoscope software.

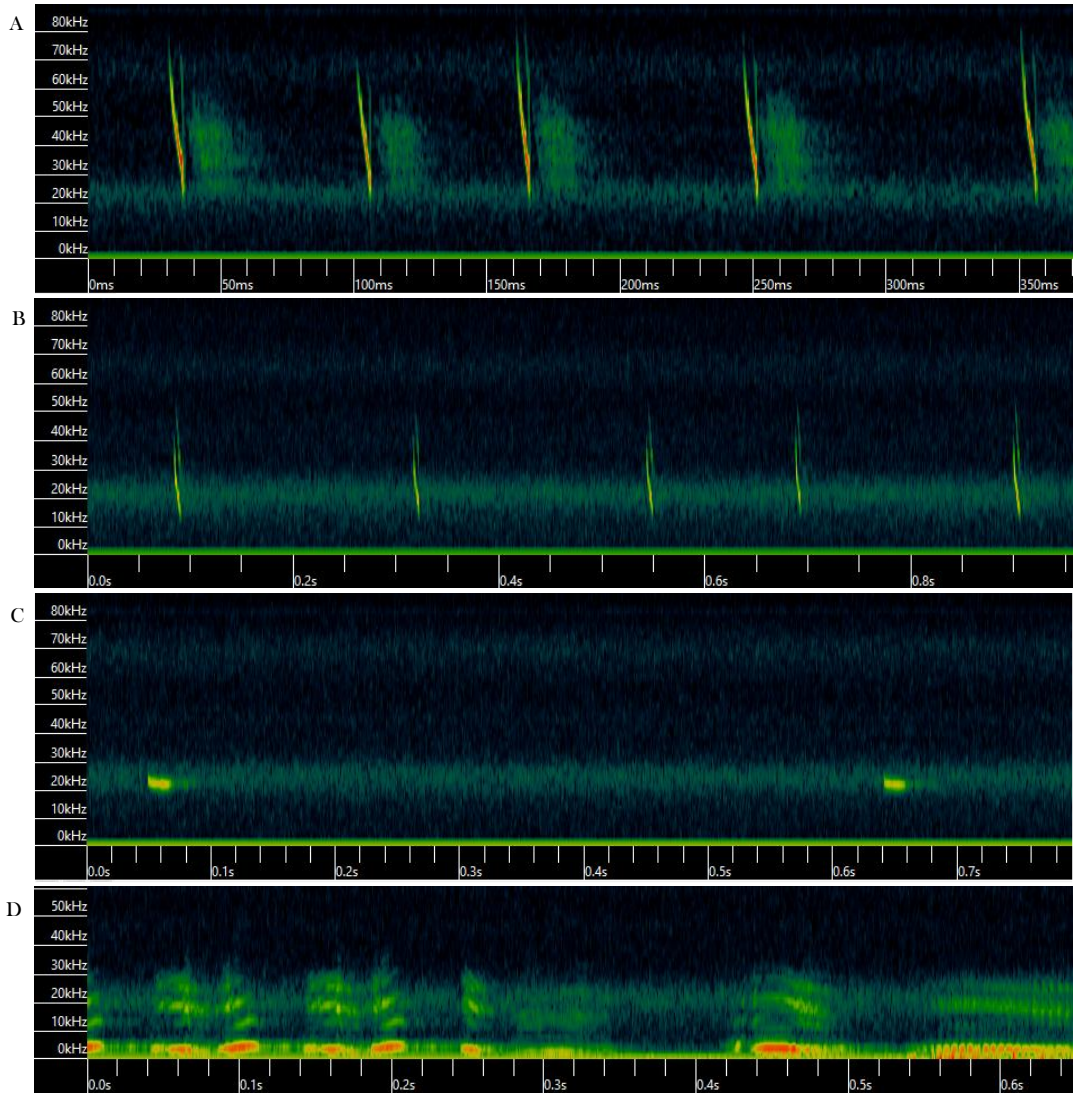

Plate 3-2 Spectrogram of typical echolocation pulses of (A) Myotis spp.*, (B) Brown long-eared bat, (C) Leisler's bat and (D) typical non-bat sounds.*

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

3.5 Assessment of Bat Activity Levels

The online database tool Ecobat (mammal.org.uk) is recommended by NatureScot 2021 to assess bat activity levels within a proposed wind farm site. This web-based interface, launched in August 2016, allows users to upload activity data and to contrast results with a comparable reference range, allowing objective interpretation. Uploaded data then contributes to the overall dataset to provide increasingly robust outputs. Ecobat generates a percentile rank for each night of activity and provides a numerical way of interpreting levels of bat activity in order to provide objective and consistent assessments. Table 3-7 defines bat activity levels as they relate to Ecobat percentile values (NatureScot, 2021).

Table 3-7 Ecobat Percentile Score and Categorised Level of Activity (NatureScot, 2021)

Ecobat Percentile	Bat Activity Level
81 to 100	High
61 to 80	Moderate to High
41 to 60	Moderate
21 to 40	Low to Moderate
0 to 20	Low

Ecobat was unavailable for a cross-site analysis of 2024 data as the platform has been undergoing maintenance since late 2022 with no proposed timeline of a relaunch. Ecobat has since relaunched at the end of 2024 after data evaluation had been undertaken, it was decided not to use the software for the Proposed Wind Farm Site and rely on the site-specific analysis already undertaken.

Following preliminary analysis and manual verification using Kaleidoscope Pro, statistical analysis and visualisation was performed using RStudio (version 2024.09.0.+375.) and R1 (version 4.4.1). RStudio, an integrated development environment for the R programming language, was employed for data cleaning, exploration, and data visualisation. The 'ggplot2' R package was particularly instrumental in creating the data visualisations shown in the results section. Data was standardised into bat pass rates, calculated as bat passes per hour (total bat passes / night length) to account for seasonal changes in night length (Matthews et al. 2016). Activity is often variable between survey nights. Therefore, the median Nightly Pass Rate was used as the most appropriate measure of bat activity (Lintott & Mathews, 2018). During all calculations, data was rounded to at least three decimal places. When visualising the bat pass rates per season, survey effort was defined as detector hours (sum of recorded hours across all detectors). This was defined to circumvent any issues arising from differences in survey effort between detectors in a season.

The methodology used to assess activity levels across the Site was adapted from Mathews et al. (2016). For widespread species (Pipistrellus pipistrellus, Pipistrellus pygmaeus, Nyctalus leisleri), activity thresholds were derived from the average of the maximum nightly pass rates (bpph) across all detectors, divided into quartiles. For all other species groups, the maximum nightly pass rate (bpph) recorded across all detectors was used and similarly divided into quartiles.

Median and maximum nightly activity (bpph) at each detector location were then categorized as *Low, Medium, or High* for each recorded season. Any figure <25% of the maximum/average maximum nightly pass rate was considered *Low* activity, while figures >75% were classified as *High*. Values falling between these two quartiles were defined as *Moderate*. To prevent skewing the activity thresholds, any evident outliers recorded across the detectors were excluded. Table 3-8 presents activity ranges per species group identified.

Table 3-8 Site-specific Activity Level Categories based on Maximum Bat Passes per Hour (bpph)

Assessment Level	Activity Threshold as Bat Passes per Hour (bpph) for Bat Species					
	Myotis spp.	***Nyctalus spp.***	***Nathusius' pipistrelle***	***Pipistrellus spp.***	***Plecotus auritus***	***Rhinolophus hipposideros***
Low	<20.48	<0.59	<0.40	<3.22	<1.68	<0.05
Medium	20.48-61.43	0.59-1.78	0.4-1.20	3.22-9.65	1.68-5.03	0.05-0.15
High	>61.43	>1.78	>1.20	>9.65	>5.03	>0.15

Based on experience gained surveying a large number of development sites, the calculated activity thresholds were considerably high for all species surveyed. To provide a more precautionary and representative assessment of bat activity in agricultural and wet grassland habitats, the thresholds were adjusted based on MKO's experience with similar habitat types. The thresholds presented in Table 3-9 have been deliberately reduced to reflect a worst-case scenario, ensuring a conservative approach to assessing potential impacts.

Table 3-9 Adapted Activity Level Categories

Assessment Level	Activity Threshold as Bat Passes per Hour (bpph) for Bat Species					
	Myotis spp.	***Nyctalus spp.***	***Nathusius' pipistrelle***	***Pipistrellus spp.***	***Plecotus auritus***	***Rhinolophus hipposideros***
Low	<3.88	<0.51	<0.35	<2.69	<0.43	<0.05
Medium	3.88-11.63	0.51-1.53	0.35-1.05	2.69-8.08	0.43-1.28	0.05-0.15
High	>11.63	>1.53	>1.05	>8.08	>1.28	>0.15

3.6 Assessment of Collision Risk

3.6.1 Population Risk

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

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

Table 3-10 Population Vulnerability of Irish Bat Species (Adapted from NatureScot, 2021).

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

Low Population Vulnerability	Medium Population Vulnerability	High Population Vulnerability

3.6.2 Site Risk

The likely impact of a proposed 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 3-11) i.e. Table 3a (NatureScot, 2021). Table 5-1 in the results section describes the criteria and site-specific characteristics used to determine an indicative risk level for the Site. All site assessment levels, as per NatureScot (2021) are presented in **Appendix 2**.

Table 3-11 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 (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) (**Appendix 3**).

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 3-10 above).

3.7 Limitations

A comprehensive suite of bat surveys has been undertaken at the Proposed Wind Farm Site in 2024, 2025 and 2026 with additional supplementary surveys carried out in 2019 and 2022. The surveys undertaken at the Site, in accordance with NatureScot Guidance, provide the information necessary to allow a complete, comprehensive and robust assessment of the potential impacts of the Site 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. The specialist studies, analysis and reporting have been undertaken in accordance with the appropriate guidelines.

No limitations in the scope, scale or context of the assessment have been identified. Overall, a comprehensive assessment has been achieved.

4. SURVEY RESULTS

4.1 Consultation

4.1.1 Bat Conservation Ireland

Bat Conservation Ireland were invited to comment on the potential of the Proposed Development to affect bats. No response has been received as of completing this report.

4.1.2 Development Applications Unit - 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 27th January 2026. The response primarily addressed Hen Harrier and did not make any reference to bats.

4.2 Desk Study

4.2.1 Previous Baseline Surveys

MKO ecologists undertook bat surveys within the site and the surrounding area in 2019 and 2022. A review of baseline survey data collected during this period was undertaken to inform the current assessment.

The baseline surveys undertaken established records of bat activity and species composition within the site. Across the survey periods, a total of seven bat species or species groups were recorded, with common pipistrelle and soprano pipistrelle accounting for the majority of activity.

No structures, building or trees and were identified within the 275 m roost search buffer and no bat roosts were identified within these areas in 2019 or 2022. A temporary night roost with an individual bat was identified within a small shed associated with the farm complex (ITM: 512887, 681128) during the 2019 survey period. This structure is located approximately 529m from turbine T2. No other roosting bats or evidence of roosts were identified during the surveys.

Static detector surveys in 2019 revealed a total of 31,899 bat passes, dominated by common and soprano pipistrelle. Fewer records of Leisler's bat, *Myotis spp.,* brown long-eared bat were also recorded.

Static detector surveys in 2022 recorded approximately 37,852 bat passes, also dominated by common pipistrelle and soprano pipistrelle, with smaller proportions of Leisler's bat, *Myotis spp.,* brown long-eared bat, Nathusius' pipistrelle, and two lesser horseshoe bat passes.

4.2.2 Bat Records

Bat Conservation Ireland

A data request was sent to Bat Conservation Ireland for records of bat activity and roosts within a 10km radius of an approximate central point in the Site (ITM: 512330, 680316).

Available bat records were provided by BCI on 7th July 2025. The search included roosts, transects and ad-hoc observations. A number of ad-hoc observations (n=38) have been recorded. At least eight of Ireland's nine resident bat species were recorded within 10km of the Site. A subsequent data check with Bat Conservation Ireland confirmed on 16th February 2026. The results of the database search are provided in Table 4-1.

Table 4-1 Bat Conservation Ireland Records within 10km of the Site centre

Survey Type	Species	ITM	Date	Location
Roost	*Myotis daubentonii*	*520785, 681355*	*N/A*	*Inagh; Co. Clare*
	Plecotus auritus	*519957, 681029*	*N/A*	*Inagh; County Clare*
	Myotis mystacinus	*519957, 681029*	*N/A*	*Inagh; Co. Clare*
Transect	*Myotis daubentonii;Pipistrellus pygmaeus;Unidentified bat*	*520777, 681319*	*N/A*	*Inagh Bridge Transect*
	Myotis daubentonii;Unidentified bat	*516987, 684929*	*N/A*	*Moananagh Bridge Transect*
Ad-Hoc	*Myotis daubentonii; Myotis mystacinus; Nyctalus leisleri; Pipistrellus pygmaeus; Plecotus auritus*	*520785, 681355*	*07/07/2018*	*EIS & Other surveys*
	Pipistrellus pipistrellus (45kHz)	*515564, 684249*	*17/07/2008*	*BATLAS 2010*
	Myotis natterreri	*516959, 684866*	*17/07/2008*	*BATLAS 2010*
	Nyctalus leisleri; Unidentified bat	*515895, 682053*	*17/07/2008*	*BATLAS 2010*
	Pipistrellus pygmaeus	*519525, 685186*	*29/08/2018*	*BATLAS 2020*
	Nyctalus leisleri; Pipistrellus pipistrellus (45kHz)	*521220, 674136*	*10/08/2018*	*BATLAS 2020*
	Nyctalus leisleri; Pipistrellus pipistrellus (45kHz); Pipistrellus spp. (45kHz/55kHz)	*509398, 687803*	*08/07/2018*	*BATLAS 2020*
	Myotis daubentonii; Pipistrellus pipistrellus (45kHz); Pipistrellus pygmaeus	*521099, 675863*	*10/08/2018*	*BATLAS 2020*
	Myotis daubentonii; Pipistrellus pygmaeus	*512971, 688374*	*23/08/2018*	*BATLAS 2020*
	Pipistrellus pipistrellus (45kHz); Pipistrellus pygmaeus	*518385, 683786*	*13/09/2016*	*BATLAS 2020*
	Pipistrellus pygmaeus; Pipistrellus spp. (45kHz/55kHz); Unidentified bat	*504538, 677100*	*30/07/2019*	*BATLAS 2020*
	Myotis daubentonii; Pipistrellus spp. (45kHz/55kHz)	*516948, 684921*	*13/09/2016*	*BATLAS 2020*
		518296, 686342	*29/08/2018*	*BATLAS 2020*
		514497, 675090	*07/07/2018*	*BATLAS 2020*
	Nyctalus leisleri; Pipistrellus pipistrellus (45kHz); Pipistrellus pygmaeus	*504342, 687855*	*08/07/2018*	*BATLAS 2020*
	Myotis daubentonii; Pipistrellus pipistrellus (45kHz); Pipistrellus pygmaeus	*517481, 678051*	*07/07/2018*	*BATLAS 2020*
		512338, 688759	*11/09/2016*	*BATLAS 2020*

	Nyctalus leisleri; Pipistrellus spp. (45kHz/55kHz)	*516948, 684921*	*13/09/2016*	*BATLAS 2020*
	Pipistrellus pipistrellus (45kHz)	*503048, 670985*	*30/07/2019*	*BATLAS 2020*
	Myotis natterreri; Myotis spp.; Pipistrellus pipistrellus (45kHz); Pipistrellus pygmaeus; Pipistrellus spp. (45kHz/55kHz); Plecotus auritus; Unidentified bat	*503641, 677255*	*09/06/2011*	*EIS & Other surveys*
	Myotis natterreri; Myotis spp.; Nyctalus leisleri; Pipistrellus pipistrellus (45kHz); Pipistrellus pygmaeus; Plecotus auritus; Unidentified bat	*513248, 676990*	*22/07/2008*	*EIS & Other surveys*
	Pipistrellus pipistrellus (45kHz); Pipistrellus pygmaeus; Unidentified bat	*511238, 677444*	*29/08/2008*	*EIS & Other surveys*

National Bat Database of Ireland

The National Bat Database of Ireland was searched for records of bat activity and roosts within a 10km radius of the Site centre (last search 13/02/2026). Seven of Ireland's nine bat species were recorded in the hectads located within 10km of the Site. The results of the database search are provided in Table 4-2.

Table 4-2 NBDC Bat Records within 10km of Proposed Project

Hectad	Species	Database	Designation
R17, R18	Brown Long-eared Bat (*Plecotus auritus*)	National Bat Database of Ireland	HD Annex IV, WA
R17, R18	Common Pipistrelle (*Pipistrellus pipistrellus*)	National Bat Database of Ireland	HD Annex IV, WA
R17, R18	Leisler's Bat (*Nyctalus leisleri*)	National Bat Database of Ireland	HD Annex IV, WA
R17, R18	Soprano Pipistrelle (*Pipistrellus pygmaeus*)	National Bat Database of Ireland	HD Annex IV, WA
R18	Daubenton's Bat (*Myotis daubentonii*)	National Bat Database of Ireland	HD Annex IV, WA
R17, R18	Natterer's Bat (*Myotis nattereri*)	National Bat Database of Ireland	HD Annex IV, WA
R18	Whiskered Bat (*Myotis mystacinus*)	National Bat Database of Ireland	HD Annex IV, WA

4.2.3 Bat Species Range

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

The site is located within range of 7 bat species, including Brown long-eared, Natterer's bat, Common pipistrelle, Soprano pipistrelle, Daubenton's Bat, Whiskered Bat and Leisler's bat.

4.2.4 Designated Sites

Within Ireland, the lesser horseshoe bat is the only bat species requiring the designation of Special Areas of Conservation (SACs). The Site is located within the current known range of this species

(NPWS, 2025) and is approximately 14km away from the nearest designated SAC for the lesser horseshoe bat (East Burren Complex SAC). This is significantly outside the core foraging range (2.5km) of this species.

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 Site centre found no sites designated for the conservation of bats.

4.2.5 Landscape Features and Habitat Suitability

A review of mapping and photographs provided insight into the habitats and landscape features present at the Site. The dominant habitats comprise conifer plantation, wet heath, degraded bog and grassland, with only very limited treelines and hedgerows occurring across the area. These habitat types provide relatively low structural complexity and few linear features, thereby constraining the availability of high-quality commuting and foraging corridors for bats.

A review of the GSI online mapper did not indicate the possible presence of any subterranean sites within the Site. A search of the National Monuments Database revealed the presence of several monuments located within the Site (Table 4-3). None of these features provide suitable crevice, void or roofed structures capable of supporting bat roosts.

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

A review of the NBDC bat landscape map provided a habitat suitability index of 18.67 (Green) to 27.67 (Yellow). This indicates that the Site has Low to Moderate habitat suitability for bat species.

Table 4-3 National monument sites within the Proposed Project.

National Monument	Description
CL031-019	Earthworks
Cl031-052	Stone Circle
CL031-018	Ringfort - rath

4.2.6 Additional Projects in the Wider Landscape

Table 4-5 provides an overview of existing, permitted, and proposed wind farms located within 5 km and 10 km of the Proposed Project.

Table 4-4 Wind farm developments within 10km of the Site

Wind Farm	Status	No. of Turbines	Turbine Height
Less than 5km			
Slieve Callan Wind Farm	Existing	29	Tip Height 110m
Coor Shanavogh Wind Farm	Proposed	4	Tip Height 126m
Ilaunbaun Wind Farm	Proposed	6	Tip Height 150m

Wind Farm	Status	No. of Turbines	Turbine Height
5 to 10km			
Cahermurphy Wind Farm	Existing	4	Tip Height 131m
Booltiagh I Wind Farm	Existing	11	Tip Height 90m
Booltiagh Wind Farm (Extension)	Existing	6	Tip Height 120m
Cahermurphy II Wind Farm	Proposed	10	Tip Height 170m

Additional EIA-Scale Projects within 10km

A search was undertaken to identify any permitted, operational or proposed EIA-scale projects within a 10km radius of the Site, in line with the methodology outlined in Chapter 2, Section 2.9. This review included an examination of relevant planning authority records and publicly available planning registers, together with a review of applicable development maps and project databases. The purpose of this exercise was to inform the assessment of potential cumulative effects.

Based on the information available at the time of assessment, no additional EIA-scale projects were identified within 10km of the Site in the wider area.

4.3 Field Surveys

4.3.1 Bat Habitat Suitability Appraisal

4.3.1.1 Proposed Wind Farm Site

A total of sixteen habitats were recorded within the Proposed Wind Farm Site including:

- *Conifer plantation (WD4)*
- *Recently felled woodland (WS5)*
- *Upland blanket bog (PB2)*
- *Wet Heath (HH3)*
- *Cutover bog (PB4)*
- *Transition mire and quaking bog (PF3)*
- *Exposed siliceous rock (ER1)*
- *Wet grassland (GS4)*
- *Scrub (WS1)*
- *Hedgerow (WL1)*
- *Wet willow alder ash woodland (WN6)*
- *Spoil and bare ground (ED2)*
- *Buildings and artificial surfaces (BL3)*
- *Stone walls and other stonework (BL1)*
- *Eroding/upland rivers (FW1)*
- *Drainage ditches (FW4)*

Further details on habitats within the Proposed Wind Farm Site can be found in Chapter 6 of the main EIAR. The Proposed Wind Farm Site comprises of areas of plantation forestry (WD4), comprising mainly of Sitka spruce (*Picea sitchenis*) and Lodgepole pine (*Pinus contorta*), and areas of degraded peatland assessed as Upland blanket bog (PB2) and Wet heath (HH3). The site is accessible via a network of local roads, existing forestry access tracks and forestry rides. The remainder of the Proposed Project is dominated by Wet grassland (GS4) and Scrub (WS1).

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

With regard to foraging and commuting bats, areas of closed canopy conifer forestry, recently felled woodland, wet grassland, buildings and artificial surfaces as well as exposed areas of peatland habitats that may be used by a small number of bats, but which are poorly connected to the wider landscape were considered *Low* suitability, i.e. habitat that could be used by small numbers of commuting bats, but isolated (Collins, 2023) (Plate 4-1; Plate 4-3). Forestry edge, hedgerow, scrub, wet willow alder ash woodland and drainage ditches may provide greater foraging and commuting opportunities. These habitats within the Proposed Wind Farm Site provide linear connectivity within the Site and to the surrounding landscape. As such, these habitats were classified as *Moderate* suitability, i.e. habitat connected to the wider landscape that could be used by bats for foraging and commuting (Collins, 2023) (Plate 4-4; Plate 4-5).

Plate 4-1 Example of mature Conifer plantation (WD4) within the Proposed Wind Farm site.

Plate 4-2 Area of Wet grassland (GS4) managed via rush topping.

Plate 4-3 Example of Cutover bog (PB4) habitat within the Site.

Plate 4-4 Gorse dominated Scrub (WS1) witin the Site

Plate 4-5 Example of wet agricultural field within the Site woodland.

Plate 4-6 Example of wet willow alder ash

Tree cover within the Proposed Wind Farm Site is dominated by commercial conifer plantation (Plate 4-1). Small areas of wet willow alder ash woodland are also present, comprising of willow (Salix spp.), with frequent to occasional recordings of alder (*Alnus glutinosa*), hawthorn (*Crataegus monogyna*), blackthorn, and Birch (*Betula pubescens*), with an understory of encroaching bramble. No trees with bat roosting potential were identified within the bat felling buffer or other infrastructure footprint.

Three structures, including associated outbuildings, were inspected for bat roosting suitability. One structure was assessed as offering *Negligible* roosting potential, one structure had *Low* roosting potential, and the farm complex structures were also assessed as having *Low* potential. Details of the buildings inspection and dusk emergence surveys are presented below in Section 4.3.2.

Trees and treelines within the Proposed Wind Farm Site, particularly those scheduled for felling within bat buffer zones and within areas subject to potential disturbance including the Turbine Delivery Route (TDR) works areas, Proposed Grid Connection Site and relevant portions of the Proposed Enhancement Site, 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.

No PRFs were identified on any tree, including those scheduled for felling. Any superficial features observed offered no roosting potential; accordingly, all inspected trees were assessed as *None* in line with Collins (2023).

4.3.1.2 Proposed Grid Connection Site

The proposed 33kV underground cabling is approximately 7.1km. The proposed 33kV underground cabling will leave the Proposed Wind Farm Site to the west of T6, initially passing through a short section of coniferous forestry (WD4), before entering existing access track, categorised as Spoil and bare ground (ED2.) The underground cable route then joins a local road, categorised as Buildings and artificial surfaces (ED2). The underground cable route runs along the R460 for approximately 1.55km before joining the existing unbound access road to Slievecallan 110kV substation.

The proposed 33kV underground cabling is approximately 7.1 km in length and will begin at Turbine 6, and continue south through existing forestry for approximately 0.83 km, towards the road corridor (R460) via existing farm tracks. It will continue west along the R460 for approximately 1.55 km, before it exits onto existing private access tracks, following these for approximately 4.17 km before reaching the proposed substation extension compound

Habitats within the Proposed Grid Connection Site include:

- Spoil and bare ground (ED2)
- Conifer plantation (WD4)
- Buildings and artificial surfaces (ED2)

Further details of habitats within the Proposed Grid Connection Site are outlined in Chapter 6.

With regard to commuting and foraging bats, features within the footprint of the proposed 33kV underground cabling such as Spoil and bare ground (ED2) and Building and artificial surfaces (ED2) were assessed as having no suitability *(None)*. These habitats are not considered to provide continuous lines of protection for flight-lines or generate insect populations available to foraging bats. Habitat features such as Conifer plantation (WD4) were assessed as having *Low* suitability as this habitat may be used by a small number of bats, but is poorly connected to the wider landscape, i.e. habitat that could be used by small numbers of commuting bats, but isolated (Collins, 2023).

With regard to roosting bats, habitat features along the proposed 33kV underground cabling, including Spoil and bare ground (ED2) and Building and artificial surfaces (ED2) were assessed as having no suitability (*None*) due to there being a complete absence of suitable shelter or roosting features. Habitat features such as Conifer plantation (WD4) were assessed as having *Negligible potential* due to the absence of any PRF's i.e. Negligible habitat features on site likely to be used by roosting bats (Collins, 2023).

With regard to roosting bats, no buildings, trees or other features capable of supporting bat roosts were identified within the on-site substation footprint, and this area was therefore assessed as having no (*None)* roosting potential for bats.

The Proposed Grid Connection Site 33kV underground cabling will traverse 15 no. watercourses and culvert crossings. The crossing points were assessed for bat roosting potential in the July 2025. Across the inspected structures, one crossing was assessed as having *Negligible* roosting potential and the

remaining crossings had no (*None*) roosting potential. No evidence of bat roosts was identified at any of the structures. The detailed findings are presented in **Appendix 4**.

The construction methodology for the watercourse crossings has been designed to eliminate the requirement for in-stream works, as outlined in Chapter 4 of this EIAR. There are no instream works or bridge/culvert alterations proposed therefore the watercourse crossings will not be directly impacted. The locations of the watercourse crossings are shown on Figure 4-37 in Chapter 4 of the EIAR.

4.3.1.3 Turbine Delivery Accommodation Works

The proposed haul road is shown in Figure 4-27, Chapter 4 of the EIAR. Starting at Fahanlunaghta More Road (to the northwest of the Proposed Wind Farm Site), the haul route comprises mainly of existing bound roads assessed as Buildings and artificial surfaces (BL3). In order to facilitate turbine delivery, minor junction modifications are required at this location. This will involve an alteration to small areas of adjacent Wet grassland (GS4) habitat at two locations along the Fahanlunaghta More Road.

The proposed haul route will continue to follow the existing road (BL3) south until it enters the Proposed Wind Farm Site through Conifer plantation (WD4) and on to existing forestry tracks (ED2). The existing road is bordered by Conifer plantation (WD4), soft rush dominated Wet grassland (GS4) and Cutover bog (PB4) along its length, before reaching Turbine no. 1. No trees are proposed for removal to accommodate the proposed haul route and there will be no loss of linear habitat features associated with the proposed junction modifications along the proposed haul route as these areas comprise primary of earthen embankments with some individual scattered willows (Salix spp.) or sapling Sitka spruce.

With regard to roosting bats, the existing road (BL3), Wet grassland (GS4) and Cutover bog (PB4) were assessed as having no suitability (*None*) due to there being a complete absence of suitable features and shelter.

The hedgerows and treelines along the proposed haul road provide *Negligible* suitability for commuting and foraging bats; however, no potential roost features (PRFs) were identified within these habitats. Given the limited nature of the works and the absence of roosting opportunities, no loss of commuting, foraging or roosting habitat is anticipated along the proposed haul road.

With regard to roosting bats, hedgerows and treelines within the works areas were subject to ground-level inspection in accordance with Andrews (2018) and were not found to contain any potential roost features (PRFs); no trees will be affected by the proposed TDA works.

4.3.1.4 Proposed Enhancement Site

As described in in the Biodiversity Management and Enhancement Plan (BMEP) in Appendix 6-4 of this EIAR, A total of 13 areas, totalling c. 172.7 ha within the Site, biodiversity enhancement measures as part of the Proposed Project and were subject to bat habitat appraisal. This includes for the permanent removal of c. 123 hectares of forestry and the establishment of more biodiverse upland habitats, and the management of c. 19.9 hectares of agricultural grassland into species rich wet grassland. The study area comprises of areas of Conifer plantation (WD4), Recently-felled woodland (WS5), Wet grassland (GS4), Lowland blanket bog (PB3) and Reed and large sedge swamp (FS1).

With regard to foraging and commuting bats, areas of closed canopy conifer forestry, recently felled woodland, wet grassland, lowland blanket bog and reed and large sedge swamp that may be used by a small number of bats, but which are poorly connected to the wider landscape were considered *Low* suitability, i.e. habitat that could be used by small numbers of commuting bats, but isolated (Collins, 2023) (Plate 4-1; Plate 4-3). Forestry edge may provide greater foraging and commuting opportunities.

With regard to roosting bats, habitat features within the Proposed Enhancement Site, including closed canopy conifer forestry, recently felled woodland, wet grassland, lowland blanket bog and reed and large sedge swamp were assessed as having no suitability (*None*) due to there being a complete absence of suitable features that could support roosting bats. Habitat features such as Conifer plantation (WD4) were assessed as having *Negligible potential* due to the absence of any PRF's i.e. Negligible habitat features on site likely to be used by roosting bats (Collins, 2023).

4.3.2 Roost Surveys

4.3.2.1 Daytime Roost Inspections

A search for roosts was undertaken within 200 m plus the maximum rotor radius (i.e. 75 m) of each proposed turbine location (NatureScot, 2021). No structures, building or trees and were identified within the 275 m roost search buffer and no bat roosts were identified.

Following the search for roosting features, three structures, including associated outbuildings, containing potential suitable bat roost features were identified within the wider Site.

Of the three areas surveyed, two were assessed as having *Low* bat roost potential and one was assessed as having *Negligible* bat roost potential. All surveyed structures will be retained and avoided as part of the Proposed Project. Further details of the structures are provided below and are summarised in Table 4-5. The following sections describe each structure, supported by photographs and noting key features relevant to bat roosting potential.

Table 4-5 Structures assessed for bat roost potential in 2024

Structure	Potential	ITM	Nearest turbine	Approx. distance to nearest turbine
Disused Stone structure with corrugated roof	Low	511790, 678903	T7	425m
Farm Complex (Dwelling, farm shed and stone storage shed)	Low	512887, 681128	T2	529m

4.3.2.1.1 *Disused Stone structure with corrugated roof*

This structure is located approximately 425 m southeast of Turbine 7. The structure was assessed as having *Low* roosting potential i.e. A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year (Collins, 2023).

The structure is constructed of stone with a corrugated metal roof. Potential access into the building is provided via an open doorway. Several gaps were also noted within the stonework; however, these features are limited in extent and offer only low suitability for use by roosting bats.
The shed is situated within an area of wet grassland, with conifer plantation edges with limited habitat connectivity. No evidence of bat use was recorded during the daytime inspection.

Plate 4-1 Stone structure exterior

Plate 4-2 Stone structure interior

4.3.2.1.2 *Farm Complex*

This complex is located approximately 529 m from the nearest turbine (T2). The farm complex consists of a modern farm shed with a corrugated roof (ITM: 512876, 681149), a residential dwelling (ITM: 512900, 681118), and a stone shed (ITM: 512887, 681128), (Plates 4-3 to 4-6).

The modern brick and corrugated iron shed appears in regular use, alongside an older stone-built shed structure with a tile roof. Visual inspections revealed several cracks in the stone walls and roof that may offer limited roosting opportunities for crevice-dwelling bat species. Open doorways/shed entrances were noted in the outbuildings, providing potential access to the building interiors. No potential access points were identified in the single-storey dwelling.

The surrounding habitat comprises open grasslands with small areas of managed hedgerows and plantation forestry connected to field boundaries, offering some connectivity to the wider landscape. Due to the limited number and quality of roosting features, these structures were assessed as having *Low* bat roost potential in accordance with Collins (2023). No evidence of roosting bats were identified during the 2024 inspections. However, it is noted that an individual bat was identified resting within the stone shed during a survey in 2019.

Plate 4-3 Eastern elevation of farm shed with open doors

Plate 4-5 Interior of farm shed

Plate 4-4 Stone shed exterior – adjoining farm shed

Plate 4-6 Stone shed interior

4.3.2.1.3 *Derelict Brick Building*

This concrete block structure is located approximately 560 m west of Turbine 7. While the doorway remains continuously open, providing potential access into the building, the structure itself was assessed as not providing significant suitable roosting potential for bats. Following a thorough inspection, the structure was assessed as having *Negligible* roosting potential i.e. No obvious 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 (Collins, 2023). Additionally, no evidence of bat use was recorded during the inspections.

Plate 4-7 Brick building

Plate 4-8 Brick building access.

4.3.2.1.4 *Ground-Level Tree Assessments*

Targeted ground-level tree inspections were undertaken where trees were present within works areas, in accordance with Andrews (2018) and Collins (2023). Inspections focused on identifying the

presence of potential roosting features (PRFs), including cracks, splits, cavities, lifted bark, woodpecker holes and evidence of decay.

Trees within the Proposed Wind Farm Site that are required to be removed to facilitate turbine bases, crane hardstands, access tracks and associated infrastructure comprise exclusively commercial conifer plantation forestry. These trees do not provide suitable roosting features for bats due to their species composition, uniform structure and management regime, which limits the development of cavities, cracks, loose bark or other potential roost features.

Trees within the Proposed Enhancement Site proposed for felling were also inspected at ground level. Areas of commercial conifer plantation forestry proposed for felling are characterised by closed-canopy, even-aged conifer stands managed for timber production and were assessed as offering no (None) roosting potential for bats.

A small, localised patch of broadleaved trees within one of the Hen Harrier Habitat Enhancement Areas, comprising predominantly willow, alder and ash, was also subject to ground-level inspection (Plates 4-6). No PRFs were identified within these trees, and no evidence of bat use was recorded. As such, all non-conifer trees within the Hen Harrier Habitat Enhancement Areas proposed for felling were also assessed as having no (None) roosting potential.

Overall, the tree inspections confirmed that no trees within the Proposed Project, including all areas subject to felling, provide suitable roosting opportunities for bats.

4.3.2.2 Emergence Survey

Following the roost suitability assessments detailed in Section 4.3.2.1, dusk emergence surveys were undertaken to confirm the presence or absence of roosting bats at structures identified as having *Low* potential to support roosting bats. Table 4-6 summarises the findings of the bat activity surveys carried out on the structures.

Table 4-6 Emergence Survey Results 2022 & 2024

Structure	PRF Suitability	ITM	Survey Type	Date Surveyed	Survey Results
2022					
Farm Complex	*Low*	512887, 681128	Dusk Emergence	26th May 2022	No bats recorded emerging*
2024					
Disused Stone structure with corrugated roof	*Low*	511790, 678903	Dusk Emergence	4th September 2024	No bats recorded emerging

*One individual bat recorded night roosting within stone shed during 2019 transect survey.

4.3.3 Manual Transects

Manual transects were undertaken in spring, summer and autumn 2024. Bat activity was recorded in all seasons. A total of 149 bat passes were recorded. In general, Common pipistrelle (n=100) was recorded most frequently, followed by Soprano pipistrelle (n=34). *Myotis spp (n=5),* Leisler's bat (n=5) and Brown long-eared (n=5) were less frequent (Plate 4-9).

Species composition and activity levels varied across the survey periods. Transect survey results were calculated as bat passes per km surveyed (to account for differences in survey effort). Plate 4-10 presents the results for individual species per survey period. Figures 4-1 – 4-3 present the spatial distribution of bat activity across surveys. Common and Soprano pipistrelle were most frequently recorded in summer and autumn 2024, whereas Brown long-eared bat and *Myotis spp.* bat were mainly detected during spring. Leisler's bat was recorded only in summer and autumn, and brown long-eared bat was recorded only during the spring.

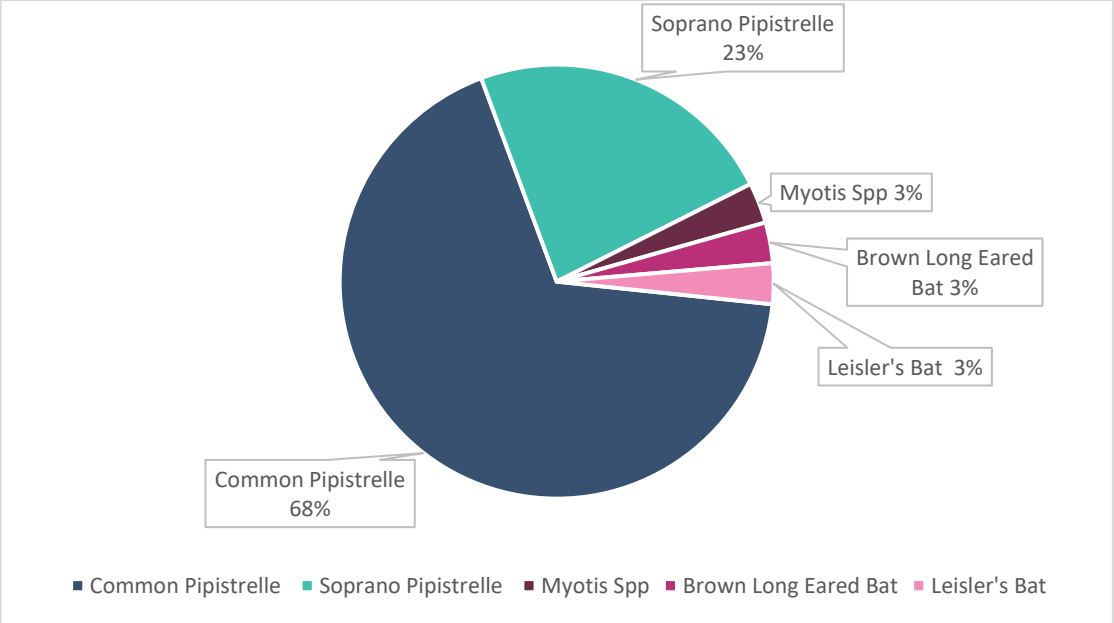

Plate 4-9 2024 Manual Activity Surveys (Total Species Composition)

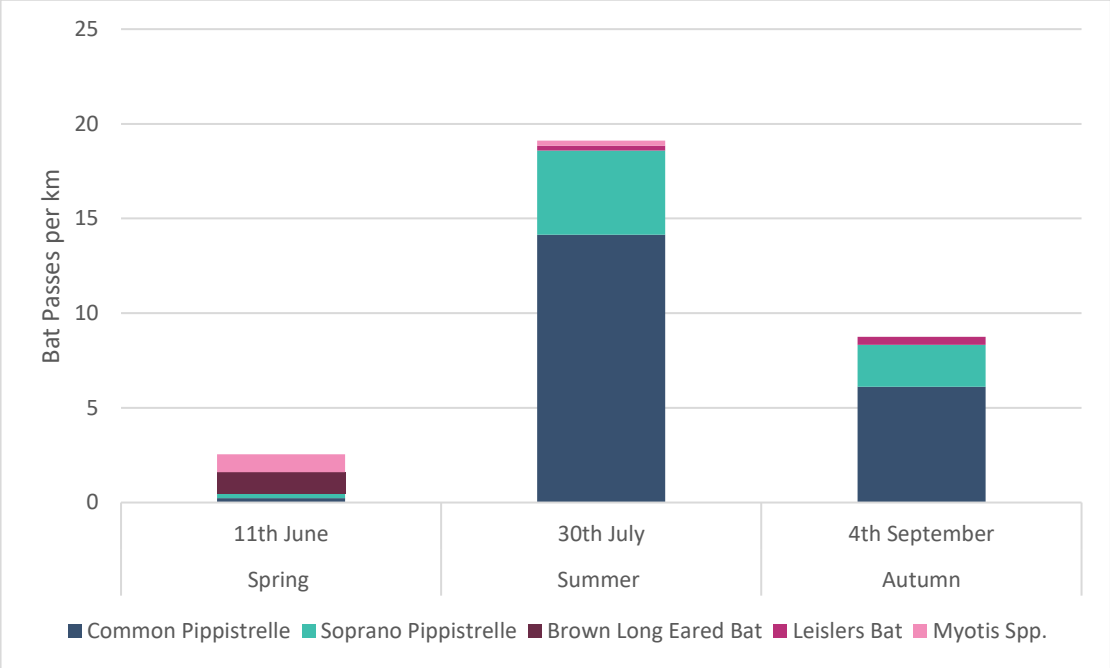

Plate 4-10 2024 Transect Results – Species Composition Per Survey Period

Map Legend

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

2024 Spring Manual Results

- Myotis species
- Common pipistrelle
- Soprano pipistrelle
- Brown long-eared bat

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

SITE LOCATION - NOT TO SCALE

Drawing Title

Spring Manual Results 2024

Project Title

Slieveacurry Wind Farm, Co. Clare

Project No.	Drawing No.	Scale
240538	4-2	1:6,500
Drawn By	Checked By	Date
AM	MNR	21/04/2026

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

511000

511500

679500

679000

N

T9

T7

Microsoft, Vantor

0 125 250 Meters

Map Legend

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

2024 Summer Manual Results

- Myotis species
- Common pipistrelle
- Soprano pipistrelle
- Leisler's bat

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Summer Manual Results 2024

Project Title

Slieveacurry Wind Farm, Co. Clare

Project No.	Drawing No.	Scale
240538	4-3	1:3,500
Drawn By	Checked By	Date
AM	MNR	21/04/2026

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

510000

680000

N

T3

T4

T5

T9

T6

T8

T7

0 0.5 1 km

510000

Microsoft Vantor

Map Legend

EIAR Site Boundary

Proposed Turbine Layout

Autumn Transect Route

2024 Autumn Manual Results

Common pipistrelle

Soprano pipistrelle

Leisler's bat

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

N

SITE LOCATION - NOT TO SCALE

Drawing Title

Autumn Manual Results 2024

Project Title

Slieveacurry Wind Farm, Co. Clare

Project No.	Drawing No.	Scale
240538	4-4	1:11,500
Drawn By	Checked By	Date
AM	MNR	21/04/2026

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

4.3.4 Ground-level Static Surveys

In total, 37,852 bat passes were recorded across all deployments. In general, Common pipistrelle (n=17,499) occurred most frequently, followed by Soprano pipistrelle (n=10,579) and *Myotis spp*. (n=6,987). Instances of Leisler's bat (n=1,562), Brown long-eared bat (n=1,102) and Nathusius' pipistrelle (n=121) were recorded less frequently while only two Lesser horseshoe bat passes were recorded in autumn. Plate 4-11 presents relative species composition across all ground-level static detector surveys.

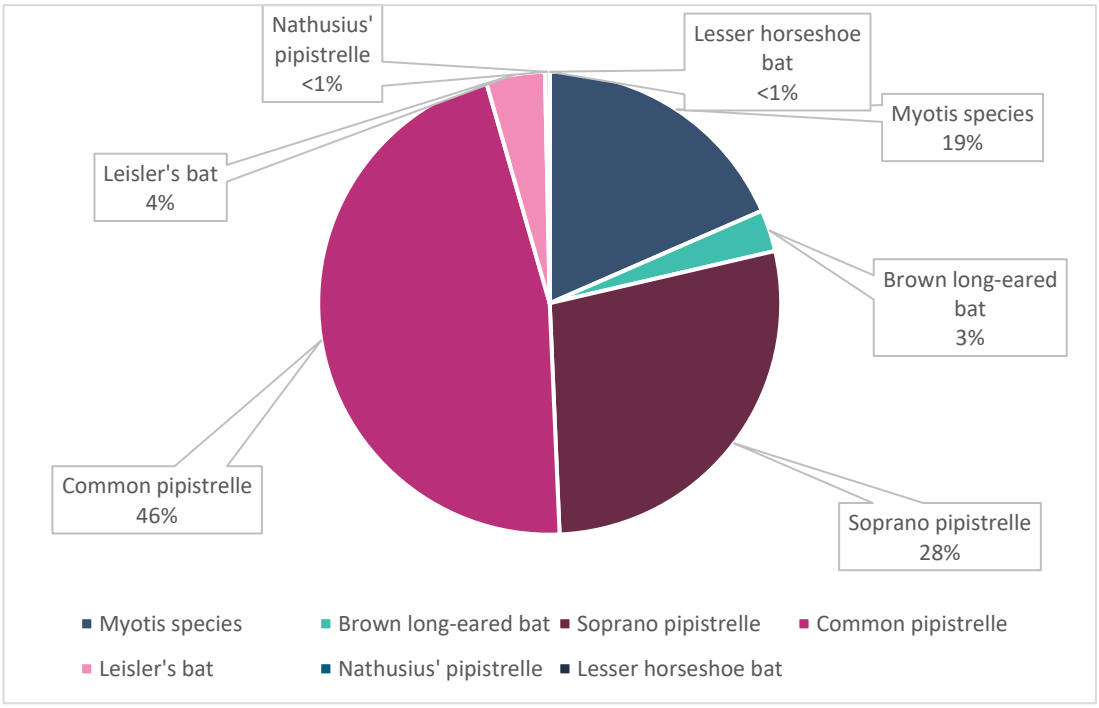

Plate 4-11 2024 Static Detector Surveys: Species Composition Across All Deployments (Total Bat Passes)

Bat activity was calculated as total bat passes per hour (bpph) per season to account for any bias in survey effort, resulting from varying night lengths between seasons. Plates 4-12 and Table 4-7 presents these results for each species per season. Spring activity was dominated by *Myotis spp.* with contributions from Common and Soprano pipistrelle. Summer activity saw a significant increase in Common pipistrelle activity, with *Myotis spp.* the second most recorded species. Soprano pipistrelle activity also increased. During the autumn, activity was more evenly distributed between common and soprano pipistrelle, which both experienced activity increases. *Myotis spp*. activity remained similar to that of the summer survey. Leisler's bat activity was highest in Spring, and low across all other seasons. Instances of brown long-eared bat and Nathusius' pipistrelle were relatively rare throughout the survey periods. Lesser horseshoe bats were recorded only during the autumn season with two bat passes in total.

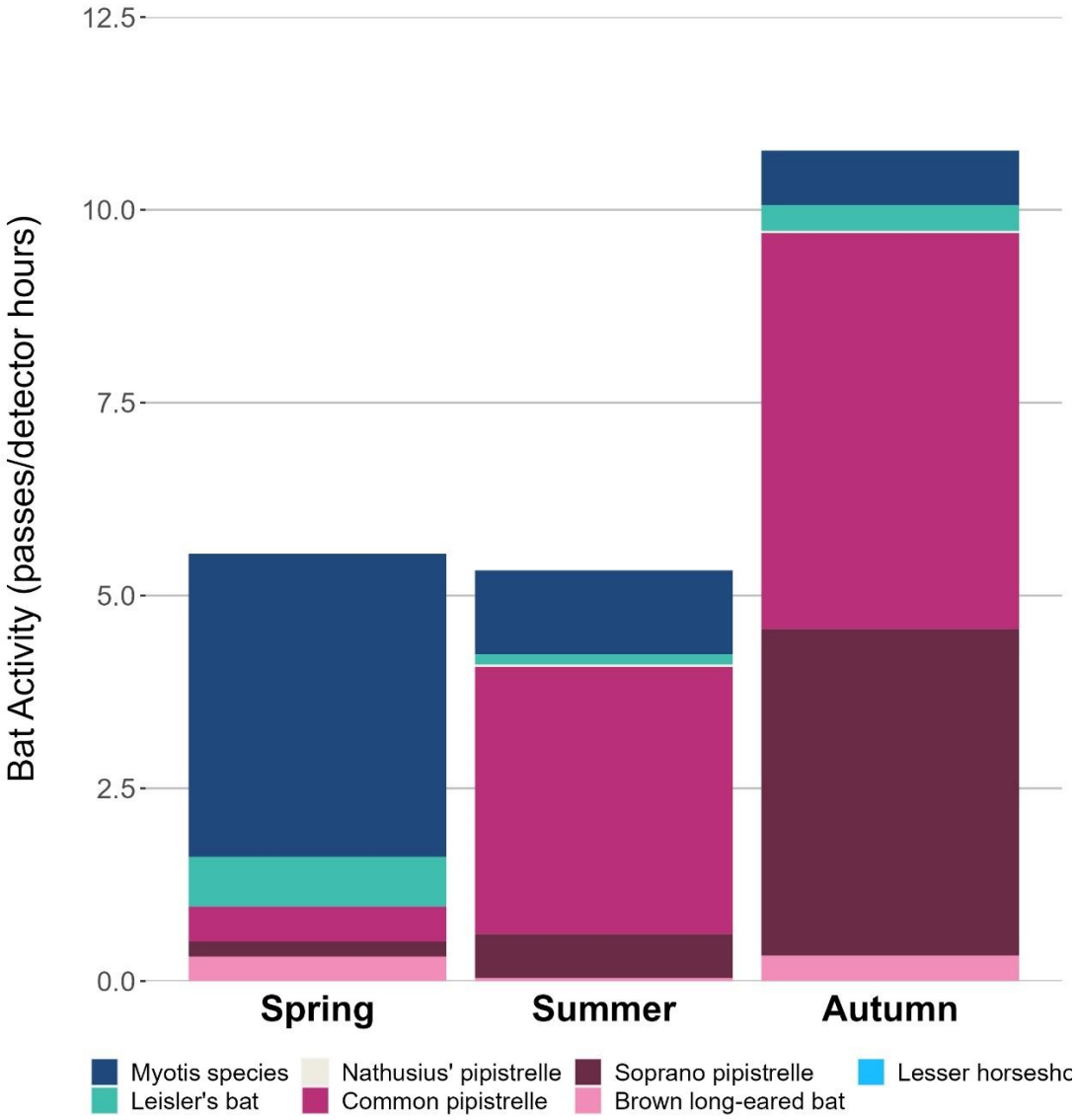

Plate 4-12 2024 Static Detector Surveys: Species Composition Across All Deployments (Total Bat Passes Per Hour, All Nights)

Table 4-7 Static Detector Surveys: Species Composition Across All Deployments (Total Bat Passes Per Hour, All Nights)

	Spring	Summer	Autumn
Total Survey Hours	**103**	**200.3**	**248.6**
Myotis spp.	35.39	8.78	6.37
Brown long-eared bat	2.87	0.33	2.98
Soprano pipistrelle	1.76	4.61	38.11
Common pipistrelle	4.08	27.94	46.19
Leisler's bat	5.78	1.07	3.03
Nathusius' pipistrelle	0.01	0.28	0.26
Lesser Horseshoe bat	0.00	0.00	0.01

The median bat activity recorded at each detector during each survey period is presented in Plates 4-13 and 4-14 (the latter incorporates a varied y-axis scale to illustrate differences between detectors more clearly). The results demonstrate clear seasonal and spatial variation in median activity levels across the survey area.

In spring, activity was highest at D01, and almost entirely consisted of *Myotis spp.* All other detectors exhibited low median activity. Summer showed a reduction in activity at D01 which still recorded the highest activity but increases in activity at both D05 and D07. Detectors D02 and D06 recorded minimal activity in summer. In autumn, D01 remained the most active site, with increased activity present across all other detectors.

The median nightly pass rate (i.e. median total bat passes per hour per night) was used as a robust measure of typical bat activity at the Proposed Wind Farm Site, as shown in Plate 4-15. This metric reduces the influence of occasional high-activity nights on overall results and is recommended to account for nightly variability caused by weather, seasonal changes and other environmental factors (Lintott & Mathews, 2018). Zero values, representing nights when a given species was not detected, were retained in the dataset to avoid overestimating activity levels.

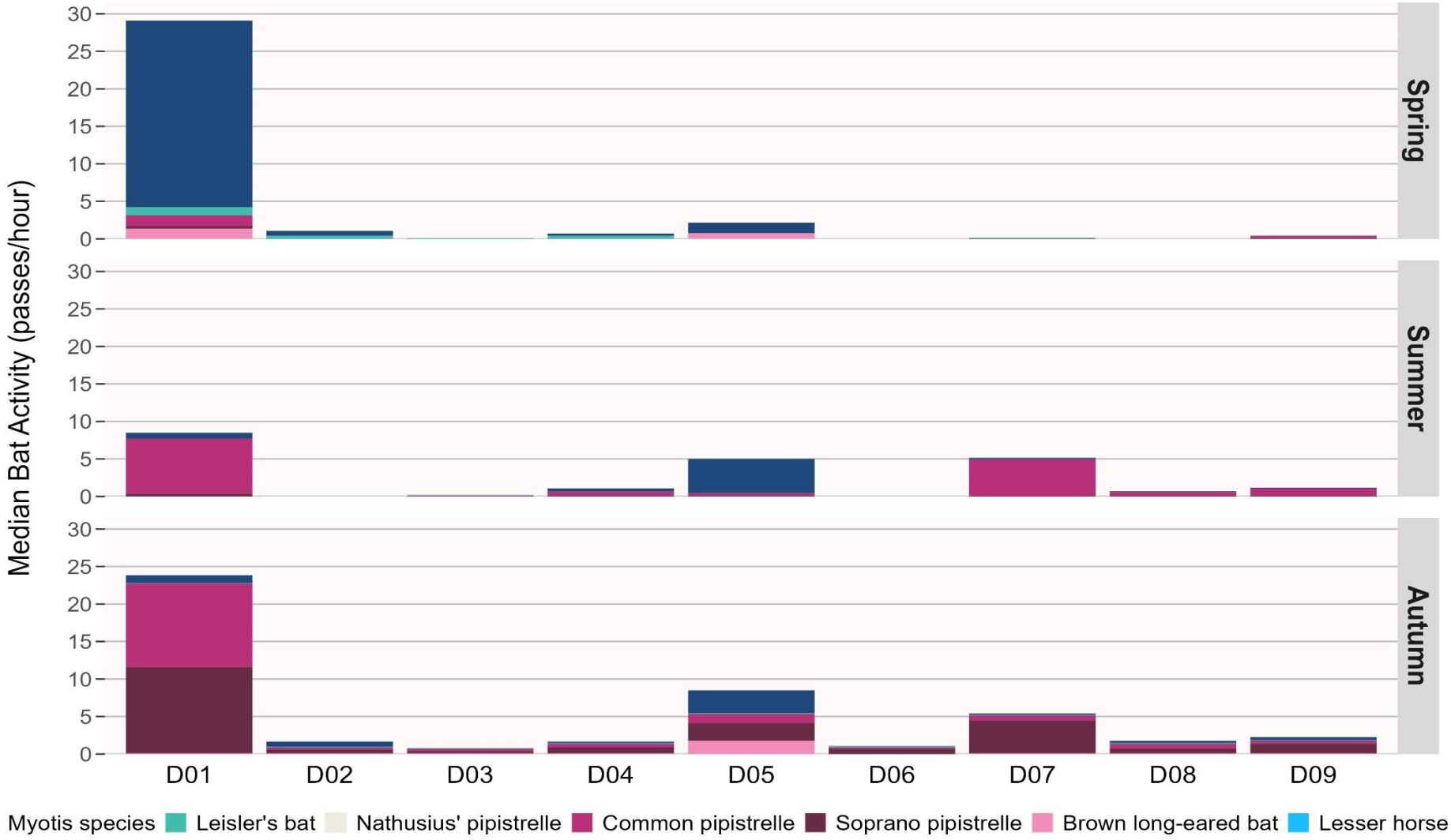

Plate 4-13 Static Detector Surveys: Median Bat Pass Rate (bpph) Including Absences, Per Location Per Survey Period.

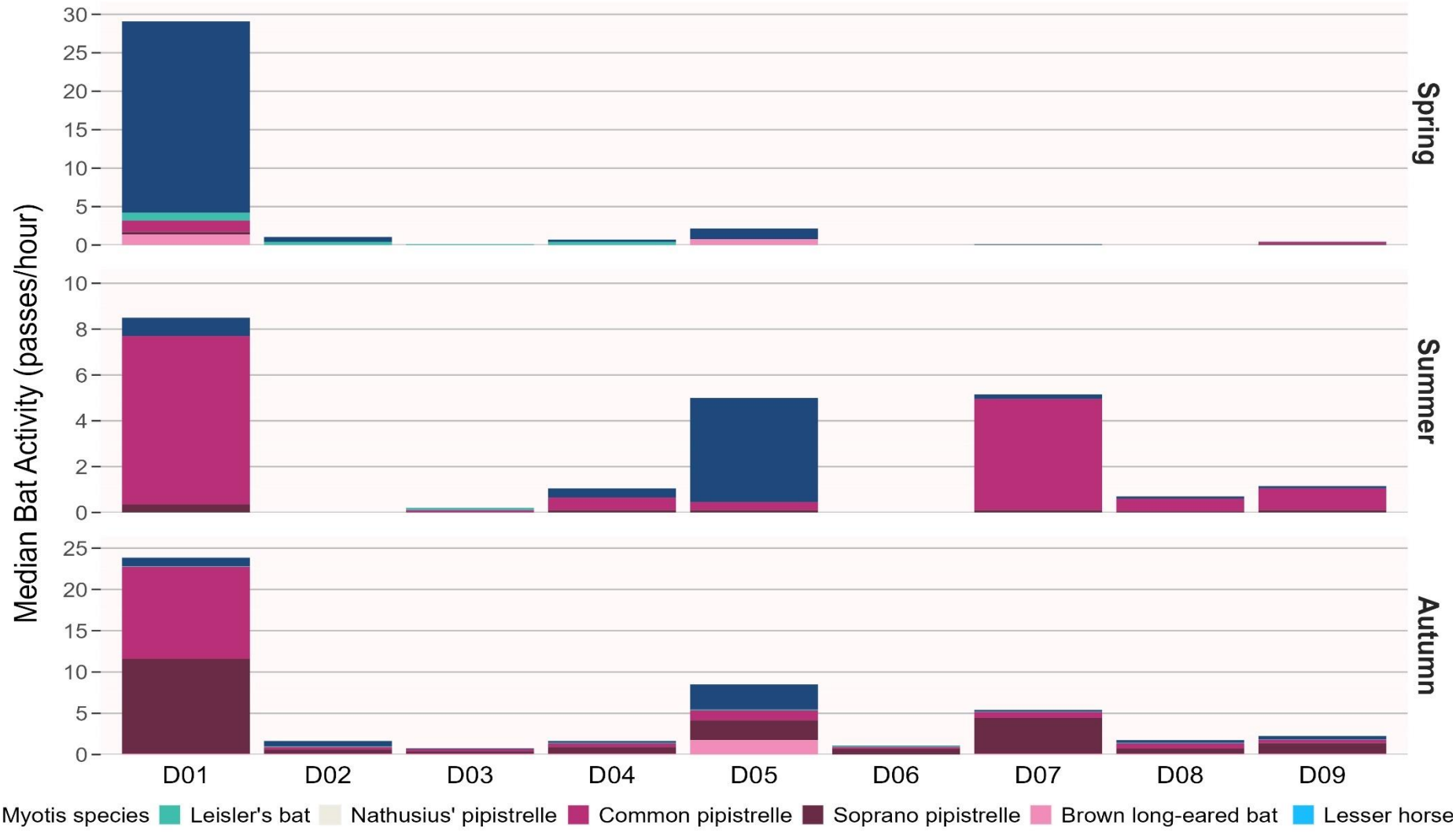

Plate 4-14 Static Detector Surveys: Median Bat Pass Rate (bpph) Including Absences, Per Location Per Survey Period (Varied Axis Scale).

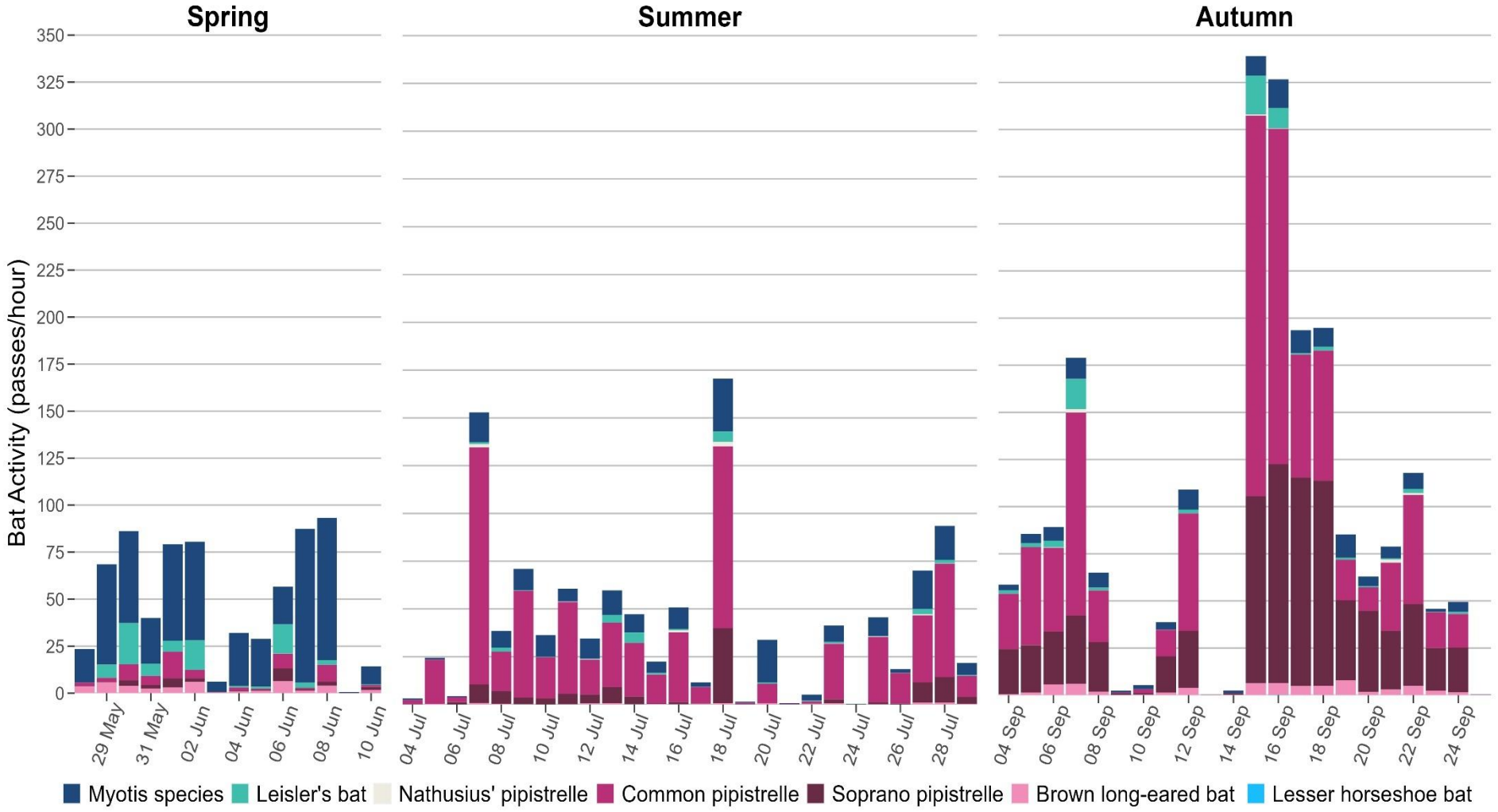

Plate 4-15 Static Detector Surveys: Median Bat Pass Rate (bpph) Including Absences, Per Season Per Night

4.4 Assessment of Bat Activity Levels 2024

4.4.1 Adapted Site-specific Ranges

Low, *Moderate* 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 4-8 shows the results of the site-level assessment as calculated on a site-specific activity level. Where no maximum activity at a detector is reported, no data was recorded for that species throughout the deployment.

Leisler's bat generally exhibited *Low* median activity across spring, summer and autumn. The highest median activity was observed at detector D01 during spring, reaching 1.1 bat passes per hour (bpph), classified as *Moderate*, with a corresponding maximum of 3.7 bpph. This was the only *Moderate* median activity recorded for the species across all detectors in 2024. Median activity rates were *Low* at all other locations in all seasons. The highest maximum activity was observed at detector D06 during autumn, reaching 10.9 bat passes per hour (bpph), classified as *High.*

Common pipistrelle demonstrated predominantly *Low* median activity throughout the year, punctuated by several notable *Moderate* or *High* activity periods. In spring, median activity was *Low* throughout. During summer, both D01 and D07 registered *Moderate* medians of 7.4 bpph and 4.9 bpph, respectively. In autumn, D01 again showed *High* median activity at 11.2 bpph, with a maximum of 48.4 bpph. All other detectors remained within the *Low* median activity range.

Soprano pipistrelle activity remained mostly within the *Low* to *Moderate* range. A single *High* median value was recorded at D01 in autumn (11.5 bpph, maximum 22.6 bpph). Spring and summer median activity was uniformly *Low*, while autumn showed a single *Moderate* activity level at D07.

***Myotis* species** exhibited *Low* median activity across most detectors and seasons. One *High* median was recorded—at D01 in spring (24.9 bpph, with a maximum of 81.9 bpph) and one *Moderate* activity level at D05 in summer (4.6 bpph with a maximum of 15.5 bpph). In autumn, all median activity values were *Low*.

Brown long-eared bat were generally within the *Low* median activity category throughout the year. *High* median activity was recorded in spring at D01 (1.4 bpph), and in autumn at D05 (1.8 bpph). In addition, a single instance of *Moderate* median activity was recorded at D05 in spring (0.8 bpph).

Nathusius' pipistrelle activity was largely absent, with zero median activity recorded at all detectors in all seasons. High Maximum activity levels were recorded at D07 and D08 in summer, and D02 and D05 in autumn.

Lesser horseshoe bat activity was generally absent throughout the year. The only recordings were 0. bpph detected at D08 in autumn.

Table 4-8 Median Nightly Bat Activity (bpph) per Species, per Season, per Detector Location 2024 Low, Moderate, High, Absent

Species	Season	Bat activity (bpph)	D01	D02	D03	D04	D05	D06	D07	D08	D09	Activity Level
Myotis spp.	Spring	Median	24.9	0.7	0.0	0.3	1.4	0.0	0.0	0.0	0.0	Low (1)
		Maximum	81.9	1.4	0.3	1.9	3.2	0.1	0.1	0.7	0.7	Low (1)
	Summer	Median	0.8	0.0	0.0	0.4	4.6		0.2	0.1	0.1	Low (1)
		Maximum	2.8	6.8	0.6	3.7	15.5		1.1	2.0	1.6	Low-moderate (2)
	Autumn	Median	1.1	0.7	0.1	0.2	3.1	0.1	0.2	0.3	0.4	Low (1)
		Maximum	3.2	2.9	1.9	0.7	8.7	0.6	1.1	1.0	1.0	Low (1)
Leisler's bat	Spring	Median	1.1	0.4	0.1	0.4	0.0	0.0	0.1	0.0	0.1	Low (1)
		Maximum	8.7	7.0	0.9	3.9	2.4	2.3	1.0	2.5	1.1	Moderate-high (4)
	Summer	Median	0.0	0.0	0.1	0.0	0.0		0.0	0.0	0.0	Low (1)
		Maximum	0.7	0.6	1.1	1.3	0.5		1.9	0.9	0.6	Moderate (3)
	Autumn	Median	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.1	Low (1)
		Maximum	1.1	1.0	2.4	3.2	1.1	10.9	2.4	3.2	1.2	Moderate-high (4)
Nathusius' pipistrelle	Spring	Median									0.0	Low (1)
		Maximum									0.1	Low (1)
	Summer	Median	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		Low (1)
		Maximum	0.1		0.1	0.2	0.1		1.4	1.6		Low-moderate (2)
	Autumn	Median		0.0			0.0	0.0	0.0		0.0	Low (1)
		Maximum		1.3			1.3	0.2	0.5		0.1	Low-moderate (2)
Common pipistrelle	Spring	Median	1.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	Low (1)
		Maximum	5.7	0.3	0.4	0.7	0.3	0.4	8.9	3.3	3.0	Low-moderate (2)
	Summer	Median	7.4	0.0	0.1	0.6	0.4		4.9	0.6	1.0	Low (1)
		Maximum	39.9	1.0	0.5	34.2	6.1		51.9	34.1	10.3	Moderate (3)
	Autumn	Median	11.2	0.3	0.3	0.5	1.2	0.2	0.7	0.6	0.4	Low (1)
		Maximum	48.4	6.7	6.1	3.9	18.6	31.7	65.2	69.5	13.1	Moderate-high (4)

Soprano pipistrelle	Spring	Median	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	Low (1)
		Maximum	0.8	0.5	0.1	0.3	0.4	0.3	4.1	1.5	1.1	Low (1)
	Summer	Median	0.4	0.0	0.0	0.1	0.1		0.1	0.1	0.1	Low (1)
		Maximum	5.6	0.5	0.7	5.9	3.2		7.0	27.9	0.8	Low-moderate (2)
	Autumn	Median	11.5	0.5	0.3	0.8	2.4	0.7	4.4	0.7	1.3	Low-moderate (2)
		Maximum	22.6	9.2	6.8	6.0	17.3	21.3	53.4	27.4	5.9	Moderate-high (4)
Brown long-eared bat	Spring	Median	1.4	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	Low-moderate (2)
		Maximum	5.4	0.3	0.1	0.3	1.7	0.4	0.1	0.1	0.3	Low-moderate (2)
	Summer	Median	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	Low (1)
		Maximum	0.6	0.1	0.1	0.4	0.3		0.1	0.1	0.7	Low (1)
	Autumn	Median	0.1	0.1	0.1	0.1	1.8	0.0	0.1	0.1	0.1	Low (1)
		Maximum	0.2	0.5	0.4	0.5	6.7	0.3	0.6	0.6	0.5	Moderate (3)
Lesser horseshoe bat	Spring	Median										Low (1)
		Maximum										Low (1)
	Summer	Median										Low (1)
		Maximum										Low (1)
	Autumn	Median								0.0		Low (1)
		Maximum								0.2		Low (1)

4.5 Importance of Bat Population Recorded at the Site

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

All bat species in Ireland are protected under the Bonn Convention (1992), Bern Convention (1982) and the EU Habitats Directive (92/43/EEC). Additionally, in Ireland bat species are afforded further protection under the Birds and Natural Habitats Regulations (2011) and the Wildlife Acts 1976, as amended.

Bats have been assessed as Ecological Receptors of **Local Importance (Higher Value)** based on the presence of a several regularly occurring bat species recorded within the Site and use of the Site for foraging and commuting. No bat roosts were identified within the Site during the 2022 or 2024 survey period. An individual bat was observed night roosting within a stone shed structure located over 500m from the nearest proposed turbine in 2019. Although Lesser horseshoe bat (*Rhinolophus hipposideros*) is an Annex II species of high conservation importance, only extremely low levels of activity were recorded at the Site during surveys. Records were limited to occasional passes, indicating sporadic use by commuting or foraging individuals rather than regular use by a local population. The Site is characterised by a relative absence of suitable commuting and foraging habitat for Lesser horseshoe bat, with limited habitat connectivity across the survey area. In addition, the site and its immediate surroundings exhibit negligible roosting suitability for this species. On this basis, and taking into account the very low and spatially restricted levels of activity recorded, only 1 recorded pass in Autumn, the Site is not considered to represent significant suitable habitat for Lesser horseshoe bat. In the absence of roosts or important commuting corridors, the Site is therefore considered to be of Local Importance (Higher Value) for bats, including lesser horseshoe bat. Overall, no large or significant maternity roosts (i.e. those supporting >100 individuals or considered of National Importance) were recorded within the Site.

5. RISK AND IMPACT ASSESSMENT

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

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

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

5.1 Collision Mortality

5.1.1 Assessment of Site-Risk

The likely impact of 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 the NatureScot guidance, is provided in Table 5-1 below.

Table 5-1 Site-risk Level Determination for the Proposed Project (Adapted from NatureScot, 2021)

Criteria	Site-specific Evaluation	Site Assessment
Habitat Risk	During the autumn 2019 transect survey, a single bat was observed resting and flying within a single storey stone shed (ITM: 512887, 681128). It is suspected that the structure is used as an occasional transitional/night roost. No other evidence of roosting bats and no trees with roosting potential were recorded within the footprint of the Proposed Project in 2022 or 2024. The Site primarily consists of open grassland, conifer plantation and peatland. The conifer edges and the limited number of linear features (hedgerows, stone walls and streams) provide some commuting and foraging opportunities for bats; however, habitat connectivity is relatively weak and the extent of high-quality habitat is limited. Overall, the Site does not meet any of the criteria for a *High* risk site as set out in Table 3a of NatureScot (2021).	Low
Project Size	Following the criteria set out in NatureScot, 2021 the project is of Small scale as it consists of <10 turbines (9 no. turbines). However, since these turbines exceed 100m in height, the project falls into the Medium project size category. The Proposed Project is a Strategic Infrastructure Development and is well below the number of turbines that would constitute a Large development (NatureScot, 2021). The project has therefore been assessed as being of Medium size. There are three wind energy developments within 5km and four within 10km of the Site.	Medium
Site Risk Assessment (from criteria in Plate 3-3)		**Low Site Risk (2)**

The Site is located in an area of predominantly conifer plantation, degraded peatland and grassland habitats. As per Table 3a of the NatureScot Guidance (2021), the Site has a *Low* habitat risk and *Medium* project size (Small scale development including 9 turbines but comprised of turbines >100m in height). The cross tabulation of a ***Low*** project on a ***Medium*** risk site results in an overall risk score of ***Low*** (NatureScot Table 3a).

5.1.2 Assessment of Collision Risk

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

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

The Overall Risk Assessment for high collision risk species is provided in the sections below. Overall Risk was determined, in accordance with Table 3b of NatureScot 2021 guidance (**Appendix 3**), by a cross-tablature of the site risk level (i.e. Low). 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). NatureScot recommends that the most appropriate activity level (i.e. median or maximum) be utilised to determine the overall risk assessment for a species.

As per NatureScot guidance there is no requirement to complete an Overall Risk Assessment for low-risk species. During the extensive suite of surveys undertaken the following low risk species were recorded:

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

Overall levels for *Myotis spp.,* brown long-eared bat and lesser horseshoe bat were generally low. While there was *High* median activity recorded for brown long-eared bat at D01 in spring and D05 in autumn, and for *Myotis pp.* at D01 in spring, the overall activity levels for the species were low; therefore, no significant collision related effects are anticipated. Loss of habitat is assessed further in Section 5.2 and 5.3. below. Activity levels for these species will continue to be assessed during operational monitoring following the implementation of best practice mitigations provided. Further mitigation will be implemented after Year 1 if deemed necessary.

5.1.2.1 Leisler's bat

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

Based on site visit and survey data, including transects, it is determined that the Typical Activity (i.e. Median) is reflective of the nature of the Site, which is primarily bogland, conifer plantation and agricultural grassland with low levels of bat activity recorded during the walked transects undertaken at the Site.

Thus, the overall collision risk level for the local population of Leisler's bat is generally assessed as ***Low-Moderate*** across all seasons and detectors.

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 2024		Low (1)	Typical Risk is Low (2)	Moderate-High (4)	Peak Risk is Medium (8)

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)
Summer 2024	Low (2)	Low (1)	Typical Risk is Low (2)	Moderate (3)	Peak Risk is Medium (6)
Autumn 2024		Low (1)	Typical Risk is Low (2)	Moderate-High (4)	Peak Risk is Medium (8)

5.1.2.2 Soprano pipistrelle

The Site is within range for soprano pipistrelle bat (NPWS, 2025). Soprano pipistrelle are classed as a common species of a medium population vulnerability which have a high potential collision risk (Plate 3-2). Soprano pipistrelle was recorded during activity surveys across the Site. When assessed in the context of the identified site risk and in line with Table 3b (NatureScot 2021) overall activity risk for soprano pipistrelle was found to be ***Low*** at median activity levels for spring, and summer, and ***Low-Moderate*** for autumn. Peak activity levels in spring and autumn were identical to the median values. In summer, peak activity levels were considered of ***Medium*** risk as outlined in Table 5-3 below.

Based on site visit and survey data, including transects, it is determined that the Typical Activity (i.e. Median) is reflective of the nature of the Site, which is primarily bogland, conifer plantation and agricultural grassland with low levels of bat activity recorded during the walked transects undertaken at the Site.

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

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 2024	Low (2)	Low (1)	Typical Risk is Low (2)	Low (1)	Peak Risk is Low (2)
Summer 2024		Low ()	Typical Risk is Low (2)	Low-Moderate (2)	Peak Risk is Medium (4)
Autumn 2024		Low-Moderate (2)	Typical Risk is Medium (4)	Low-Moderate (2)	Peak Risk is Medium (4)

5.1.2.3 Common pipistrelle

The Site is within the current range of the common pipistrelle bat (NPWS, 2025). Common pipistrelle are classed as a common species of a medium population vulnerability which have a high collision risk (Plate 3-2). Common pipistrelle were recorded during all activity surveys across the Site. When assessed in the context of the identified site risk and in line with Table 3b (NatureScot 2021); overall activity risk for common pipistrelle at Typical Activity levels was found to be ***Low*** in all seasons in 2024. Peak risk levels for common pipistrelle was also found to be ***Medium*** in all seasons. (See Table 5-4 below).

Based on site visit and survey data, including transects, it is determined that the Typical Activity (i.e. Median) is reflective of the nature of the Site, which is primarily bogland, conifer plantation and agricultural grassland with low levels of bat activity recorded during the walked transects undertaken at the Site.

Thus, there is a ***Low*** collision risk level assigned to the local population of common pipistrelle in all seasons, with the exception of D01 in summer and autumn, where there is a ***Medium-High*** peak risk.

Table 5-4 Common pipistrelle - Overall Risk Assessment

Survey Period	Site Risk	Typical Activity (Median)	Typical Risk Assessment (as per Table 3b NatureScot 21	Activity Peaks (Maximum)	Peak Risk Assessment (as per Table 3b NatureScot 2021)
Spring 2024	Low (2)	Low (1)	Typical Risk is Low (2)	Low-Moderate (2)	Medium (4)
Summer 2024		Low (1)	Typical Risk is Low (2)	Moderate (3)	Medium (6)
Autumn 2024		Low (1)	Typical Risk is Low (2)	Moderate-High (4)	Medium (8)

5.1.2.1 Nathusius' pipistrelle

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

Based on site visit and survey data, including transects, it is determined that the Typical Activity (i.e. Median) is reflective of the nature of the Site, which is primarily bogland, conifer plantation and agricultural grassland with low levels of bat activity recorded during the walked transects undertaken at the Site.

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

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 2024	Low (2)	Low (1)	Typical Risk is Low (2)	Low (1)	Peak Risk is Low (2)
Summer 2024		Low (1)	Typical Risk is Low (2)	Low - Moderate (2)	Peak Risk is Medium (4)
Autumn 2024		Low (1)	Typical Risk is Low (2)	Low - Moderate (2)	Peak Risk is Medium (4)

5.1.3 Collision Risk Summary

Following NatureScot (2021) guidance and the application of site-specific activity thresholds, typical site-level collision risk for high-risk bat species at the Proposed Project was assessed as **Low**. At peak activity levels, the risk assessment increased to **Medium** for Leisler's bat, common pipistrelle, soprano pipistrelle and Nathusius' pipistrelle (Tables 5-2 to 5-5).

Overall bat activity levels were considered representative of the habitat composition at the Proposed Wind Farm Site, which is dominated by commercial conifer plantation, with widespread areas of peatland and grassland habitats. Both static detector data and manual transect surveys indicated activity levels typical of a commercial forestry/open habitat landscape, with low suitability for commuting and foraging largely limited to conifer plantation corridors.

Detailed detector-level analysis identified one location that recorded **High** median activity for high collision-risk species (Table 5-6), indicating a small number of localised activity peaks associated with conifer plantation edges.

A bat monitoring and mitigation strategy has been devised for the Proposed Project, in line with the case study example provided in Appendix 5 of the NatureScot 2021 Guidance and based on the site-specific data. After year 1 monitoring, if a curtailment requirement is identified, a curtailment programme, in line with relevant guidelines, will be devised. This would be tailored to site-specific seasonal and species-specific patterns and may include curtailment based on wind speed thresholds, weather-based triggers, and increased buffer zones as required.

Table 5-6 Detector Location Recording High Median Activity in 2024 for High-risk Bat Species

Detector ID	Turbine	Species	High Median Activity Survey Period
D01	T01	Common pipistrelle	Autumn 2024
D01	T01	Soprano pipistrelle	Autumn 2024

5.2 Loss or Damage to Commuting and Foraging Habitat

In the absence of appropriate design and mitigation, the loss or degradation of commuting/foraging habitat has potential to reduce feeding opportunities and/or displace local bat populations. The Site is predominantly composed of conifer plantation, peatland and grassland habitats.

Baseline habitat appraisal and activity surveys demonstrated that the commercial conifer plantation, peatland and grassland habitats generally provide *Low* suitability for bat commuting and foraging**,** reflecting their limited structural complexity and insect productivity. *Moderate* suitability is largely confined to plantation edges and corridors**,** which provide shelter and navigational structure within the wider forestry landscape. Overall bat activity levels recorded across the Site were low and considered representative of a commercial forestry landscape.

The removal of dense, closed-canopy 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.

All of the trees within the plantation parcels proposed for felling comprise commercial conifer species. As the commercial conifer plantation trees are managed on a short to medium rotation, are generally immature to semi-mature, and are even-aged with a uniform structure. As a result, they are considered unlikely to support potential roost features typically used by bats, such as cavities, cracks, splits or areas of decay, and therefore offer no roosting potential in the context of this site. No potential roost features (PRFs) were identified within the inspected wet willow woodland trees, and no evidence of bat use was recorded. Accordingly, all trees within the plantation parcels were assessed as having no (*None*) roosting potential.

Turbine Delivery Route accommodation works are minor and confined to areas of *Negligible* bat habitat suitability, with no high-value commuting or foraging habitats affected. This will involve an alteration to small areas of adjacent Wet grassland (GS4) habitat at two locations along the Fahanlunaghta More Road. Similarly, the grid connection works will not result in the loss or degradation of bat commuting or foraging habitat.

Within the Proposed Enhancement Site, the felling of commercial conifer plantation will be followed by habitat enhancement through natural regeneration and targeted management, resulting in increased structural diversity and a more open habitat mosaic. While designed primarily for hen

harrier conservation, these measures are expected to provide beneficial effects for bats, through the creation of additional edge habitat, increased connectivity to the wider landscape, increased insect availability and improved foraging opportunities at a local scale. It is proposed to plant c. 1,960m of hedgerow and riparian woodland habitat within the Proposed Enhancement Site. It is also proposed to bolster and maintain c.3.4 km of gappy or poor-quality hedgerow habitats in the eastern section of the Proposed Enhancement Site. Further details are outlined in Chapter 6, Appendix 6-4 – BMEP.

Given that the majority of the Proposed Project is located within habitats of *Low* suitability for bat commuting and foraging**,** that no high-value bat habitats will be lost, and that large areas of the site will remain undisturbed with targeted habitat enhancement implemented, 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

The Proposed Wind Farm Site is located within a landscape that provides limited opportunities for bat roosting, with potential roost features largely confined to a small number of built structures in the wider Proposed Project. Commercial conifer trees within the site do not provide suitable roosting habitat due to their species composition, structure and management regime.

Two structures within the Proposed Wind Farm Site were assessed for bat roosting suitability. They were assessed as offering *Low* roosting potential**.** No roosts were identified within any of the structures during the surveys undertaken in 2022 or 2024. An individual bat was observed night roosting within a stone shed during transect surveys in 2019. All structures surveyed are located over 400m away from the Proposed Turbines and will not be affected by the Proposed Project. No loss or disturbance of potential roosts is anticipated.

Trees within the Proposed Wind Farm Site that are required to be removed to facilitate turbine bases, crane hardstands, access tracks and associated infrastructure comprise exclusively commercial conifer plantation forestry. These trees do not provide suitable roosting features for bats due to their species composition, uniform structure and management regime, which limits the development of cavities, cracks, loose bark or other potential roost features. They were assessed as having no (None) roosting potential. No loss of tree roosting habitat will occur.

Within the Proposed Grid Connection Site, a small number of bridges and culverts were assessed as offering no (*None)* roosting potential, and no evidence of bat roosting was recorded. Works at these structures will be undertaken using horizontal directional drilling (HDD) with appropriate setbacks and no alteration to these structures. Temporary turbine delivery accommodation works will not affect any roosting features, as no bat roosts or potential roosting features were identified within the works areas.

No potential for significant effect with regard to the loss of, or damage to roosting habitat as a result of the Proposed Project is anticipated.

5.4 Displacement of Individuals or Populations

The Proposed Project is located within a landscape dominated by commercial conifer plantation, grassland and peatland habitats. These habitats generally provide low suitability for bat roosting, commuting and foraging, and baseline surveys recorded relatively low bat activity levels overall, consistent with a commercial forestry/open habitat landscape.

A search for roosts was undertaken within 200 m plus the maximum rotor radius (i.e. 75 m) of each Proposed Turbine location (NatureScot, 2021). No structures, building or trees and were identified within the 275 m roost search buffer and no bat roosts were identified.

Construction activities associated with the Proposed Project, including underground cabling works undertaken using HDD, are localised and temporary in nature and will not result in the fragmentation of bat habitat or a reduction in habitat availability. No bat roosts were identified at or in the immediate vicinity of HDD locations. A proportion of habitat will also be enhanced through the implementation of the Biodiversity Management and Enhancement Plan. It is proposed to plant c. 1,960m of hedgerow and riparian woodland habitat within the Proposed Enhancement Site. These have been strategically chosen to link up existing areas of bat activity and to extend connectivity through the Proposed Project. It is also proposed to bolster and maintain c.3.4 km of gappy or poor-quality hedgerow habitats in the eastern section of the Proposed Enhancement Site.

Given the baseline activity levels, limited extent of habitat removal, the absence of roost loss, and the retention of functional ecological corridors throughout the Site, the habitats will continue to support bat activity. Taking this into account, and with the implementation of the proposed mitigation and enhancement measures, no significant displacement of individual bats or local populations is anticipated as a result of the Proposed Project.

6. BEST PRACTICE AND MITIGATION MEASURES

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

6.1 Standard Best Practice Measures

6.1.1 Noise Restrictions

During the construction phase, plant machinery will be turned off when not in use and all plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations (S.I. No. 632 of 2001, as amended).

6.1.2 Lighting Restrictions

Where lighting is required, directional lighting will be used to prevent overspill on to woodland/forestry edges and linear features. Exterior lighting, during construction and post construction, will be designed to minimize light spillage, reducing the effect on surrounding habitat features and bat activity. Lighting will be directed away from mature trees and treelines around the periphery of the site boundary to minimize disturbance to bats.

Directional accessories will be used to direct light appropriately, such as light shields (Stone, 2013). All luminaires will be of a type that prevents upward and lateral spillage. The proposed lighting will comply with ILP Guidance Note 08/23 – Bats and Artificial Lighting at Night (ILP, 2023).

The applicant also commits to the Dark Sky Ireland Lighting Recommendations, ensuring that:

- Every light is justified;
- Light is used only when necessary;
- It is directed where needed;
- Light intensity is minimised;
- Spectra are adapted to the environment;
- White light sources will have a “warm” colour temperature (less than 3000K).

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 Bat Felling Buffers

In accordance with NatureScot (2021) and NIEA (2021) guidance, a minimum 50 m buffer is applied between turbine blade tips and habitat features used by bats (e.g. hedgerows, treelines). Although increased buffers of 100–200m are recommended around woodland by Eurobats Publication No. 6 and NIEA, these recommendations are not currently supported by empirical evidence from the UK or Ireland and are not routinely applied in wind farm planning.

NatureScot recommends that a distance of 50m between turbine blade tip and nearest woodland (or other key habitat features) is adequate mitigation. This 50m buffer will be implemented from the

outset and monitored as per the post-construction monitoring. The success of the buffer mitigation will be assessed as part of post construction monitoring (outlined in Section 6.2 below) and updated where necessary.

For the Proposed Wind Farm Site, a 50 m buffer between turbine blade tip and the nearest habitat feature has been implemented, based on a conservative worst-case turbine specification (blade length: **75 metres;** hub height: **100metres**; total height: **175m**). Buffer distances were calculated using the Natural England formula (NatureScot, 2021) as illustrated in Plate 6-1 and have been incorporated into the turbine layout.

Removal of areas of conifer plantation will be required to provide the necessary bat buffers within the Proposed Wind Farm Site. These vegetation-free areas (i.e. less than 2m in height) will be maintained for the duration of the operational phase and form part of the overall collision-risk mitigation strategy for bats.

The required distance (**b**) between the edge of a habitat feature and the centre of the turbine tower is calculated as follows:

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

Where:

- bl = blade length (m)
- hh = hub height (m)
- fh = height of habitat feature (m)

Using the turbine dimensions outlined above and a feature height of 20 m for conifer forestry, the calculated offset distance **(b) is approx. 95.2 m**.

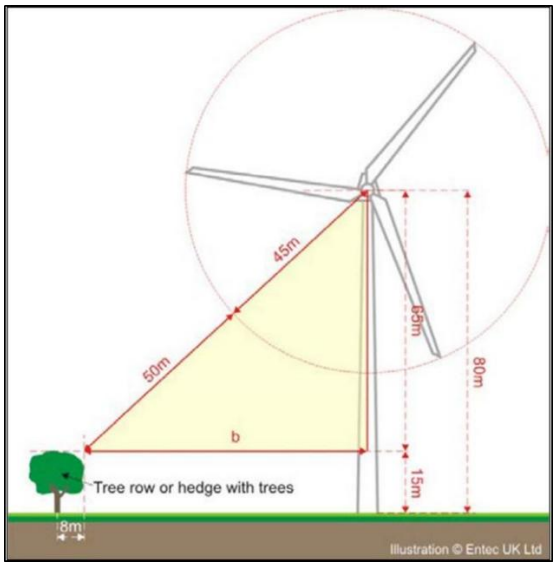

Plate 6-1 Calculate buffer distances (Natural England, 2014).

6.1.4 Biodiversity Management and Enhancement Plan

In the absence of appropriate design, the loss or degradation of commuting/foraging habitat has potential to reduce feeding opportunities and/or displace bat populations. However, the Proposed Project is predominantly located within conifer plantation, peatland and grassland habitats. Any linear landscape features such as hedgerows, woodland and drains will be largely retained or avoided.

Small areas of linear vegetation, such as hedgerow, but primarily conifer edge habitats within the required turbine bat buffers will be removed A replanting design has been curated to provide alternative commuting corridors within the Site. It is proposed to bolster and plant new hedgerow and riparian corridors within the eastern section of the Site, as well as manage existing hedgerows and areas of native scrub. The aim of these measures is to ensure that the Proposed Project results in a net gain of linear habitats within the Site, and to increase connectivity within the Site and the surrounding environments for bats. To comply with NatureScot recommendations vegetation habitat will be removed as a result of the Proposed Project, including the recommended buffers applied for bats. Further details are outlined in Chapter 6, Appendix 6-4 Biodiversity Management and Enhancement Plan (BMEP).

Linear landscape features in the wider area that will be retained, and the loss of gappy hedgerow is not anticipated to have a significant effect on local bat populations. However, it is proposed to plant new linear features and bolster existing habitat features to offset any potential loss in linear habitat features and to provide additional new opportunities for commuting and foraging bats. It is proposed to plant c. 1,960m of hedgerow and riparian woodland habitat within the Proposed Enhancement Site. These have been strategically chosen to link up existing areas of bat activity and to extend connectivity through the Proposed Project. It is also proposed to bolster and maintain c.3.4 km of gappy or poor-quality hedgerow habitats in the eastern section of the Proposed Enhancement Site.

The locations in which the proposed linear hedgerow planting and enhancement will take place will be carried out along selected boundaries of fields within the Proposed Enhancement Site. Refer to the BMEP outlined in Appendix 6-4 of the EIAR for hedgerow planting details.

Overall, the proposed planting of new native hedgerow, along with the enhancement and translocation of existing hedgerow, will result in a net gain of linear landscape 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, BMEP.

6.1.5 Blade Feathering

NIEA Guidelines 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. Blade feathering will not be applied during winter months (November - March) when bats are largely inactive.

- Spatial Targeting:

Feathering will be implemented only at turbines located in areas of high bat activity, as identified through baseline surveys. Turbines positioned in habitats unsuitable for bats (e.g., extensive bare peat, exposed upland areas with no foraging or commuting value) will not require feathering at low wind speeds. Section 6.1.3 of this report outlines areas 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.

6.2 Bat Monitoring Plan

Overall risk levels for high collision risk bat species were typically ***Low***. This risk level is reflective of the nature of the site, which is dominated by commercial conifer plantation, grassland and peatland habitats, with overall relatively low bat activity levels recorded during baseline surveys. Structural connectivity for bats within the site is largely limited to conifer plantation edges within the wider landscape.

However, 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 the NatureScot, (2021) and based on the site-specific data.

Post-construction monitoring will be used to confirm collision risk predictions and to determine whether additional mitigation measures, such as turbine operational curtailment during defined high-risk conditions, are required.

The monitoring strategy is designed to be proportionate to the assessed risk, allowing mitigation measures to be implemented only where post-construction evidence indicates a need, thereby ensuring effective protection of bat populations while avoiding unnecessary operational constraints.

6.2.1 Operational Monitoring

To assess the effects of the Proposed Project on bat activity, at least 3 years of post-construction monitoring is proposed. Post-construction monitoring will include static detector surveys, walked survey transects and corpse searching to record any bat fatalities resulting from collision.

The results of post-construction monitoring shall be utilised to assess any potential changes in bat activity patterns and to monitor the implementation of the mitigation strategy as outlined in Section 6 above. If the monitoring identifies a curtailment requirement (i.e. significant bat fatalities encountered), a curtailment programme, in line with relevant guidelines, will be devised around key activity periods and weather parameters, as well as a potential increase in buffers.

At the end of each year, the efficacy of the mitigation and monitoring plan will be reviewed, and any identified efficiencies incorporated into the programme. This approach allows for an evidence-based review of the potential for bat fatalities at the Proposed Wind Farm Site, post construction, to ensure that the necessary measures, based on a new baseline post-construction, are implemented for the protection of bat species locally. The effectiveness of any mitigation/curtailment needs to be monitored in order to determine (a) whether it is working effectively (i.e. the level of bat mortality is

incidental), and (b) whether the curtailment regime can be refined such that turbine down-time can be minimised whilst ensuring that it remains effective at preventing casualties.

The below subsections provide additional detail on the proposed survey effort, timing, and mitigation.

6.2.1.1 Monitoring Year 1

Bat activity surveys

The post-construction surveys will be carried out as per the pre-construction survey effort. Static monitoring will take place at each turbine during the bat activity season (between April and October) (NatureScot, 2021, NIEA, 2021). Full spectrum recording detectors will be utilised for the same duration as during pre-application surveys and at the same density (NatureScot, 2021). Walked survey transects will also be conducted.

Key weather parameters and other factors that are known to influence collision risk will be monitored and shall include:

- Windspeed in m/s (measured at nacelle height)
- Temperature (ºC)
- Precipitation (mm/hr)

Carcass searches

Carcass searches, to monitor and record bat fatalities, shall be conducted at each turbine in accordance with most recent NatureScot/NIEA Guidance. This shall include searcher efficiency trials and an assessment of scavenger removal rates to determine the appropriate correction factor to be applied in relation to determining an accurate estimate of collision mortality. Surveys should cover all activity seasons and the use of a trained dog detection team will be carried out to ensure maximum efficiency.

6.2.1.2 Monitoring Years 2 & 3

Monitoring surveys shall continue in Year 2 and 3, and where a curtailment requirement has been identified, the success of the curtailment strategy shall be assessed in line with the baseline data collected in the preceding year(s). The performance of any curtailment programme in terms of its ability to respond to the changes in bat abundance based on temperature and wind speed shall be analysed to confirm it is neither significantly over- nor under- curtailing during different periods of bat activity.

At the end of each year, the efficacy of any mitigation/curtailment programme shall be reviewed, and any identified efficiencies incorporated into the programme. The requirement for continued post-consent monitoring will also be considered. Should no bat fatalities be recorded in Year 1, curtailment (where applicable) in Year 2 and Year 3 could be reduced/re-evaluated or removed with monitoring continuing to inform this strategy.

6.3 Residual Effects

Taking into account the sensitive design of the project and the implementation of best practice 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 commuting and foraging habitat,
3. Loss or damage to roosts,

4. 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 conifer plantation edge habitats including fire breaks required to facilitate construction associated with the Proposed Enhancement Site. While this loss will be offset through a comprehensive enhancement and replanting programme, it will take approximately 5–10 years for newly planted hedgerows to establish and restore full habitat functionality. As such, a minor temporary reduction in ecological connectivity may occur during this period.

6.4 Cumulative Effects

This cumulative assessment was informed by a review of available planning registers and relevant planning documentation to identify past, present and reasonably foreseeable future developments. Details of the plans and projects considered are provided in Chapter 2 and Section 4.2.6 of this EIAR.

The cumulative assessment identified a number of existing and proposed wind farms within the wider landscape. One existing wind farms are located within 5 km of the proposed turbine locations, and several additional existing and proposed wind farms are located within 10 km of the Proposed Turbines (Table 4-3).

Following the detailed assessment presented in Sections 5.1 to 5.4, the Proposed Project is not predicted to result in any significant residual effects on bats when considered alone. Collision risk has been assessed as **Low** under typical activity conditions and **Medium** at peak activity levels for a small number of species, with adaptive post-construction monitoring proposed to confirm predictions. Detailed detector-level analysis identified one location that recorded **High** median activity for high collision-risk species (Table 5-6), indicating a small number of localised activity peaks associated with conifer plantation edges. No loss or damage to bat roosts is anticipated, no high-value commuting or foraging habitat will be affected, and no displacement of individual bats or local bat populations is predicted.

In reviewing other relevant plans and projects, no spatial or functional linkages were identified that would give rise to cumulative effects on bat populations. The identified wind farm developments are dispersed across the wider landscape, and no shared bat roosts, high-value commuting corridors or foraging areas have been identified that would be affected by the Proposed Project in combination with other projects.

Taking into account the absence of significant residual effects from the Proposed Project alone, the nature and scale of other plans and projects in the area, and the lack of identified pathways for interaction, **no significant cumulative effects on bats are predicted to arise** as a result of the Proposed Project when considered in combination with other existing, permitted or proposed plans and projects.

7. CONCLUSION

This report presents a comprehensive assessment of the potential impacts of the Proposed Project on local bat populations, based on the results of baseline surveys and in accordance with current best practice guidance, including that published by NatureScot (2021).

All potential impacts, including collision risk, roost loss, 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. These include the implementation of bat buffers, light and noise restrictions, habitat enhancement and an adaptive post-construction monitoring and mitigation programme.

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

8. BIBLIOGRAPHY

Abbott, I., Aughney, T., Langton, S. & Roche, N. (2015). *BATLAS 2020 Pilot Project Report.* Bat Conservation Ireland, Virginia, Co. Cavan.

Amorim, F., Rebelo, H. & Rodrigues, L. (2012). Factors influencing bat activity and mortality at a wind farm in the Mediterranean region. *Acta Chiropterologica,* 14(2), 439–457.

Andrews, H. (2018). *Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals.* Pelagic Publishing, Exeter.

Arnett, E.B. (2006). A preliminary evaluation on the use of dogs to recover bat fatalities at wind energy facilities. *Wildlife Society Bulletin,* 34, 1440–1445.

Arnett, E.B., Baerwald, E.F., Mathews, F., Rodrigues, L., Rodríguez-Durán, A., Rydell, J. & Voigt, C.C. (2016). Impacts of wind energy development on bats: a global perspective. In: *Bats in the Anthropocene: Conservation of Bats in a Changing World,* pp. 295–323. Springer International Publishing.

Aughney, T. (2008). *An Investigation of the Impact of Development Projects on Bat Populations: Comparing Pre- and Post-Development Bat Faunas.* Bat Conservation Ireland.

Aughney, T., Langton, S. & Roche, N. (2011). *Brown Long-eared Bat Roost Monitoring Scheme for the Republic of Ireland: Synthesis Report 2007–2010.* Irish Wildlife Manuals No. 56. NPWS, Department of Arts, Heritage and the Gaeltacht, Dublin.

Aughney, T., Langton, S. & Roche, N. (2012). *All-Ireland Daubenton's Bat Waterway Monitoring Scheme 2006–2011.* Irish Wildlife Manuals No. 61. NPWS, Department of Arts, Heritage and the Gaeltacht.

Barataud, M. & Tupinier, Y. (2012). *Écologie acoustique des chiroptères d'Europe.* Biotope.

Baerwald, E.F., D'Amours, G.H., Klug, B.J. & Barclay, R.M.R. (2008). Barotrauma is a significant cause of bat fatalities at wind turbines. *Current Biology,* 18(16), R695–R696.

Baerwald, E.F. & Barclay, R.M.R. (2009). Geographic variation in activity and fatality of migratory bats at wind energy facilities. *Journal of Mammalogy,* 90(6), 1341–1349.

Bat Conservation Trust (2020). *Core Sustenance Zones and Habitats of Importance for Designing Biodiversity Net Gain for Bats.* BCT, London.

Bat Conservation Ireland (2012a). *Wind Turbine/Wind Farm Development Bat Survey Guidelines,* Version 2.8. Bat Conservation Ireland, Virginia, Co. Cavan.

Bat Conservation Ireland (2012b). *Bats and Appropriate Assessment Guidelines,* Version 1. Bat Conservation Ireland, Virginia, Co. Cavan.

Berthinussen, A., Richardson, O.C. & Altringham, J.D. (2014). *Bat Conservation: Global Evidence for the Effects of Interventions.* Pelagic Publishing.

Carden, R., Aughney, T., Kelleher, C. & Roche, N. (2010). *Irish Bat Monitoring Schemes: BATLAS Republic of Ireland Report 2008–2009.* Bat Conservation Ireland.

Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). Bat Conservation Trust, London.

Collins, J. (ed.) (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edn). Bat Conservation Trust, London.

Collins, J. & Jones, G. (2009). Differences in bat activity in relation to bat detector height: implications for bat surveys at proposed wind farm sites. *Acta Chiropterologica,* 11(2), 343–350.

Cryan, P.M., Gorresen, P.M., Hein, C.D., Schirmacher, M.R., Diehl, R.H., Huso, M., Hayman, D.T.S., Fricker, P.D., Bonaccorso, F.J. & others (2014). Behavior of bats at wind turbines. *Proceedings of the National Academy of Sciences,* 111(42), 15126–15131.

EUROBATS (2016). *Report of the Intersessional Working Group on Wind Turbines and Bat Populations.* 21st Meeting of the Advisory Committee, Zandvoort.

Hein, C.D., Gruver, J. & Arnett, E.B. (2013). *Relating Pre-construction Bat Activity and Post-construction Bat Fatality to Predict Risk at Wind Energy Facilities: A Synthesis.* Bat Conservation International.

Hill, D., Fasham, M., Tucker, P., Shewry, M. & Shaw, P. (eds.) (2005). *Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring.* Cambridge University Press.

Horn, J.W., Arnett, E.B. & Kunz, T.H. (2008). Behavioral responses of bats to operating wind turbines. *Journal of Wildlife Management,* 72(1), 123–132.

Hundt, L. (2012). *Bat Surveys: Good Practice Guidelines* (2nd edn). Bat Conservation Trust.

Institution of Lighting Professionals (ILP) (2023). *Guidance Note 08/23: Bats and Artificial Lighting at Night.* ILP, Rugby.

Korner-Nievergelt, F., Brinkmann, R., Niermann, I. & Behr, O. (2013). Estimating bat and bird mortality at wind turbines using mixture models. *PLOS ONE,* 8(7), e67997.

Mathews, F., Richardson, S., Lintott, P. & Hosken, D. (2016). *Understanding the Risk to European Protected Species (Bats) at Onshore Wind Turbine Sites to Inform Risk Management.* University of Exeter.

Mitchell-Jones, A.J. & McLeish, A.P. (2004). *The Bat Worker's Manual* (3rd edn). JNCC, Peterborough.

Montgomery, I., Lundy, M. & Roche, N. (2014). *Irish Bats in the 21st Century.* Bat Conservation Ireland, Virginia, Co. Cavan.

Montgomery, W.I., Provan, J., McCabe, A.M. & Yalden, D.W. (2014). Origin of British and Irish mammals: disparate post-glacial colonisation and species introductions. *Quaternary Science Reviews,* 98, 144–165.

Natural England (2014). *Bats and Onshore Wind Turbines: Interim Guidance (Technical).* Technical Information Note TIN051.

NIEA (2011). *Bat Survey – Specific Requirements for Wind Farm Proposals.* Northern Ireland Environment Agency.

NIEA (2021). *Guidance on Bat Surveys, Assessment & Mitigation for Onshore Wind Turbine Developments.* Natural Environment Division, NIEA.

NPWS (2019). *The Status of EU Protected Habitats and Species in Ireland: Article 17 Report.* National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Dublin.

NPWS & VWT (2022). *Lesser Horseshoe Bat Species Action Plan 2022–2026*. Department of Housing, Local Government and Heritage, Dublin, Ireland.

NPWS (2024). *Conservation objectives supporting document – Lesser Horseshoe Bat (Rhinolophus hipposideros)*, Version 2. Department of Housing, Local Government and Heritage, Dublin, Ireland.

NRA (2006a). *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes.* National Roads Authority, Dublin.

NRA (2006b). *Guidelines for the Treatment of Bats During the Construction of National Road Schemes.* National Roads Authority, Dublin.

Rodrigues, L., Bach, L., Dubourg-Savage, M.J., Karapandža, B., Kovač, D., Kervyn, T., Dekker, J., Kepel, A., Bach, P., Collins, J., Harbusch, C., Park, K., Micevski, B. & Minderman, J. (2015). *Guidelines for Consideration of Bats in Wind Farm Projects* (Revision 2014). EUROBATS Publication Series No. 6. UNEP/EUROBATS Secretariat, Bonn.

Roche, N., Aughney, T. & Langton, S. (2015). *Lesser Horseshoe Bat: Population Trends and Roosting Resource Status.* Irish Wildlife Manuals No. 85. NPWS.

Russ, J. (2012). *British Bat Calls: A Guide to Species Identification.* Pelagic Publishing.

Rydell, J., Bach, L., Dubourg-Savage, M.-J., Green, M., Rodrigues, L. & Hedenström, A. (2010). Bat mortality at wind turbines in northwestern Europe. *Acta Chiropterologica,* 12(2), 261–274.

Schofield, H. (2008). *The Lesser Horseshoe Bat: Conservation Handbook.* The Vincent Wildlife Trust, Ledbury.

Schuster, E., Bulling, L. & Köppel, J. (2015). Consolidating the state of knowledge: A synoptical review of wind energy's wildlife effects. *Environmental Management,* 56, 300–331.

SNH (2019). *Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation.* Scottish Natural Heritage (now NatureScot).

Stone, E.L. (2013). Bats and lighting: overview of current evidence and mitigation. In: *Bat Conservation Trust National Conference Proceedings.*

Voigt, C.C., Kaiser, K., Look, S., Scharnweber, K. & Scholz, C. (2022). Wind turbines without curtailment produce large numbers of bat fatalities throughout their lifetime: A call against ignorance and neglect. *Global Ecology and Conservation,* 37, e02149.

Wray, S., Wells, D., Long, E. & Mitchell-Jones, T. (2010). Valuing bats in ecological impact assessment. *CIEEM In Practice,* December issue.

Bat Conservation Ireland (2026). Guidance on Bat Surveys for Wind Energy Developments in Ireland. Bat Conservation Ireland, Dublin.

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Appendix 1 – Habitat Suitability Assessment

HABITAT SUITABILITY ASSESSMENT

Guidelines for assessing the potential suitability of a site for bats, based on the presence of habitat features (taken from Collins, 2016)

Suitability	Roosting Habitats	Commuting and Foraging Habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions1 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 or hibernation2. A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential3.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitats. 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 or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are 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 commuting 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 or tree 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 and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats 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.

[1] For example, in terms of temperature, humidity, height above ground, light levels or levels of disturbance.
[2] Larger numbers of Common pipistrelle may be present during autumn and winter in large buildings in highly urbanised areas, based on evidence from the Netherlands (Korsten *et al.* 2015).
[3] Categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

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Appendix 2 – Site Risk Assessment (Table 3a, NatureScot)

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.

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Appendix 3 – Overall Risk Assessment (Table 3b, NatureScot)

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).

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Appendix 4 – Bat Roost Suitability of Watercourse Crossings along the Proposed Grid Connection Underground Cabling Route

Bat Roost Suitability of Watercourse Crossings along the Proposed Grid Connection Underground Cabling Route

Watercourse Crossing No.	X ITM	Y ITM	Watercourse Type	Watercourse Crossing Type	Extent of in-channel works	Bat Roost Potential
UGC1 (Mapped)	512991	679609	Plastic pipe	Standard Formation Crossing under Culvert	None. No in-stream works required	None
UGC2	513017	679584	Stone culvert	Standard Formation Crossing under Culvert	None. No in-stream works required	Negligible
UGC3 (Mapped)	512013	678169	Metal culvert	Shallow Formation Crossing Under Culvert	None. No in-stream works required	None
UGC4	512341	677312	Plastic pipe	Shallow Formation Crossing Under Culvert	None. No in-stream works required	None
UGC5 (Mapped)	512407	677225	Metal culvert	Shallow Formation Crossing Under Culvert	None. No in-stream works required	None
UGC6	512770	677095	Plastic pipe	Shallow Formation Crossing Under Culvert	None. No in-stream works required	None
UGC7	512939	676934	Plastic pipe	Standard Formation Crossing over Culvert	None. No in-stream works required	None
UGC8	513026	676806	Plastic pipe	Standard Formation Crossing over Culvert	None. No in-stream works required	None
UGC9	513090	676793	Plastic pipe	Standard Formation Crossing over Culvert	None. No in-stream works required	None
UGC10 (Mapped)	513289	676739	Plastic pipe	Standard Formation Crossing over Culvert	None. No in-stream works required	None
UGC11	513215	676475	Plastic pipe	Standard Formation Crossing over Culvert	None. No in-stream works required	None
UGC12	513229	676075	Plastic pipe	Shallow Formation Crossing Under Culvert	None. No in-stream works required	None
UGC13	513289	675904	Plastic pipe	Shallow Formation Crossing Under Culvert	None. No in-stream works required	None
UGC14	513428	676177	Plastic pipe	Standard Formation Crossing over Culvert	None. No in-stream works required	None
UGC15	513448	676174	Plastic pipe	Standard Formation Crossing over Culvert	None. No in-stream works required	None